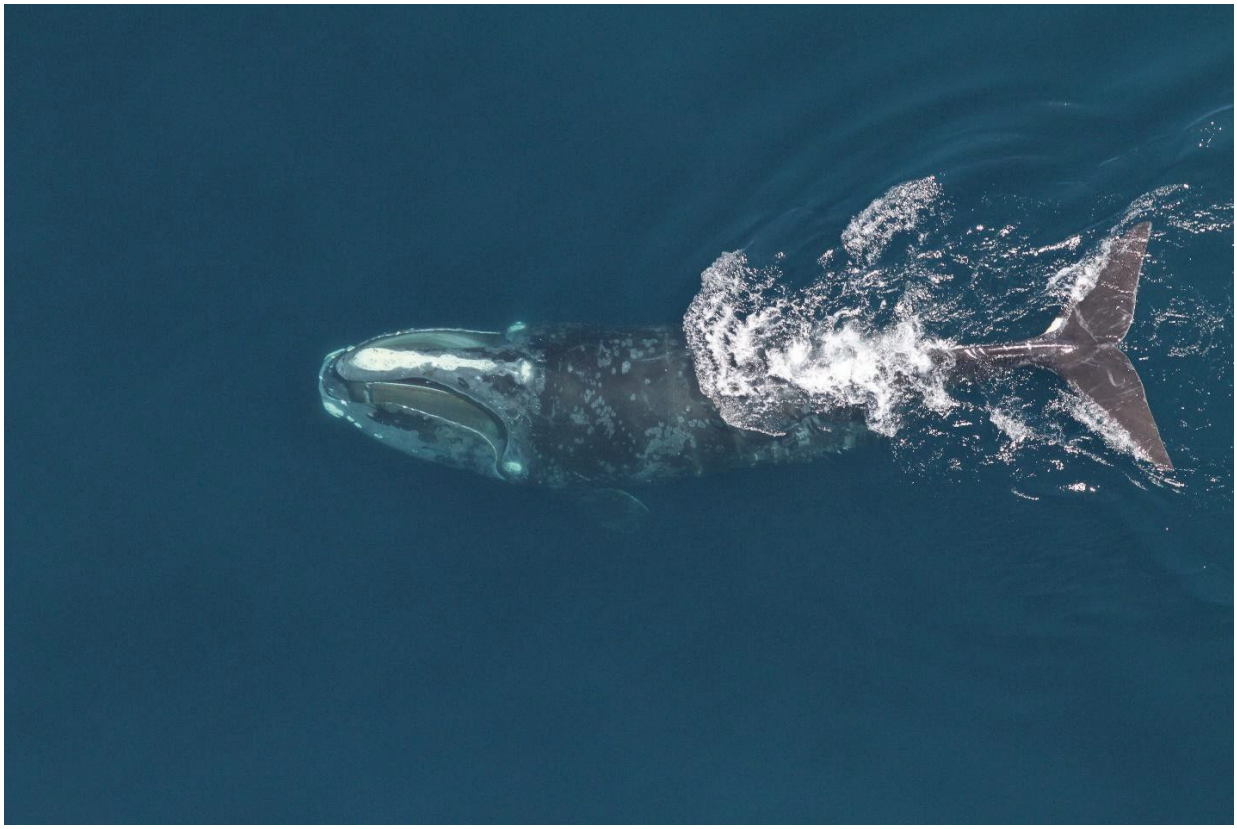
DRAFT ENVIRONMENTAL IMPACT STATEMENT,
REGULATORY IMPACT REVIEW, AND INITIAL REGULATORY FLEXIBILITY ANALYSIS
FOR AMENDING
THE ATLANTIC LARGE WHALE TAKE REDUCTION PLAN:
RISK REDUCTION RULE
VOLUME II APPENDICES



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National Marine Fisheries Service National Oceanic and Atmospheric Administration
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Trap/Pot Gear Modification Requirements and Restrictions under the ALWTRP

Trap/Pot Universal Requirements

- No buoy line floating at the surface.
- No wet storage of gear (all gear must be hauled out of the water at least once every 30 days).
- Fishermen are encouraged, but not required, to maintain knot-free buoy lines.
- All groundlines must be made of sinking line.
- Northeast and Mid-Atlantic: Trawls with less than or equal to 5 traps may only possess 1 buoy line, except in MA state waters. In MA, 3 traps or less must have 1 endline.

Trap/Pot Weak Link Requirements

- All buoys, flotation devices and/or weights must be attached to the buoy line with a weak link having a certain breaking strength as defined for each management area on the following pages.
- Weak links must be chosen from the list of NMFS approved gear, which includes: off the shelf weak links, rope of appropriate breaking strength, hog rings, and other materials or devices approved in writing. Weak links must be designed in such a way that the bitter end of the buoy line is clean and free of any knots when the weak link breaks.

Trap/Pot Gear Marking Requirements

- Trap/pot surface buoys to be marked to identify the vessel or fishery with one of the following: the owner's motorboat registration number and/or U.S. vessel documentation number; the federal commercial fishing permit number; or whatever positive identification marking is required by the vessel's home-port state.
- When marking is not already required by state or federal regulations, the letters and numbers to mark gear must be at least 1 inch (2.5 cm) in height, block letters or Arabic numbers, in a color that contrasts with the color of the buoy.
- Buoy lines are to be marked with three 12 inch (30.48 cm), colored marks: one at the top of the buoy line, one midway along the buoy line, and one at the bottom of the buoy line.
- If the mark consists of two colors, EACH COLOR mark may be 6-inches for a TOTAL MARK of 12- inches.
- Color requirements are defined for each individual management area as described in each management area description that follows.

Massachusetts Restricted Area

February 1 – April 30 • CLOSED to ALL trap/pot fishing

May1 – January 31

- Universal requirements
- Gear marking – RED or the following colors for minimum trap per trawl exemption areas

- Single traps in exempted MA State waters in LMA1- RED & WHITE
- Single traps in exempted MA state waters in LMA 2 - RED & BLACK
- Single traps in exempted MA state waters in Outer Cape - RED & YELLOW
- Weak links ≤ 600 lbs breaking strength
- Sinking groundline

Trap Restrictions
- MA State Waters – 2 or no minimum
- LMA 1 (3-12 miles) – 10
- LMA1/Outer Cape Overlap (0-3 miles), Outer Cape (0-3 miles) – no minimum
- Outer Cape (3-12 miles) – 10

Great South Channel Restricted Area

<u>April 1 – June 30</u> • CLOSED to ALL trap/pot fishing

<u>July 1 – March 31</u>
- Universal requirements
- Gear Marking – RED (areas overlapping LMA 2 and/or Outer Cape LMA), BLACK (areas overlapping LMA 2/3 Overlap and/or LMA3)
- Weak links no greater than 600 lb in area overlap with LMA2 and/or OC, and no greater than 1,500 lb. in areas that overlap with LMA 2/3 and/or LMA3
- Sinking groundline

Trap Restrictions
- Outer Cape (12+ miles) – 20
- LMA 2 (12 + miles) – 15
- LMA 2/3 Overlap (12+ miles) – 20
- LMA 3 (12+ miles) – 20

Stellwagen Bank/Jeffreys Ledge Restricted Area

<u>Year-round</u>
- Universal requirements
- Gear marking – RED or RED & GREEN if overlapping Jeffreys Ledge Gear Marking Area or the following colors for minimum trap per trawl exemption areas
- Single traps in exempted MA State waters in LMA1 – RED & WHITE
- Single traps in exempted MA state waters in LMA 2 – RED & BLACK
- Single traps in exempted MA state waters in Outer Cape – RED & YELLOW
- Weak links ≤ 600 lbs breaking strength
- Sinking groundline

Trap Restrictions
- ME Zones A-G (3-6 miles) – 3
- ME Zones A-C (6-12 miles) – 5
- ME Zones D-G (6-12 miles) – 10

- ME Zones A-E (12+ miles) – 15
- ME Zones F-G (12+ miles) – 15 (Mar 1 – Oct 31), 20 (Nov 1 – Feb 28/29)
- LMA 1 (3-12 miles) – 10
- LMA 1 (12+ miles) – 20
- Outer Cape (3-12 miles) – 10
- Outer Cape (12+ miles) – 20
- LMA 2 (3-12 miles) – 10
- LMA 2 (12 + miles) – 15

Northern Inshore State Trap/Pot Waters

<u>Year-round</u>
- Universal requirements
- Gear marking – RED or the following colors for minimum trap per trawl exemption areas
  - Single traps in exempted MA State waters in LMA1 – RED & WHITE
  - Single traps in exempted MA state waters in LMA 2 – RED & BLACK
  - Single traps in exempted MA state waters in Outer Cape – RED & YELLOW
- Weak links ≤ 600 lbs breaking strength
- Sinking groundline

Trap Restrictions
- ME State and Pocket Waters – 2
- MA State Waters – 2 or no minimum
- NH State Waters, LMA1/Outer Cape Overlap (0-3 miles), Outer Cape (0-3 miles), & Rhode Island State Waters - no minimum

Northern Nearshore Trap/Pot Waters
<u>Year-round</u>
- Universal requirements
- Gear marking – RED or RED & GREEN if overlapping Jeffreys Ledge Gear Marking Area (page 30) or RED & PURPLE if overlapping Jordan Basin Gear Marking Area
- Weak links ≤ 600lbs breaking strength
- Sinking groundline

Trap Restrictions
- ME Zones A-G (3-6 miles) – 3
- ME Zones A-C (6-12 miles) – 5
- ME Zones D-G (6-12 miles) – 10
- ME Zones A-E (12+ miles) – 15
- ME Zones F-G (12+ miles) – 15 (Mar 1 – Oct 31), 20 (Nov 1 – Feb 28/29)
- LMA 1 (3-12 miles) – 10
- LMA 1 (12+ miles) – 20
- Outer Cape (3-12 miles) – 10
- Outer Cape (12+ miles) – 20
- LMA 2 (3-12 miles) – 10
- LMA 2 (12 + miles) – 15

Southern Nearshore Trap/Pot Waters

Northeast – <u>Year-round</u>

Mid-Atlantic - <u>September 1 – May 31</u>

Southeast - <u>December 1 – March 30</u> South of the Southeast Restricted Area North and <u>September 1 – May 31</u> North of the Southeast Restricted Area North

- Universal requirements
- Gear marking – ORANGE
- Weak links ≤ 600 lbs breaking strength
- Sinking groundline

Trap Restrictions
LMA 4,5,6 – no minimum

Offshore Trap/Pot Waters

Northeast – <u>Year-round</u>

Southeast – <u>September 1 – May 31</u> North of 32° N. lat, <u>November 15 – April 15</u> Between 32° N. lat and 29° N. lat, and <u>December 1 – March 31</u> Between 29°N. lat and 27° 51' N. lat

- Universal requirements
- Gear marking – BLACK or BLACK & PURPLE if overlapping Jordan Basin Gear Marking Area
- Weak links ≤ 1500 lbs in offshore, 2,000 lbs if red crab trap/pot
- Sinking groundline

Trap Restrictions
- ME Zones A-E (12+ miles) – 15
- ME Zones F-G (12+ miles) – 15 (Mar 1 – Oct 31), 20 (Nov 1 – Feb 28/29) LMA 2/3 Overlap (12+ miles) - 20
- LMA 3 (12+ miles) North of 40° – 20
- No trap restrictions in offshore waters south of 40 degrees

Southeast Restricted Area North

<u>Nov. 15 – April 15</u>

All of Southeast Restricted Area North
- Universal requirements
- Buoy lines must be made out of sinking line
- Buoy lines – Only single traps are allowed. Also, whole buoy line (from trap/pot to buoy)

must be the same diameter and free of objects (e.g., weights, floats, etc.) and the buoy line must be made of sinking line.

Florida State Waters

- Weak links – ≤ 200lbs
- Vertical line breaking strength ≤ 1,500 lbs
- Gear marking – BLUE & ORANGE

SC/GA State Waters

- Weak links – ≤ 600lbs
- Vertical line breaking strength ≤ 2,200 lbs
- Gear marking - BLUE & ORANGE

Federal Waters

- Weak links – ≤ 600lbs
- Vertical line breaking strength ≤ 2,200 lbs
- Gear marking – GREEN & ORANGE
- Trap/pot gear must be brought back to shore at the conclusion of each trip.

Jordan Basin Gear Marking Area

Year-round

- Gear marking – RED & PURPLE if overlapping LMA1, BLACK & PURPLE if overlapping Offshore Trap/Pot Waters

Jeffreys Ledge Gear Marking Area

Year-round

Gear marking – RED & GREEN

Gillnet Gear Modification Requirements and Restrictions under the ALWTRP

Gillnet Universal Requirements

- No buoy line floating at the surface.
- No wet storage of gear (all gear must be hauled out of the water at least once every 30 days)
- Fishermen are encouraged, but not required, to maintain knot-free buoy lines.
- All groundlines must be made of sinking line.

Gillnet Gear Marking Requirements

- Gillnet surface buoys to be marked to identify the vessel or fishery with one of the following: the owner's motorboat registration number and/or U.S. vessel documentation number; the federal commercial fishing permit number; or whatever positive identification marking is required by the vessel's home-port state.
- When marking is not already required by state or federal regulations, the letters and numbers to mark gear must be at least 1 inch (2.5cm) in height, block letters or Arabic numbers, in a color that contrasts with the color of the buoy.
- Buoy lines are to be marked with three 12 inch (30.48 cm), colored marks: one at the top of the buoy line, one midway along the buoy line, and one at the bottom of the buoy line. Color requirements are defined for each individual management area as described in each management area description that follows.

Gillnet Weak Link Requirements

- All buoys, floatation devices and/or weights must be attached to the buoy line with a weak link having a certain breaking strength as defined for each management area in the following tables.
- Individual weak links are not required in locations where rope of appropriate breaking strength is used. Additionally, if no up and down line is present, then weak links are not required at that location.
- Gillnet panel weak links must be chosen from the list of NMFS approved gear, which includes: off the shelf weak links, rope of appropriate breaking strength, hog rings, and other materials or devices approved in writing.
- The weak link placement must meet one of the two configuration options shown on the following page. The same configuration will be required for all gillnet panels in a string.

Anchored Gillnet Anchoring Requirements

- All gillnets, regardless of number of net panels, will be required to be anchored with the holding power of at least a 22-lb Danforth-style anchor at each end of the net string (must be a burying anchor; no dead weights)

Drift Gillnet Night Fishing & Storage Restrictions

- Fishing with drift gillnet gear at night (i.e., anytime between one-half hour before sunset and one half hour after sunrise) is prohibited unless the gear is tended (i.e., attached to the vessel).
- All drift gillnet gear must be removed from the water and stowed on board before a vessel returns to port.

Cape Cod Bay Restricted Area

<u>Jan. 1 – May 15</u> All Gear
- CLOSED to ALL gillnet fishing

<u>May 16 – Dec 31</u> Anchored
- Universal requirements
- Weak links – breaking strength of no greater than 1,100 lb.
- Anchoring requirements
- Sinking groundlines
- Gear marking – GREEN

Drift
- Gear marking – GREEN
- Night fishing & storage restrictions

Stellwagen Bank/ Jeffrey's Ledge Restricted Area

<u>Year-round</u> Anchored
- Universal requirements
- Weak links – breaking strength of no greater than 1,100 lb.
- Anchoring requirements
- Sinking groundlines
- Gear marking – GREEN

Drift
- Gear marking – GREEN
- Night fishing & storage restrictions

Great South Channel Restricted Gillnet Area

<u>April 1 – June 30</u>
All Gear (not including Silver Area)
- CLOSED to ALL gillnet fishing. Does not include Sliver Area.

<u>July 1 – March 31</u>
Anchored (including Silver Area)
- Universal requirements
- Weak links – breaking strength of no greater than 1,100 lb.
- Anchoring requirements

- Sinking groundlines
- Gear marking – GREEN

Drift (including Silver Area)
- Gear marking – GREEN
- Night fishing & storage restrictions

Jeffrey's Ledge Gear Marking Area

<u>Year-round</u> All Gear
- Gear marking – GREEN & BLACK

Jordan Basin Gear Marking Area
<u>Year-round</u> All Gear
- Gear marking – GREEN & YELLOW

Other Northeast Gillnet Waters

North – <u>Year-round</u>

Mid-Atlantic – <u>Sept 1 – May 31</u> Anchored
- Universal requirements
- Weak links – breaking strength of no greater than 1,100 lb.
- Anchoring requirements
- Sinking groundlines
- Gear marking – GREEN

Drift
- Gear marking – GREEN
- Night fishing & storage restrictions

Mid/South Atlantic Gillnet Waters

<u>Sept 1 – May 31</u>

Anchored
- Universal Requirements
- Sinking GroundlinesGear Marking – BLUE
- Weak Link & Anchoring Requirements- Breaking strength of no greater than 1,100 lb. Configurations differ for gillnets returning to port and those that do not. See page 9 for more details.
- Gillnets set within 300 yards (900ft) of the shoreline in NC, that do not return to port with the vessel, will also have an optional gillnet configuration: net panels configured with 5 or more weak links per net panel, depending on panel length, with a breaking strength no greater than 600 lb, and be anchored with the holding power of at least an 8-lb Danforth-style anchor on the offshore end of the string and a 31-lb dead weight on the inshore end of the string. The entire

string must be set within 300 yards (900ft) of the shoreline.

Anchored
- Gear marking – GREEN
- Night fishing & storage restrictions

<u>November 15 – April 15</u> All Gear
- Fishing with or possessing gillnets is prohibited.
- Vessels transiting through the area may possess gillnet if the following three conditions are met:
    - Nets are covered with canvas or other similar material and lashed or
    - otherwise securely fastened to the deck, rail, or drum;
    - All buoys, high flyers, and anchors are disconnected from all gillnets; and
      No fish are onboard.

Southeast U.S. Restricted Area South

<u>December 1 – March 31</u> All Gear
- The Southeast U.S. Restricted Area South is CLOSED to fishing with or possessing gillnets.

Fishing for sharks with gillnets is exempt from the closure from IF:
- Gillnet is 5 inches or greater stretched mesh;
- Gillnet is deployed so that it encloses an area of water;
- A valid commercial directed shark limited access permit is issued to the vessel and is on board;
- No net is set at night (any time between one 1/2 hour before sunset and one 1/2 hour after sunrise) or when visibility is less than 500 yards;
- The gillnet is removed from the water before night or immediately if visibility decreases below 500 yards;
- Each set is made under the observation of a spotter plane;
- No gillnet is set within 3 nm of a right, humpback, or fin whale; and
- The gillnet is removed immediately from the water if a right, humpback, or fin whale moves within 3 nm of the set gear.
- Vessel operator calls the Southeast Fisheries Science Center Panama City Laboratory (phone 850-234-6541) at least 48 hours prior to departure on fishing trips in order to arrange for observer coverage. If Panama City Laboratory requests an observer be taken, gillnetting is not allowed unless an observer is on board the vessel during the fishing trip.
- Gear marking – GREEN and BLUE

<u>Fishing with gillnet for Spanish mackerel is exempt from the closure from</u> <u>December 1 through December 31 and from March 1 through March 31 IF:</u>

- Gillnet mesh size is between 3-½ inches and 4-7/8 inches stretched mesh;
- A valid commercial vessel permit for Spanish mackerel is issued to the vessel and is onboard;
- No person may fish with, set, place in the water, or have on board a vessel a gillnet with a

float line longer than 800 yards;

- The gillnet is removed from the water before night or immediately if visibility decreases below 500 yards;
- No net is set within 3 nm of a right, humpback, or fin whale; and
- The gillnet is removed immediately from the water if a right, humpback, or fin whale moves within 3 nm of the set gear.
- No person may fish with, set, or place in the water more than one gillnet at any time;
- No more than two gillnets, including any net in use, may be possessed at any one time; provided, however, that if two gillnets, including any net in use, are possessed at any one time, they must have stretched mesh sizes (as allowed under the regulations) that differ by at least ¼";
- No net is soaked for more than 1 hour. The soak period begins when the first mesh is placed in the water and ends either when the first mesh is retrieved back on board the vessel or the gathering of the gillnet is begun to facilitate retrieval on board the vessel, whichever occurs first; providing that, once the first mesh is retrieved or the gathering is begun, the retrieval is continuous until the gillnet is completely removed from the water;
- No net is set at night or when visibility is less than 500 yards;
- Gear marking – YELLOW

Other Southeast Gillnet Waters

<u>November 15 – April 15</u> – North of 29°00'N lat. & <u>December 1 – March 31</u> – South of 29°00'N lat.

Non-shark gillnet

- Universal requirements
- Gear marking – YELLOW
- Weak links ≤1,100 lbs
- Sinking groundline

Shark gillnet with webbing 5" or greater stretched mesh

- Gear marking – GREEN and BLUE
- Nets cannot be set within 3nm of a right, humpback, or fin whale
- Gear is immediately removed from the water if a right, humpback, or fin whale approaches within 3 nm of the set gear

<u>December 1 – March 31</u> - South of 27°51'N lat. Non-shark gillnet

Gear marking –YELLOW

Southeast U.S. Monitoring Area

<u>December 1 – March 31</u>

Shark gillnet with webbing 5" or greater stretched mesh

- Gear Marking – GREEN and BLUE
- Fishing vessel must be compliant with VMS requirements found in 50 CFR 635.69.
- Fishing vessel must carry an observer if selected by NMFS.

Appendix 2.2: Large Whale Entanglement and Vessel Strike Cases That Resulted in Serious Injury or Mortality

Table 1: Serious injury or mortality of north Atlantic right whales as a result of entanglement (EN) or vessel strike (VS) by country of origin or gear type (PT:trap/pot, GN:gillnet, NE:netting, or UN:unknown). Includes the country of origin (US, CN:Canada, or UN:unkown) , if determined, and fate (M:mortality, SI:serious injury, SIA:serious injury averted, or PR:prorated).

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
18-Dec-12	4193	2.8 mi off Palm Coast, FL	EN	MT	US	PT
27-Sep-14	U	36 nm S of Nantucket, MA	EN	MT	US	UN
22-Sep-16	3823	6.5 nm N of Race Point, Provincetown, MA	EN	SIA	US	PT
27-Mar-11	1308	Nags Head, NC	VS	MT	US	UN
03-May-16	4681	Morris Island, MA	VS	MT	US	UN
13-Apr-17	4694	Cape Cod Bay, MA	VS	MT	US	UN
07-Dec-12	U	Wassaw Island, GA	VS	PR	US	UN
09-Apr-14	U	Cape Cod Bay	VS	PR	US	UN
20-Jan-11	3853	off South Carolina	VS	SI	US	UN
27-Mar-11	2011 Calf of 1308	Nags Head, NC	VS	SI	US	UN
25-Dec-10	3911/Bayla	14.6 nm SE of Jacksonville, FL	EN	MT	XU	PT
27-Jun-10	1124/Tips	37.6 nm E of Cape May, NJ	EN	MT	XU	UN
16-Mar-11	U	Cape Island, SC	EN	MT	XU	UN
06-Aug-17	U	Martha's Vineyard, MA	EN	MT	XU	UN
23-Oct-17	U	Nashawena Island, MA	EN	MT	XU	UN
25-Aug-18	U	10.4 nm S of Martha's Vineyard, MA	EN	MT	XU	UN
14-Oct-18	U	100 nm E of Nantucket, MA	EN	MT	XU	UN
18-Sep-11	4090	25.8 nm NE of Gloucester, MA	EN	PR	XU	GN
04-Dec-16	3405/Fuse	3.5 nm E of Sandy Hook, NJ	EN	PR	XU	NE
12-Jul-13	3123	55.7 nm ESE of Virginia Beach, VA	EN	PR	XU	UN
28-Sep-15	U	22.2 nm E of Cape Elizabeth, ME	EN	PR	XU	UN
15-Feb-12	3996/Calanus	0.5 nm S of Race Point, Provincetown, MA	EN	SI	XU	NE
10-Sep-10	1503/Trilogy	15.5 nm NE of Gloucester, MA	EN	SI	XU	UN
13-Feb-11	3993	18.4 nm SSE of Tybee Island, GA	EN	SI	XU	UN
22-Apr-11	3302	9.4 nm SW of Martha's Vineyard, MA	EN	SI	XU	UN
15-Jan-14	4394	12 mi E of Ossabaw Island, GA	EN	SI	XU	UN

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
01-Apr-14	1142/Kleenex	80 nm SE of Atlantic City, NJ	EN	SI	XU	UN
18-Dec-14	3670/Cherokee	11 nm E of Sapelo Sound, GA	EN	SI	XU	UN
06-Apr-15	CT04CCB14	Cape Cod Bay	EN	SI	XU	UN
29-Nov-15	3140/Lou	6.4 nm E of Truro, MA	EN	SI	XU	UN
29-Jan-16	1968/Quatro	Jupiter Inlet, FL	EN	SI	XU	UN
19-May-16	3791/Truffula	20.2 nm E of Chatham, MA	EN	SI	XU	UN
04-Jul-17	3139/Diablo	1.5 nm S of Nantucket, MA	EN	SI	XU	UN
15-Feb-18	3296	33 nm off Jekyll Island, GA	EN	SI	XU	UN
13-May-10	2470/Killick	49.7 nm ESE of Chatham, MA	EN	SIA	XU	UN
29-Apr-11	3123	9.1 nm S of Long Point, Provincetown, MA	EN	SIA	XU	UN
02-Jul-10	3901	26 mi SW of Grand Manan Island, ME	VS	MT	XU	UN
31-Aug-16	4320	Sable Island, CAN	EN	MT	CN	PT
23-Sep-16	3694	6.5 nm SE of Seguin Island, ME	EN	MT	CN	PT
21-Jun-17	3603/Starboard	Gulf of St. Lawrence	EN	MT	CN	PT
15-Sep-17	4504	Gulf of St. Lawrence	EN	MT	CN	PT
22-Jan-18	3893	55 nm E of Virginia Beach, VA	EN	MT	CN	PT
13-Aug-16	4057/FDR	3.25 nm E of Grand Manan Island, Canada	EN	SI	CN	PT
19-Jul-17	4094/Mayport	26.5nm SE of Sainte-Marie Saint-Raphael, NB	EN	SI	CN	PT
18-Jul-15	3160/White Cloud	2.3 nm E of Ingonish Ferry, Cape Breton, NS	EN	SIA	CN	PT
05-Jan-17	3530/Ruffian	17.6 nm E of Cumberland Island, GA	EN	SIA	CN	PT
05-Jul-17	4510	37.9 nm SE of Sainte-Marie Saint-Raphael, NB	EN	SIA	CN	PT
09-Jul-17	4123	22.5nm E of Sainte-Marie Saint-Raphael, NB	EN	SIA	CN	PT
19-Jun-17	1402/Glacier	Gulf of St. Lawrence	VS	MT	CN	UN
23-Jun-17	1207	Gulf of St. Lawrence	VS	MT	CN	UN
06-Jul-17	U	Gulf of St. Lawrence	VS	MT	CN	UN
19-Jul-17	2140/Peanut	Gulf of St. Lawrence	VS	MT	CN	UN
12-Aug-10	1113/Trident	Digby Neck, NS	EN	MT	XC	UN
19-Jul-12	U	Point Rd, Maritime Beach, Clam Bay, NS	EN	MT	XC	UN
04-Sep-14	U	114 nm SE of Saint Pierre & Miquelon, NL	EN	MT	XC	UN

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
27-Sep-11	3111	Bay of Fundy, 8.9 nm E of Grand Manan Island, NB	EN	PR	XC	UN
13-Jun-15	U	8.8 nm NW of Westport, NS	EN	PR	XC	UN
16-Aug-16	1152/Necklace	2.0 nm S of Baccaro, NS	EN	PR	XC	UN
30-Jul-18	3843	13.2 nm E of Grand Manan Island, NB	EN	PR	XC	UN
03-Sep-11	2660/Gannet	Gaspe Bay, QC	EN	SI	XC	UN
24-Sep-12	3610	Bay of Fundy	EN	SI	XC	UN
29-Jun-14	1131/Snowball	180 nm E of Provincetown, MA	EN	SI	XC	UN
04-Sep-14	4001	7 nm SE of Grand Manan Island, NB	EN	SI	XC	UN
17-Sep-14	3279	9 nm SE of Grand Manan, NB	EN	SI	XC	UN
26-Jul-16	1427	Gulf of St Lawrence	EN	SI	XC	UN
01-Aug-16	3323	Bay of Fundy, CAN	EN	SI	XC	UN
28-Aug-16	2608	5.2 nm N of Brier Island, NS	EN	SI	XC	UN
21-Jul-18	4601	GSL	EN	SI	XC	UN
11-Jul-18	G046	GSL	VS	SI	XC	UN

Table 2: Serious injury or mortality of fin whales as a result of entanglement (EN) or vessel strike (VS) by country of origin or gear type (PT:trap/pot, HK/MF:hook and monofilament, MF:monofilament, AN: anchored, or UN:unknown). Includes the country of origin (US, CN:Canada, or UN:unkown) , if determined, and fate (M:mortality, SI:serious injury, or PR:prorated).

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
18-Mar-10	U	South Delaware Bay Beach	VS	MT	US	UN
03-Sep-10	U	Cape Henlopen State Park, DE	VS	MT	US	UN
01-Jan-11	U	85 nm SE of Portland, ME	EN	MT	XU	UN
05-Jun-11	U	7 mi E of Long Branch, NJ	VS	MT	US	UN
02-Jul-11	F100	Between Anticosti Island and the North Shore, GSL	EN	SI	CN	PT
24-Jul-11	U	Petit Etang beach, Cheticamp, NS	EN	MT	CN	UN
21-Sep-11	U	113 miles due E of Atlantic City, NJ	EN	MT	US	UN
23-Jan-12	U	Ocean City, NJ	VS	MT	US	UN
19-Feb-12	U	Norfolk, VA	VS	MT	US	UN
16-Jul-12	U	16.5 nm SE of Portland, ME	EN	PR	XU	UN
10-Aug-12	U	Hampton Bays, NY	VS	MT	US	UN
07-Oct-12	U	Outer Boston Harbor Islands, MA	VS	MT	US	UN
13-Jan-13	U	East Hampton, NY	VS	MT	US	UN
06-Jun-13	Capitaine Crochet	St. Lawrence Marine Park, QB	EN	SI	CN	PT
12-Apr-14	U	Port Elizabeth, NJ	VS	MT	US	UN
13-May-14	U	10 nm off Rocky Harbour, NL	EN	MT	CN	PT
23-Jun-14	U	30 nm SE of Chatham, MA	EN	PR	XU	UN
20-Aug-14	U	30 nm E of Provincetown, MA	EN	PR	XU	UN
05-Oct-14	U	35 nm E of Manasquan, NJ	VS	MT	US	UN
06-Jun-15	U	41.8 nm SSE of Bar Harbor, ME	EN	SI	XU	UN
06-Jul-16	U	32.5 nm E of Truro, MA	EN	PR	XU	UN
08-Jul-16	U	60 nm NE of Virginia Beach, VA	EN	PR	XU	HK/MF
14-Dec-16	U	1.4 nm S of Provincetown, MA	EN	PR	XU	UN
30-May-17	U	Port Newark, NJ	VS	MT	US	UN
25-Aug-17	U	38nm NE of Miscou Island, QC	EN	MT	CN	PT

Table 3: Serious injury or mortality of humpback whales as a result of entanglement (EN) or vessel strike (VS) by country of origin or gear type (PT:trap/pot, NE:netting, GN:gillnet , HK/MF:hook and monofilament, or UN:unknown). Includes the country of origin (US, CN:Canada, or UN:unkown) , if determined, and fate (M:mortality, SI:serious injury, or PR:prorated).

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
07-Mar-10	U	16.2 nm E of Ponte Vedra Beach, FL	EN	SI	XU	UN
13-Mar-10	U	Ocean City Inlet, MD	VS	MT	US	UN
05-May-10	U	1.5 nm W of Northampton, VA	EN	SI	XU	UN
08-May-10	U	0.35 nm SW of Point Judith, RI	EN	MT	US	GN
15-May-10	U	Hatteras Inlet Sandbar, NC	EN	MT	XU	UN
28-May-10	U	off South Beach, Martha's Vineyard, MA	EN	MT	XU	NE
10-Jun-10	U	Jones Beach State Park, NY	VS	MT	US	UN
04-Jul-10	U	12 mi S of Ocean City Inlet, MD	VS	MT	US	UN
26-Jul-10	U	12.8 nm E of Chatham, MA	EN	PR	XU	UN
13-Aug-10	U	2.7 nm E of Orleans, MA	EN	SI	US	PT
20-Aug-10	Chili	10.3 nm NE of Race Point, Provincetown, MA	EN	SI	XU	UN
10-Sep-10	U	4 miles from White Head Island, Grand Manan, NB	EN	PR	XC	UN
02-Oct-10	U	4.0 nm NE of Race Point, Provincetown, MA	EN	PR	XU	UN
27-Nov-10	U	0.9 nm ENE of Grand Manan Island, NB	EN	MT	XC	UN
23-Dec-10	U	S of Port Everglades Inlet, FL	EN	SI	XU	UN
07-Jan-11	U	6.8 nm SE of Oregon Inlet, NC	EN	SI	US	GN
01-Feb-11	EKG	20.8 nm S of Bar Harbor, ME	EN	SI	US	UN
07-Mar-11	U	Thorofare Bay, Core Sound, NC	VS	MT	US	UN
11-Apr-11	U	Off Halibut Point, Rockport, MA	EN	PR	XU	UN
05-May-11	U	Little Compton, RI	VS	MT	US	UN
27-May-11	U	Island Beach State Park, NJ	VS	MT	US	UN
30-May-11	U	0.1 nm E of Nauset Beach, Orleans MA	EN	PR	XU	UN
02-Jul-11	U	Off Race Point, Cape Cod	EN	SI	XU	UN
09-Jul-11	U	3.4 nm SSE of Monomoy Island, MA	EN	PR	XU	UN
10-Jul-11	U	6.1 nm E of Monomoy Island, MA	EN	PR	XU	UN
21-Jul-11	U	3.0 nm SE of Oregon Inlet, Rodanthe, NC	EN	PR	XU	UN

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
10-Oct-11	Clutter	Bay of Fundy, 5.3 nm NE of Grand Manan Island, NB	EN	SI	XC	UN
29-Apr-12	U	10 nm ESE of Chatham, MA	EN	SI	US	UN
29-Jul-12	U	15.2 nm SE of Gloucester, MA	EN	SI	XU	UN
04-Aug-12	Aphid	7.7 nm NE of Race Point, Provincetown, MA	EN	SI	XU	UN
21-Aug-12	2011 Calf Of Wizard	3.6 nm NE of Race Point, Provincetown, MA	EN	PR	XU	MF
24-Aug-12	Forceps	6.0 nm NW of Race Point, Provincetown, MA	EN	SI	US	UN
03-Apr-13	U	9 mi off Ft. Story, VA	VS	MT	US	UN
13-Sep-13	U	mouth of York River, VA	VS	MT	US	UN
16-Sep-13	U	29.4 nm SE of Chatham, MA	EN	PR	XU	UN
28-Sep-13	U	0.2 nm SE of Saltaire, NY	EN	MT	XU	GN
01-Oct-13	U	Buzzards Bay, MA	EN	MT	US	UN
04-Oct-13	U	2.0 nm E of Chatham, MA	EN	SI	XU	UN
02-Jun-14	U	14 nm SE of Chatham, MA	EN	PR	XU	UN
21-Jun-14	U	6 nm E of Gloucester, MA	EN	PR	XU	UN
18-Jul-14	U	Provincetown Harbor, MA	EN	SI	XU	UN
14-Aug-14	U	600ft off Harvey Cedars, Long Island Beach, NJ	VS	PR	XU	UN
03-Sep-14	U	600ft off Harvey Cedars, Long Island Beach, NJ	EN	PR	XU	NE
11-Sep-14	Spinnaker	18 nm SE of Southwest Harbor, ME	EN	MT	XU	GN, PT
20-Sep-14	NYC0010	off Rockaway Beach, Long Island, NY	EN	PR	US	GN
01-Oct-14	U	12 nm E of Metompkin Inlet, VA	EN	PR	XU	NE
15-Dec-14	U	8.5 nm S of Grand Manan, NB	EN	PR	CN	PT
25-Dec-14	Triomphe	Little Cranberry Island, ME	EN	MT	XU	UN
01-Feb-15	U	9.3 nm SW of Cape Lookout, NC	EN	SI	XU	NE
03-Feb-15	U	Corolla, NC	EN	MT	US	UN
13-Apr-15	U	15.4 nm SE of Fire Island, NY	VS	MT	US	UN
18-Apr-15	U	Smith Point, NY	VS	MT	US	UN
29-Jun-15	U	Fire Island, NY	VS	MT	US	UN
09-Jul-15	U	3.4 nm SE of Sandy Hook, NJ	EN	PR	XU	UN
02-Aug-15	U	3.5 nm SE of Race Point, Provincetown, MA	EN	SI	XU	GN, PT

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
02-Aug-15	U	14.8 nm NNE of Chatham, MA	EN	PR	XU	UN
07-Sep-15	U	12.2 nm NW of Race Point, Provincetown, MA	EN	PR	XU	MF
24-Sep-15	U	13.5 nm ESE of Hampton, NH	EN	PR	US	AN
25-Sep-15	U	0.6 nm N of Menemsha Harbor, MA	EN	SI	XU	UN
17-Oct-15	U	Lloyd Neck Harbor, NY	VS	MT	US	UN
04-Dec-15	U	16.5 nm NW of Brier Island, NS	EN	PR	CN	PT
15-Dec-15	U	3.5 nm SE of Ingomar, NS	EN	PR	CN	PT
07-Jan-16	U	1 nm S of Great Captains Island, Greenwich, CT	EN	PR	US	PT
09-Jan-16	MAHWC-254/HDRVA053	2.6 nm NE of Fort Story, VA	VS	SI	US	UN
03-Mar-16	MAHWC-251/HDRVA045	off Virginia Beach, VA	VS	SI	US	UN
24-Apr-16	U	1 nm SE of Race Point, Provincetown, MA	EN	PR	XU	UN
25-Apr-16	U	Marshfield, MA	VS	MT	US	UN
25-Apr-16	U	Napreague Bay, NY	VS	MT	XU	UN
18-May-16	Foggy	7.6 nm NE of Gloucester, MA	EN	SI	XU	UN
21-May-16	U	0.4 nm E of Mantoloking, NJ	EN	PR	XU	GN
15-Jun-16	U	20.9 nm E of Fenwick Island, DE	VS	MT	US	UN
24-Jun-16	U	0.5 nm off Shinnecock Inlet, NY	VS	MT	US	UN
26-Jun-16	Snowplow	15 nm NE of Rockport, MA	VS	MT	US	UN
05-Jul-16	U	2.4 nm SE of Chatham, MA	EN	SI	XU	UN
02-Sep-16	U	14.9 nm SE of Gloucester, MA	EN	PR	XU	UN
10-Sep-16	U	Jobs Neck Cove, Martha's Vineyard, MA	EN	MT	XU	UN
16-Oct-16	GOM-1626	2.1 nm E of Ipswich, MA	EN	MT	US	PT
13-Nov-16	NYC0052	off Belmar, NJ	EN	PR	XU	MF
14-Nov-16	U	4.7 nm E of Stone Harbor, NJ	EN	PR	US	PT
04-Dec-16	U	1.1 nm S of Quogue, NY	EN	PR	XU	UN
16-Dec-16	HDRVA078	2-3 mi E of Dam Neck, VA	EN	MT	US	UN
19-Dec-16	U	0.1 nm E of Tiverton, NS, Canada	EN	PR	XC	UN
02-Feb-17	U	Hampton Roads Bridge Tunnel, Chesapeake Bay, VA	VS	MT	US	UN
05-Feb-17	U	Chesapeake Bay Bridge Tunnel, Chesapeake Bay, VA	VS	MT	US	UN

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
11-Feb-17	U	Fort Story, VA	VS	MT	US	UN
14-Feb-17	U	VA	VS	SI	US	UN
03-Apr-17	U	Rockaway, NY	VS	MT	US	UN
04-May-17	U	North Shores, Rehobeth Beach, DE	VS	MT	US	UN
15-Jun-17	U	Jamestown, RI	VS	MT	US	UN
18-Jun-17	GOM-1625	Monomoy, Chatham, MA	EN	MT	XU	UN
15-Jul-17	2016 Calf Of Thumper	6.3 nm NW of Race Point, Provincetown, MA	EN	PR	US	HK/MF
01-Aug-17	2017 Calf Of Cajun	21.9 nm SE of Gloucester, MA	EN	MT	XU	GN
19-Aug-17	U	0.5 mi off of Smith Point State Park, Long Island, NY	EN	PR	XU	UN
05-Sep-17	U	North Beach, Sable Island, NS	EN	MT	CN	PT
18-Sep-17	U	29.3 nm SE of Jonesport, ME	EN	PR	CN	PT
01-Oct-17	U	9nm S of Narragansett, RI	VS	MT	XU	UN
10-Oct-17	U	3.0 nm NE of Gloucester, MA	EN	PR	US	PT
14-Oct-17	U	6.0 nm N of Race Point, Provincetown, MA	EN	PR	XU	UN
21-Oct-17	GOM-1747	1.0 nm SE of Quogue, Long Island, NY	EN	PR	XU	UN
12-Nov-17	U	1.0 nm S of Atlantic Beach, NY	EN	PR	XU	MF
30-Nov-17	U	17nm S of Grand Manan, NS	EN	PR	CN	PT
26-Dec-17	U	East Atlantic Beach, NY	VS	MT	US	UN

Table 4: Serious injury or mortality of minke whales as a result of entanglement (EN) or vessel strike (VS) by country of origin or gear type (PT:trap/pot, NE:netting, HK/MF:hook and monofilament, DE:debris, or UN:unknown). Includes the country of origin (US, CN:Canada, or UN:unkown) , if determined, and fate (M:mortality, SI:serious injury, or PR:prorated).

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
16-Jun-10	U	Goose River, PEI	EN	MT	CN	UN
02-Jul-10	U	Naufrage, PEI	EN	MT	CN	UN
09-Jul-10	U	Fire Island Inlet, Fire Island, NY	VS	MT	US	UN
21-Aug-10	U	3.5 nm ENE of Plymouth Harbor, MA	EN	SI	XU	UN
06-May-11	U	1.7 nm NW of Gay Head, Martha's Vineyard, MA	EN	MT	US	PT
03-Jun-11	U	off Tadoussac, QC	EN	SI	CN	UN
17-Jul-11	U	2.4 nm E of Nahant, MA	EN	PR	XU	UN
24-Jul-11	U	1.9 nm NNE of North Truro, MA	EN	PR	XU	UN
04-Aug-11	U	Sandy Hook Bay, NJ	VS	MT	US	UN
26-Aug-11	U	Sandy Hook GNRA, N Horseshoe Cove, NJ	EN	MT	US	NE
29-Aug-11	U	Moriches Bay, NY	VS	MT	US	UN
07-Sep-11	U	Greenspond, NL	EN	PR	CN	GN
19-Sep-11	U	Northumberland Strait, Pointe-Sapin, PEI	EN	PR	CN	UN
06-Oct-11	U	6.9 nm NNW of Matinicus Island, ME	EN	MT	US	PT
07-Dec-11	U	Carolina Beach, NC	VS	MT	US	UN
19-Dec-11	U	Bay of Fundy, 3.0 nm W of Seal Cove, Grand Manan Island, NB	EN	MT	CN	PT
04-Feb-12	U	6.5 nm NNW of Virginia Beach, VA	EN	PR	XU	HK/MF
16-Mar-12	U	Cranes Beach, Ipswich, MA	EN	MT	US	UN
15-May-12	U	Sable Island Bank	EN	SI	CN	PT
21-Jun-12	U	4.6 nm E of Frenchboro, ME	EN	SI	XU	UN
23-Jun-12	U	Container Terminal Port Newark, NJ	VS	MT	US	UN
26-Jun-12	U	1.5 nm N of Renews Rock, NL	EN	MT	CN	PT
30-Jun-12	U	11.5 nm W of Campbell Cove/North Lake, Naufrage, PEI	EN	MT	CN	PT
01-Jul-12	U	East Point, Northern Lake Harbor, PEI	EN	MT	CN	PT
01-Jul-12	U	23.2 nm SE of Portsmouth, NH	EN	PR	XU	UN

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
13-Jul-12	U	10.5 nm SW of Jonesport, ME	EN	PR	US	UN
17-Jul-12	U	1.7 nm NNE of Chatham, MA	EN	SI	XU	UN
02-Aug-12	U	6.7 nm E of Race Point, Provincetown, MA	EN	PR	XU	UN
05-Aug-12	U	Hardings Beach, Chatham, MA	EN	MT	US	UN
04-Oct-12	U	SW Cliff Island, ME	EN	MT	US	UN
01-Jul-13	U	68.2 nm E of Chatham, MA	EN	MT	US	MT
23-Jul-13	U	off Newport, RI	EN	PR	XU	UN
17-Aug-13	U	9.4 nm E of Newburyport, MA	EN	SI	XU	UN
31-Aug-13	U	Miminegash, PEI	EN	MT	CN	UN
04-Oct-13	U	4.2 nm SE of Seal Harbor, ME	EN	PR	US	UN
09-Jun-14	U	6 nm ENE of Race Point, MA	EN	MT	US	PT
02-Jul-14	U	Northumberland Strait, NB	EN	MT	CN	UN
10-Jul-14	U	10 nm SE of Southport, ME	EN	PR	XU	UN
12-Jul-14	U	10 nm S of Southampton, NY	EN	SI	XU	DE
17-Jul-14	U	South Addison, ME	EN	MT	XU	UN
29-Jul-14	U	5 nm SE of Herring Cove, NS	EN	MT	CN	PT
29-Jul-14	U	5 nm SE of Herring Cove, NS	VS	MT	CN	UN
24-Dec-14	U	Dam Neck, VA	VS	MT	US	UN
26-Mar-15	U	2.0 nm E of Cape Canaveral	EN	SI	XU	UN
16-Apr-15	U	Lockes Island, Shelburne, NS	EN	MT	CN	UN
09-May-15	U	Duck, NC	EN	MT	XU	NE
06-Jun-15	U	Coney Island, NY	VS	MT	US	UN
14-Jun-15	U	21.8 nm SE of Chatham, MA	EN	PR	XU	UN
23-Jun-15	U	4.0 nm SE of Ingonish, NS	EN	PR	CN	PT
07-Jul-15	U	20.5 nm NW of Funk Island, NL	EN	MT	CN	PT
18-Aug-15	U	Roseville, PEI	EN	MT	CN	UN
01-Sep-15	U	Gloucester, MA	EN	MT	US	UN
21-Sep-15	U	Cape Wolfe, Burton, PEI	EN	MT	CN	UN
06-Dec-15	U	13 nm S of Port Joli, NS	EN	MT	CN	PT

Date 1st Observed	ID/Name	Location Description	Cause	Fate	Country of Origin	Gear Type
03-May-16	U	Biddeford, ME	EN	MT	US	PT
21-Jul-16	U	Digby, NS	EN	SI	XC	UN
15-Aug-16	U	2.0 nm SE of Seguin Island, ME	EN	MT	US	UN
30-Aug-16	U	3.1 nm SW of Matinicus Island, ME	EN	MT	US	PT
02-Nov-16	U	Bonne Bay, Gros Morne National Park, NL	EN	PR	XC	UN
04-Dec-16	U	10.8 nm E of Ocean City, MD	EN	MT	US	GN
24-Apr-17	U	Verrazano-Narrows Bridge, State Island, NY	VS	MT	US	UN
06-Jul-17	U	25.2 nm NE of Race Point, Provincetown, MA	EN	MT	US	PT
22-Jul-17	U	Piscataqua River NH / ME	EN	MT	US	UN
09-Aug-17	U	6.2nm NE of Ellisville, MA	EN	MT	US	UN
11-Aug-17	U	3.8 nm SE of York, ME	EN	PR	US	UN
12-Aug-17	U	0.9 nm W of West Tremont, ME	EN	MT	US	UN
14-Aug-17	U	1.0nm SE of Narragansett, RI	EN	MT	US	UN
17-Aug-17	U	Rye, NH	EN	MT	US	UN
28-Aug-17	U	9.6 nm S of Harpswell, ME	EN	MT	US	PT
30-Aug-17	U	11.1nm NE of Tignish, PEI	EN	MT	CN	UN
04-Sep-17	U	St. Carroll's, Great Northern Peninsula, NL	EN	MT	CN	NE
06-Sep-17	U	Newport, RI	VS	MT	US	UN
17-Sep-17	U	Henry Island, Inverness, NS	EN	MT	CN	UN
26-Sep-17	U	12.6nm E of Richbuctou, NB	EN	PR	CN	UN
27-Sep-17	U	5.7nm NE of Richbuctou, NB	EN	MT	CN	UN
10-Oct-17	U	5.0 nm E of Rockland, ME	EN	MT	US	PT

Appendix 3.1 Decision Support Tool Model Documentation

1. Introduction and Overview. The Right Whale Decision Support Tool was built to assist managers, decision makers, and stakeholders with visualizing and understanding spatiotemporal overlap between lobster fishing gear and North Atlantic Right Whale (NARW) distributions in the US, New England area and to model how risk of entanglement to NARW may change as a result of changes to the spatial distribution and configuration of lobster gear. Within the model, risk posed to the NARW population is calculated as the product of: (1) the density of vertical lines associated with lobster traps at a given location, (2) the threat vertical lines pose to NARW given the configuration of the lobster gear, relative to alternative gear configurations, and (3) the density of NARW expected the given location. The DST is partially based on the Vertical Line Model (VLM) and Co-Occurrence Model developed by Integrated Economics (IEc, indecon.com) for NOAA since 2004. Many of the inputs to the DST that are comparable to the VLM have a similar format and maintain some backwards-compatibility for the purpose of data-sharing.

   Similar to the IEc co-occurrence model, the DST quantifies risk as the geographic overlap of vertical lines and whale density, with an added allowance for varying levels of threat associated with different gear configurations. Thus, the DST does not attempt to incorporate more complex location- or situation-specific variables that may lead to severe entanglements including whale behavior (transiting vs feeding), adjacent gear density, or how environmental conditions affect the characteristics of vertical lines in the water, including line tension and orientation. While we have reason to believe that these factors are important, empirical data on these factors are generally insufficient to include in modeling at this time. Unlike the IEc models, the DST does not currently quantify the length of groundline attributed to lobster traps and associated threat to whales, though this may be incorporated in the future (Hamilton and Kraus 2019).

   The DST further includes a capacity for users to test different management scenarios and get feedback on how a management scenario changed the spatial distribution and gear configurations of the lobster fishery. The DST was first introduced to the ALWTRT in April 2019 and has been further revised and expanded since this time based on feedback from stakeholders, management needs and the availability of additional data.

   The spatial extent of the DST is comparable to the domain of the IEc vertical line model (Figure 2.1.a, Figure 2.1.b) and includes Lobster Management Areas (LMAs) 1, 2, the 2/3 Overlap, Outer Cape Cod (OCC), and much of LMA 3. This domain covers the vast majority of the US American Lobster Fishery including the Gulf of Maine, Georges Bank and much of the Southern New England lobster fishery. Other lobster management areas, including inshore and offshore areas off Connecticut, New York, New Jersey, Maryland and Delaware are not included as the lobster fisheries are much smaller in these areas, resulting in low gear densities, and Right Whale presence in these areas are expected to be very low with the exception of whales migrating to or from calving grounds further south along the US coast.

   2. Information Flow. The DST is a deterministic series of calculations. All parameter estimation occurs outside the tool in submodels that have been previously constructed. Flow of information

is one-way as shown in Figure 2.1 and narrated below. 2.1. The initial density of traps by location and month is loaded into the model.

2.2. User-inputs specify the spatial domain and fishery "fleet" to be tracked resulting in…

2.3. A constrained map of trap densities by month. At this step, the tool creates two copies of this map and subsequently builds two data sets in parallel; a "Default" run and a "Scenario" run. The Default run has all submodels applied to it, sequentially changing traps into trawls, endlines, rope strengths, gear threats and whale risks. The Scenario run has the same submodels applied to it but is further modified by user specified management measures that affect the number of traps, trawl lengths, endlines, and rope strengths.

2.4. User specified inputs remove traps, implement trap caps, and spatial closures.

2.5. In the event of closures, redistribution rules are implemented to move traps to adjacent areas.

2.6. Resulting in an updated spatial and temporal distribution of traps.

2.7. Representative number of traps in a trawl are included based on existing data.

2.8. Trawl length is further modified based on user-inputs.

2.9. Results in calculated trawl length by location and month.

2.10. Number of traps and trawl lengths are combined to calculate the number of trawls.

2.11. Endlines (either 1 or 2) are assigned to trawls based on trawl length. This is usually a simple rule like "trawls with more than five traps have two endlines."

2.12. Endlines per trawl are further modified by user input.

2.13. Resulting in total endlines by location and month.

2.14. Based on trawl length, appropriate distributions of rope diameters and resulting rope strengths are calculated.

2.15. Rope strength is further modified by user input.

2.16. Resulting in distributions of rope strength by location and month.

2.17. A gear threat model assigns threat scores to ropes based on rope strength.

2.18. Resulting in gear threat scores by location and month.

2.19. A whale abundance / distribution model is used to get whale densities by location and month.

2.20. Final risk values are calculated as the product of gear threat per endline, density of endlines, and density of whales.

The results of the Default and Scenario runs are then be compared to understand the approximate effectiveness of proposed management measures.

3. Basic Software Architecture. The current version of the DST is coded in the R language and is intended to be run from an Integrated Development Environment (IDE) like RStudio, Jupyter, or Notepad++. The DST code is written as an R function that is loaded into the workspace and then

called from a script where the user is able to specify inputs and configurations for a model run including:

3.1. Function arguments:

3.1.1. Home directory: the parent directory for the DST function as well as standard subdirectories for other inputs and outputs.

3.1.2. InputSpreadsheetName: The name of a user-built .csv file that is contains the user-defined management actions to be included in the model run (Figure 2.1, right column).

3.1.3. TrapMapName: the filename of the TrapMap (spatio-temporal distribution of traps) to be used for the model run; 2.1 above.

3.1.4. WhaleInputModel: Filename of the whale density model to be used in the model run; 2.19 above.

3.1.5. TrawlLengthModelName: Filename of the desired trawl length model to be used; 2.7 above. No longer specified as it is loaded simultaneously with the TrapMap.

3.1.6. TrawlRopeStrengthModel: Modeled rope strength as a function of trawl length.

3.1.7. RopeStrengthResolution: Numeric; resolution at which rope strength should be modeled. Current inputs support resolutions up to 100lb increments. Higher resolutions dramatically increase memory use and model run time while low resolutions create model artifacts. 500lb increments seem like a reasonable compromise for most cases.

3.1.8. ThreatModel: Filename of the gear threat model to be used; 2.17 above.

3.1.9. UpdateEndlineStrength: Boolean (true / false) if endline strengths should be recalculated after trawl lengths are manipulated. This was added for cases where fishers are not expected to change endline strength in response to changing trawl lengths.

3.1.10. CoOccurrence: Boolean if the model should be run without applying a threat model.

3.1.11. TestScenario: Boolean if a Scenario should be performed in addition to the Default run. Sometimes the model is being run to examine spatiotemporal distributions and interactions of factors and there is no Scenario being tested. In this circumstance, not performing the Scenario run is a way to cut down on model run time.

3.1.12. HighResolution: Boolean if the model should be run in high- or low-resolution mode. While the primary spatial inputs to the model are stored at 1NM resolution, there is the option to aggregate data to a 10NM resolution, which drastically decreased model run time and required computing capacity at the cost of lost resolution and spatial averaging.

3.1.13. PrintTables: Boolean; should the summarized output from the model run be written to a pdf file after the model run?

3.1.14. PrintDefaultMaps: Boolean; should the maps accompanying the Default model run be included in output. Can be set to FALSE to decrease processing time if these maps are not desired.

3.1.15. PrintScenarioMaps: Boolean; should the maps accompanying the Scenario model run be included in output. Can be set to FALSE to decrease processing time if these maps are not desired.

3.1.16. PrintRedistributionMaps: Boolean; if traps are relocated as a result of a spatial closure, should the maps showing the redistribution of maps be included in output.

3.1.17.WriteMapSources: Boolean; should R-objects used to produce Default and Scenario maps be written to an .Rdata file? This is useful if one wants to generate maps with a presentation different than that provided by the tool.

3.1.18.WriteOutputCSV: Boolean; should the summarized output from the model run be written to a .csv file for later use?

3.1.19.WriteDetailedOutput: Boolean; should all major R-objects generated in a model run be written to an .Rdata file for later analysis? Option to save on model run time and memory space used by model output. Detailed output for model runs at high resolution and / or large spatial extents can exceed 10Gb of drive space.

3.2. Once the function is called, the IDE provides status messages and warning messages for non-fatal issues encountered. Upon completion of a model run, all output is written to a new directory in a designated location for review.

4. Model Inputs, User Inputs and SubModels. The DST has a modular design, consisting of several inputs that are used to initialize a model run and a number of submodels that are used within a model run to perform necessary calculations and transformations. These inputs and submodels are built outside the DST and can be readily substituted for alternative inputs and submodels at the time the model is run.

4.1. Trap and Vertical Line Densities. One of the primary inputs to the DST is a data layer with the density of lobster traps throughout the domain of the model at a 1 NM spatial and monthly resolution; i.e. a "TrapMap". The TrapMap with co-located information on trawl length is the basis for calculating vertical line density at the same spatial and temporal resolution.

Despite being one of the most valuable fisheries in the US, data that allow quantifying fishing effort at fine spatial scales is generally lacking as there are no Vessel Monitoring System requirements and trip reports for vessels fishing state waters generally only record fishing regions. For vessels with federal permits, there is currently no trip reporting requirement for the lobster fishery, though many of the larger vessels carry groundfish permits that require trip reporting, in which case they report a "representative location" for each statistical are fished on each trip. As a result, the spatial distribution of traps and gear configurations is built using location-specific methods for different states and the offshore fishery.
The density and distribution of traps as well as trawl configurations for inshore LMAs (1, 2, 2/3 Overlap and OCC) were adopted from the IEc Vertical Line Model model (IEc REF). A similar model of trap densities and trawl lengths has be produced by IEc for offshore Area 3 but a different approach was employed for the current version of the DST, parameterized from data from federal Vessel Trip Reports (VTRs) and Northeast Fishery Observer Program (NEFOP) data in an attempt to better capture spatial variations in fishing effort and vertical line densities.

4.1.1. IEc Vertical Line Model. DST inputs for trap densities and trawl lengths for LMA 1, 2, the 2/3 Overlap, and OCC come from the IEc Vertical Line Model. In general, the area adjacent to each state within the inshore LMAs is divided into finer-scale polygons and data values are

assumed to be homogeneous within them. Based on harvester reporting or surveys, "vessel classes" are identified within a region, based on trap allocations and trawl configurations. For each subregion, the number of traps represented by each vessel class is estimated from the number of active vessels represented by a given vessel class and the trap allocation of that vessel type (NMFS Co-Occurrence Model 2019).

4.1.1.1. Maine Traps and Vertical Lines. For Maine, the subregions are defined based on Maine's seven lobster management zones and distance from shore including exempt state waters, non-exempt state waters, federal waters 3-6 miles from shore, federal waters 6-12 miles from shore and federal waters 12+ miles shore (Figure 4.1.1.1.a). Number of active vessels were determined based on permitting and landings data. Unique vessel classes, number of traps fished and traps per trawl were based on an annual mail-based survey of lobstermen.

4.1.1.2. New Hampshire Traps and Vertical Lines: The relatively small area of state waters for New Hampshire are identified explicitly in the IEc model but federally-permitted vessels fishing out of New Hampshire are intermixed with federal vessels from Maine and Massachusetts. Number of active vessels, vessel classes, traps fished, and trawl lengths were calculated based on harvester reporting.

4.1.1.3. Massachusetts Traps and Vertical Lines For Massachusetts, fishing activity is spatially modeled at the scale of Statistical Reporting Areas (SRAs, figure 4.1.1.3.a) and provided data for the southern portion of LMA1, OCC, eastern LMA2 and the 2/3 overlap. Number of active vessels, vessel classes, traps fished and trawl lengths were calculated from trip-level and annual reporting.

4.1.1.4. Rhode Island Traps and Vertical Lines. Rhode Island provided the data for the western portion of LMA 2, covering the extent of Statistical Area 539 (Figure 4.1.1.4.a). Harvester logbook data allowed for spatially dividing this area into state waters, federal waters between 3 and 12 miles from shore and federal waters greater than 12 miles from shore. The logbook data was also used to calculate number of vessels and define vessel classes, fishing effort, and trawl configurations.

4.1.2. Vertical line model for offshore LMA 3. Lobster vessels fishing in the offshore LMA3 do not submit to state logbook reporting programs. While federal lobster vessels are not required to file federal Vessel Trip Reports (VTRs), most lobster vessels in LMA3 do have VTR requirements due to other permits the vessels carry. However, the federal VTR was designed for mobile gear and, thus, collects minimal data on fixed gear configurations.

IEc previously built a vertical line model for LMA3 based on coordinates reported on VTRs, with fishing effort from vessels without trip reporting spread homogeneously over the region. Because lobstermen often reuse the same set of coordinates for long periods of time, the result was an unrealistically patchy distribution of fishing effort with many areas of known offshore lobster habitat showing little or no effort. Further, trawl configurations and seasonality were largely informed by expert advice rather than empirical data.

We attempt to improve on this using a combination of observer data, landings, and federal VTRs. Observer data provides gear configurations and catch-per-trap. This observer data, combined with dealer landings are used to estimate total vertical lines. Finally, coordinates from VTRs,

combined with a bathymetry map are used to spatially allocate fishing effort across lobster habitat. The offshore pot/trap fishery in this area actually consists of two overlapping fisheries: American lobster and Jonah crab (*Cancer borealis*). Both species are fished with lobster pots with only minor differences in gear modifications. Vessels with federal lobster permits can freely target either species and vessels, particularly in Southern New England, often switch between species seasonally, though several vessels now fish Jonah crab almost exclusively. Because the Jonah crab fishery is more spatially and seasonally constrained, we model the two fisheries separately in the DST to better understand if management measures would affect the two fisheries differently. Also, through visual examination of the distributions of fishing effort and observer data, we identify two general vessel classes for the offshore fishery, one for larger ~60'+ "Offshore" vessels that conduct longer, multi-day trips to the edge of the continental shelf, Georges Bank, and the Gulf of Maine along the Hague line and a class of smaller "MidShelf" vessels that tend to fish single-day trips on the continental shelf, Great South Channel and central Gulf of Maine, and model them separately.

4.1.2.1. Gear characterization and catch rates from observer data. Federal fisheries observers with the Northeast Fisheries Observer Program record detailed haul-level data and observations on fishing activities including catch rates, trawl lengths, soak times, vertical line diameters. Because there is no federal mandate to place observers on federal fishing vessels, there is very little dedicated observer effort in this area. However, there was additional observer effort in 2014 and 2015, partially funded by a grant for a tagging study of lobsters in this region and partially due to a need to document groundfish bycatch rates (Table 4.1.2.1.a). While this is not a large data set, we use it to inform the model inputs where possible.

We estimate the number of vertical lines by stat area and month by:

VerticalLines(Stat, Month) = Landings(Stat, Month) / CatchPerVerticalLine(Stat, Month)

Where Landings by Stat Area and Month come from dealer reports that include vessels that don't have VTR requirements. Catch per vertical Line is estimated as:

CatchPerVerticalLine(Stat, Month) = CatchPerTrawl(Stat, Month) * EndlinesPerTrawl(Stat, Month) * TrawlHaulsPerMonth(Stat, Month)

Where

CatchPerTrawl(Stat, Month) = CatchPerTrap(Stat, Month) * TrapsPerTrawl(Stat, Month)

4.1.2.2. Catch Per Trap. Retained catch is recorded by observers on a per-trawl basis rather than a per-trap basis. Because we wanted to build our model up from traps, we first divided the retained catch per trawl by the number of traps in the trawl, then modeled individual trap CPUE with one data point per trawl observed. Lobster CPUE was estimated using a General Additive Mixed-Effect Model assuming a Gamma error distribution and vessels and trips as nested random effects. Seasonal variation was included in the model as a cyclical spline with separate intercepts for fleet and statistical areas (Figure 4.1.2.2.a). Individual data points were weighted

by the square-root of the trawl length to account for the decreased variability in CPUE associated with longer trawls.

The same model was used for Jonah crabs except that only core statistical areas of the Jonah fishery (537, 525, and 526) had sufficient data to support this level of complexity. Trap CPUE for the remaining statistical areas, where less data were available and there is less effort and landings, were estimated as the average CPUE from the three core statistical areas (Figure 4.1.2.2.a).

4.1.2.3. Trawl Hauls Per Month The number of times that a trawl was hauled in a month was calculated by modeling the duration between trawl hauls (soak time) and dividing the number of days in a month by estimated soak time. Both lobsters and Jonah crabs were modeled using a using a General Additive Mixed-Effect Model assuming a Gamma error distribution with vessels and trips as nested random effects. Seasonality was modeled as a cyclical spline with separate intercepts for fleet and statistical area. The resulting predicted soak times (Figure 4.1.2.3.a) where then used to estimate hauls per month (Figure 4.1.2.3.b).

4.1.2.4. Traps Per Trawl. We estimated the number of traps per trawl for the lobster fishery using linear models with separate intercepts for statistical areas and fleets with vessels and trips as nested random factors (Figure 4.1.2.4.a). For Jonah crabs, the data only supported estimating a grand mean with vessel and trips as nested random factors. For both the lobster and crab fishery, there was insufficient evidence of seasonal changes in trawl length to include a temporal variable.

4.1.2.5. Total LMA3 Vertical Lines. Total vertical lines in LMA3, as calculated above closely matched the aggregate line estimates from the IEc model (Table 4.1.2.5.a), which is reassuring with both estimates comparable to estimates provided by industry. Interannual range in marginally higher for the updated model and higher than would be expected, given that most of this gear is part of a year-round fishery, which suggests that the model could be improved with additional data. We chose to use this updated model going forward as it allowed for modeling the two fisheries separately and provided realistic spatial and temporal variations in gear characteristics.

4.1.2.6. Spatial distribution of effort in LMA3. We used the above estimates of vertical lines by statistical area and month, combined with VTR reported coordinates and a bathymetry layer to spatially allocate effort in LMA3, based on the observation that fishing effort tends to be oriented along isobaths but moves about seasonally. We binned the bathymetry map into 50m intervals and used spatial overlay to get the bathymetry bin associated with landings from VTR. We then summed landings across trip reports by depth bins, statistical area and month to get the proportion of landings represented by each depth bin within a statistical area and month (Figures 4.1.2.6.a, Figure 4.1.2.6.b). We then applied these proportions to the number of vertical lines to get lines by depth bin and distributed these lines homogeneously across the depth bin within the statistical area, based on the bathymetry map (Figure 4.1.2.6.c, Figure 4.1.2.5.d). While some modeling artifacts are evident in these maps, we consider this more realistic than distributing gear and vertical lines based solely on raw VTR coordinates or a homogeneous spread across the entire statistical area.

4.1.3. The resulting final input of trap density and default line density model for the DST are shown in Figures 4.1.3.a and 4.1.3.b.

4.2. User-defined spatial and fleet filter. When setting up a DST run, users have the option to specify which fleets will be included or excluded from the model run and specify a spatial constraint. For inshore LMAs, fleet options include state exempted waters, state non-exempted waters, and federal waters. For the offshore LMA3, the fleet options include the MidShelf vs Offshore fleet and Lobster vs Crab fishery. Spatial constraints can be specified by any combination of State, LMA, Statistical Area or a user-provided shapefile. Only traps associated with the specified fleet and falling within the specified spatial region are retained for the remainder of the model run.

4.3. Trap removal models. During Scenario runs, users can specify three different types of management actions that affect the number and distribution of traps in the model; general trap removals, implementation of new trap caps, and spatial closures. 4.3.1. Trap removal. Trap removals are specified by percentage and can be spatially constrained by state, LMA, statistical area, or shapefile. Within the specified domain, the given percentage of traps are evenly removed from the Scenario run.

4.3.2. Trap Caps. Trap caps operate by lowering the maximum number of traps that individual fisherman are allowed to fish. The submodel for trap caps is built from vessel reports where fishermen have reported the total number of traps being actively fished. A separate trap cap model is produced for each spatial region and month.

At the time of writing, trap caps are only an option for Maine LMA1 state and nearshore waters with spatial models for Maine's seven lobster zones and distances of <3, 3-12, and 12+ miles from shore. Data for the number of traps fished come from Maine's harvester reporting, which includes a 10% subset of lobster license holders in any given year. For each individual lobster license holder and month, we calculate the average number of reported traps fished. For each license type, spatial region and month, we then assemble the fishermen who reported any fishing and calculate a cumulative quantile curve of the number of traps being fished. For any case where data are not available for any combination of license type, region and month, quantile profiles are first borrowed across lobster zone, then month as is necessary to fill all cases. Each of the quantile profiles are then weighted across license type by the proportion of active fishers with that license type, based on dealer reporting, to create a general quantile profile for a zone, distance from shore, and month. Figure 4.3.2.a shows an example set of quantile profiles for Maine Zone B. Given that the area under each curve represent 100% of traps fished, the proportion of traps that would be retained with the implementation of a trap cap can be calculated as the total area under both the quantile curve and horizontal line defining the trap cap, divided by the total area under the quantile curve. This method assumes that, as a fisher reduces the number of traps fished, traps are removed equally over the area they are fishing (i.e. a federally permitted fisher with traps in both 3-12 mile and 12+ mile regions will not remove all affected traps only from the 12+ region), rather than a fisher shrinking the footprint of their operation. The entire TrapCap model for Maine is depicted in Figure 4.3.2.b.

4.3.3. Spatial Closures. Spatial closures are specified via a shapefile and temporally by month or month range. It is further possible to apply a percentage to a closure, specifying what portion of the gear should be removed, which roughly approximates a closure for a portion of a month. With the specification of a closure, the affected traps within the closure are identified and the model attempts to redistribute these traps to adjacent areas. The actual industry response to a

closure would be difficult to predict and idiosyncratic but a crude model is currently employed in some attempt to depict the displacement of gear.

First, the adjacent areas where gear can be moved to are identified based on a basic set of rules whereby traps cannot move between federal and state waters under the assumption the affected fishers may not have a permit to fish in these areas. Further, the adjacent areas available to trap redistribution is limited to be more realistic and to speed computing time. For example, in Maine, gear cannot move beyond the adjacent lobster zone to reflect management rules on how much gear can be fished outside a fisher's "home" zone. For Massachusetts and Rhode Island, gear can be redistributed anywhere within the same LMA. For offshore LMA3, each statistical area has a pre-identified set of adjacent statistical area that were judged to be within a reasonable neighborhood.

Second, the distances between traps and the perimeter of the closure is calculated. For traps inside the closure, a single, mean distance to the perimeter is calculated. For traps outside the closure, the distance is calculated between the closure perimeter and each pixel in the adjacent area. The "cost" of moving traps to any adjacent pixel is then assumed to be a linear function of the total distance a trap would have to be moved to the adjacent pixel calculated as the summed distance between traps inside the closure and the distance to the adjacent pixel. The cost associated with each adjacent pixel is then weighted by the quality of lobster habitat in that pixel, measured as the density of traps already in the pixel. The weighted cost at each pixel is then divided by the summed weighted cost for all pixels and multiplied by the total traps to be moved to get the number of traps redistributed to each pixel. Figure 4.3.3.a shows a diagram illustrating this process. Figure 4.3.3.b shows an example of redistributed traps given the closure of the Canyons and Seamounts National Monument.

4.4. Traps Per Trawl Model and Number of Trawls To convert traps to trawls, the DST uses a different approach for inshore and offshore LMAs. For inshore LMAs, the DST uses the number of traps in a trawl from the IEc model, given the location and vessel class associated with the traps. For offshore LMA3, The DST uses the statistical model outlined in 4.1.2.4. The number of trawls at a location is then calculated based on the number of traps in a trawl and the number of traps at a location. For a management scenario, users can further specify a minimum, maximum or exact number of traps to occur in a trawls for a location and time period and the trawl length is truncated appropriately and the resulting number of trawls recalculated accordingly. Figure 4.4.a shows the mean trawl length for a default model run.

4.5. Endlines Per Trawl Model Based on the number of traps in a trawl and the trawl location, the number of endlines on each trawl (one or two) and total endlines at location are then calculated. For New Hampshire, trawls with three or less traps have one endline. In all other locations, trawls with four or less traps are assumed to have one endline. All other trawls have two endlines. For a management scenario, users can further specify the maximum trawl length that has a single endline.

Users are also able to implement ropeless fishing scenarios within specified spatial regions and time via either acoustic release buoys or timed tension release buoys. Buoys associated with ropeless fishing will presumably spend some period of time at the surface but exact numbers are

hard to provide as this is still largely untested technology. Thus, we currently use the model-estimated mean results from the TRT Opinion Poll (Section 4.7.1) which allows for an 88% reduction in lines for acoustic releases and a 52% and 46% reduction in lines for timed releases inside and outside of 12 miles offshore respectively. Figure 4.5.a shows the density of endlines for a default model run.

4.6. Line Diameter and Rope Strength Model The DST attempts to quantify how gear configuration contributes to entanglement risk for Right Whales. In early versions of the DST, gear threat was based on both rope diameter and trawl length as primary factors. Because the breaking strength of rope is considered a one of the biggest contributors to entanglements that result in severe injury or death and the observed high variability in rope strength at a given rope diameter, DST version >2.0.0 captures gear threat entirely on estimated rope strength with other aspects of gear configurations to be added at a future time. However, our primary data source on the relationship between trawl length and endline characteristics comes from the NEFOP observer data which only recorded rope diameter. Thus, calculating the rope strength associated with trawl lengths requires first characterizing the distribution of rope diameter observed for a given trawl length and then deriving a relationship between rope diameter and rope strength.

4.6.1. Predicted Rope Diameter from Trawl Length. For each observed trawl, observers recorded the trawl length and endline diameter. To characterize the expected distribution of rope diameters for a given trawl length, we truncated the rope diameter data at 5/16” and 3/4” to remove a few odd outliers, rescaled the rope diameters a range of zero to one, and fit the data to a logistic regression (Figure 4.6.1.a, Figure 4.6.1b).

4.6.2. Predicted Rope Strength from Rope Diameter. Data on the breaking strength of ropes from the lobster fishery came from two sources. Knowlton et al. (2016) acquired samples of rope taken from whale entanglement events and tested the breaking strength of these. Data from these ropes are further characterized by polymer and fiber type, the condition of the rope (five levels: Very Good to Very Poor), if the rope was leaded, and the test type used to determine breaking strength (whole rope vs. individual fibers). The Maine Department of Marine Resources (DMR) provided an additional data set from a recent study where lobstermen voluntarily submitted samples of endline for testing. This data was further characterized by age (number of seasons fished), and a descriptor of the rope segment (clear line, joined by a splice, or joined by a knot). To maximize the size of the data set, we looked to match as many of the attributes between the two data sets as possible.

For the data from Knowlton, we noted from residual analysis that rope condition at five levels had a remarkably linear trend. Thus we recoded this attribute with numeric values from one to five and treated this as a continuous variable comparable to age for the DMR data. Second, we quantified the storage effect as the number of years between collection and observation, using Jan. 1, 2015 as a best-guess test date, resulting in a mean storage time of 12.2 years (range 4.6 to 20.1 years). Storage was not a large effect in the final model so this assumption of test date has minimal effect on outcomes. Finally, we coded all data as “clear” rope samples. Unfortunately, rope material was not available for much of the DMR data, so material type was dropped from the Knowlton data set. For the DMR data, we assumed the rope was not leaded and a storage time of 1 year.

With the combined data set, the best linear model included (1) a rope diameter interaction with section type (clear, spliced or knotted), (2) and interaction between rope age and source (DMR vs Knowlton) to capture the different metrics of age between the data sources, (3) test type as a factor (whole rope or rope fiber), and storage time as a continuous variable, with a log-normal error distribution. Final model r-square was 0.58 with 290 degrees of freedom. As expected, rope diameter was the strongest predictor of breaking strength, increasing in breaking strength by 32.6% per 1/16th inch (Figure 4.6.2.a, 4.6.2.b). Splices and knots in ropes are predicted to decrease breaking strength by 22.5% and 39.3% respectively and rope is predicted to weaken at a rate of 4.4% annually when fished and 1.1% annually when stored, though this also represents changes in rope technology and tends to be an unstable parameter estimate.

Finally, to characterize the expected age distribution of ropes in use by the fishery, it was necessary to model the rate at which endlines are lost or replaced to get the proportion of rope at each age in the "rope population". As empirical data on this was not readily available, collaborators at Maine DMR observed that fishermen have a 10% loss allowance for lobster traps that seem to be similar to the actual rate of gear loss and that, of the samples submitted for strength testing and slated for removal, most were between 3 and 6 years of age. Thus, we assume 10% stochastic removal rate of endlines due to loss and the mean age of removal at 4.5 years with a standard deviation of 1. The product of these two curves (Figure 4.6.2.c) results in the distribution of rope ages one would expect to observe in the fishery and can be used to predict rope strength.

4.6.3. Predicted Rope Strength from Trawl Length To obtain distributions of rope strength given trawl length, we created 1,000 random draws from the predicted rope diameter distribution for each trawl length, matched each with an appropriate random draw from the age distribution, and used this to predict a mean rope breaking strength using the statistical model from 4.6.2, then added a random draw from the rope strength model error distribution. We then binned the calculated rope strengths from each trawl length into to 100-pound bins and calculated proportions represented by each bin. Resulting distributions are strongly right-skewed, particularly for short trawl lengths where both the rope diameters and rope strength distributions are right-skewed. Single-pot trawls, for example have a median breaking strength of 2,000 lbs but a range from less than 1,000 to greater than 5,000 lbs (Figure 4.6.3.a). As expected, longer trawls are predicted to have endlines that break at much higher loads with median breaking strength for a 50-pot trawl around 7,000 lbs (Figure 4.6.3.b). As a management action, users are able to specify a maximum rope breaking strength seasonally and spatially in scenarios.

4.7. Gear Threat Model Much of the interest in this tool is to provide some quantitative analysis of how changes in gear configurations (rope strength, trawl length, buoyless fishing, etc.) can contribute to decreasing risk to whales. However, quantitative data is largely lacking on the relationship between gear configuration and the probability of causing a severe injury or mortality. Notably, Knowlton et al. (2016) examined the breaking strength of ropes retrieved from entanglement mortalities or disentanglement events and observed that entanglements involving larger whales tended to occur in stronger lines. However, this falls short of providing an estimate of how any two gear configurations compare. 4.7.1. Expert Opinion Poll for the April TRT meeting. Given short notice but a desire to fill this portion of the decision tool, NMFS constructed and distributed a questionnaire to the members of the Take Reduction Team and

other experts in the field ahead of the April 2019 meeting, asking participants to provide best-guess, relative threat scores for a variety of gear configurations. Results were highly variable, particularly across different stakeholder groups, though respondents generally agreed that lighter ropes posed less threat to whales than heavy ropes (Figure 4.7.1.a). The results were analyzed using hierarchical Bayesian models with stakeholder groups as random effects and resulting models were interpolated to provide threat scores for all desired gear configurations (Figure 4.7.1.b). While the allowed for initial use of the model and testing of alternate gear configurations, there was a general consensus among TRT members and stakeholders that the poll-based threat model should be replaced with a model based on quantitative analysis of empirical data.

4.7.2. Empirical models of gear threat. Building an empirical model of gear threat for the DST has proved to be very challenging as it is necessarily attempting to distill the factors that contribute to complex outcomes for events that are generally rare and not directly observed. Most data on whale entanglements come from mortality or disentanglement events, both of which occur a considerable amount of time after the entanglement event took place. In both cases, the whales are generally not carrying the complete set of gear that they were entangled in. Because disentanglement is not attempted for minor cases, there is also necessarily a small amount of data on gear that does not result in serious injuries or mortality for comparison.

4.7.2.1. Threat model based on apparent selectivity by rope strength. The gear threat model currently implemented in DST V2.x quantify threat of different rope strengths based on the discrepancy in rope strengths between ropes recovered from severe entanglements and the ropes that whales are expected to encounter. Our data on the distribution of rope strength observed in entanglements comes Knowlton et al. 2016, subset to entanglements judged to represent serious injury cases. To get the distribution of rope strengths we expected whales to encounter, we used model runs of the DST, including a run with a humpback habitat model provided by collaborators at Duke University, and extracted the densities and strength of endlines with co-located densities of whales (See 4.8 Whale Habitat Models). We then took the product of the numbers of each ropes for each strength interval and whale density by location and summed across locations to get the relative proportion of each rope strength, by species, that whales would be expected to encounter (Figure 4.7.2.1.a). For both Right and Humpback Wales, there is some evidence of heavier ropes being more common in entanglement events than expected from encounter rates (Figure 4.7.2.1.b, 4.7.2.1.c). However, both sets of profiles also have higher than expected proportions of entanglements in the lightest ropes and lower than expected proportions in intermediate-weight ropes.

We use the ratio of the two sets of proportions (Observed vs Encountered) as a proxy for the threat associated with ropes of a given length. I.e. if a rope of a given strength is observed in entanglements twice as often as would be expected, we interpret this as being twice as lethal as a rope that is observed in proportion to the encounter rate.

For model fitting, we aggregated rope strengths to 500lb intervals and truncated all data below 1,250 lb. and above 5,250 lb. strengths, with values outside these bounds added to the nearest bin to reduce the sensitivity of ratios to very low numbers in denominators. We then bootstrapped the observed rope strength distribution 100 times, calculated observed-to-expected ratios, and

rescaled the data to have all ratios less than 1. We then combined the data sets for the two species and fitted a binomial glm with a species interaction. The resulting glm model was then back-transformed to the original scale of the data and plotted over the bootstrapped data sets (Figure 4.7.2.1.d). The trendlines for both species increase with rope strength, again suggesting that threat increases with rope strength. However, there is some lack-of-fit to the models with apparent threat being over-estimated at intermediate rope strengths and underestimated at higher rope strengths, indicating an artifact in the derived data sets or mis-specification of the statistical model. However, we judge this to be the best candidate method for deriving an empirical threat index based on rope strength, providing a threat score for any given rope strength.
Given the above issues with the model fit, we used the above bootstrapping method to further develop estimates of the uncertainty or instability of models around the relationship between 'observed' and 'expected' rope strength distributions. The goal of this approach is to define a reasonable upper and lower bound on how rope threat, calculated from the selectivity ratios, changes with rope strength.

Rather than using bootstrapping to define the range in selectivity ratios predicted for a given rope strength, it is more appropriate to quantify uncertainty as the range of models produced by the bootstrapping (Figure 4.7.2.1.e). As expected, model parameters (intercept, slope, and species interaction) are highly correlated, particularly slope and intercept. A principal components analysis of the parameter estimates suggests that >90% of variability in parameters can be explained by the first principal component, which correlates strongly with slope parameters (Figure 4.7.2.1.f). Thus, we define median, upper, and lower bounds on the model estimates as the models from the 0.5, 0.975, and 0.025 quantiles of the first principal component (Figure 4.7.2.1.g). These upper and lower bounds correspond with expected limits on how steep the relationship is between rope strength and gear threat, which also provide limits on the relative benefits of decreasing entanglement risk by changing rope strength. While the curve representing the lower bound has higher "threat scores" than the other two curves for ropes less than ~6,000 lbs breaking strength, it is important to recognize that relative threat score between any two rope strengths defines actual entanglement threat, not absolute individual values. Thus, it is instructive to plot the ratios of combinations of values for each curve to understand the inferred threat reductions (Figure 4.7.2.1.h-j). Similarly, it is instructive to examine individual profiles for each threat curve at a given target managed rope breaking strength, like 1,700lb (Figure 4.7.2.1.k). For changing to 1,700 lb breaking strength, the median model predicts a 50% reduction in risk from a 3,100 lb rope and 75% reduction in risk from a 4,700 lb rope. The upper bound curve predicts a 50% reduction in risk switching from 2,600 lb rope to 1,700lb and a 75% reduction switching from 3,400 lb rope. Conversely, the lower bound curve predicts that 50% reduction does not occur within the domain of the model with changing from 10,000 lb rope to 1,700 rope resulting in a 38% reduction in risk.

These three curves have been implemented as alternate threat models in DST V>2.1.x. Thus, the updated model produces output results and risk scores for all three threat models as well as a "co-occurrence" model where all ropes have equal threat, providing a range of outcomes given the uncertainty in the threat model.

For example, figures 4.7.2.1.k – .n show output from an example DST model run where all ropes >2,250 lb breaking strength were decreased to exactly 2,250 lbs. Figure 4.7.2.1.k depicts the

differences in rope strength distribution between the right-skewed default condition and the scenario condition where rope strengths have been truncated to 2,250lbs breaking strength. Figure 4.7.2.1.l shows the resulting truncated distribution in resulting threat scores for the median threat model. Truncation in threat scores is less apparent for the lower bound curve (Figure 4.7.2.1.m) and more apparent for the upper bound curve (Figure 4.7.2.1.n). In this example, setting max rope strength at 2,250 lbs. results in a mean reduction of rope strength of 26% (Figure 4.7.2.1.o) corresponding in a reduction in gear threat of 40% from the median threat curve (Figure 4.7.2.1.p) but a range of 5 – 68% from the lower and upper bound curves respectively (Figure 4.7.2.1.q and r). Similar tables are also produced for the co-occurrence model (all ropes have equal threat) but are not presented here as numbers from co-occurrence calculations only change if the number of ropes in the water are affected by the scenario.
This modeling framework seems useful for conveying uncertainty in the outcome of management actions through manipulating rope strengths. This does not address the validity of the threat modeling methods itself with the difficulties discussed above. We anticipate further developing the modeling methods as well as seeking additional data to include in the analysis but would expect to keep presentations of uncertainty like these in future versions of the model.
4.8. Whale Habitat Models The spatial and temporal distribution of whales within the model domain is adapted from the Right Whale Habitat model from Roberts et al. (2016). In short, the model uses whale citing data from a variety of sources, matched with co-located oceanographic and habitat variables to predict whale density at any given location. The habitat model has a native resolution of 10km pixels and was translated to the domain of the DST by overlaying the DST domain, as points, on the habitat model raster and extracting the overlapping values. Thus, whale density values for individual pixels in the DST will have the same value as some neighboring pixels if they fell into the same cell in the original whale model. This change in spatial support and the original resolution of the habitat model is evident in output from the DST from high-resolution runs (Figure 4.8.a).

While this habitat model is preferred for its ability to combine disparate data sources and fill in areas where empirical surveys are lacking, it currently has a couple drawbacks. First, the habitat model was originally built for the US Navy and lacks some areas of inshore waters that were not included in the original contract (Figure 4.8.a). As a result, the DST can perform model runs that include these areas and provide full outputs except for final risk estimates, where all gear inside the missing areas is treated as having a risk of zero. Fortunately, Right Whales are exceedingly rare in the missing areas and this generally has minimal affects on scenario testing. To partially address this, a second whale model was provided where the missing cells are iteratively filled in with the mean of any adjacent cells that have estimated values. As there is a general declining trend moving inshore in some of these areas, this method of filling in missing vales would tend to over-estimate whale density and risk in the missing areas. Thus, for cases where there is interest in modeling these inshore areas, we typically perform two model runs, one with the original whale model and one with the expanded whale model and assume the results of the two models bound the actual risk values. These missing areas will be included with an updated version of the whale habitat model, due this winter, which will address this issue.

A second drawback of the current model is that it is essentially an average, representative whale distribution model for 1998 – 2017 but the distribution of Right Whales shifted sharply around 2010 due to an ecosystem regime shift (Records et al. 2019). Thus, this whale model represents a

mixture of two habitat regimes, rather than only the current regime. In discussion with the developers of the whale model, we found that there was insufficient data to build year-specific whale models, which would allow us to examine interannual variations and characterize the current spatial distribution. But, with the production of the updated model, we hope to get separate distribution models for before and after the regime shift, which will address this concern and allow us to test if management actions are robust to regime shifts in whale distributions.

5. Model Outputs Upon completion of a model run, a new directory is created to house the output and the following are saved to review the results of the model run and scenario tested. 5.1. Low-Resolution Monthly Maps of the following Default conditions: 5.1.1. Trap density

5.1.2. Mean trawl length

5.1.3. Vertical line density

5.1.4. Mean vertical line strength

5.1.5. Mean gear threat score

5.1.6. Total threat score (gear threat * line density)

5.1.7. Whale density

5.1.8. Total risk (total threat * whale density).

An .Rdata file with the individual data objects used for creating these maps is also saved to custom maps can be created after the model run.

5.2. Low-Resolution Monthly Maps of the following Scenario conditions: 5.2.1. Trap density before scenario effects on traps

5.2.2. Trap density after trap reduction

5.2.3. Trap density after implementation of trap caps

5.2.4. Trap density after implementation of closures

5.2.5. Map of traps relocated as a result of closures

5.2.6. Trawl lengths after scenario effects

5.2.7. Line densities after scenario effects

5.2.8. Mean line strength after scenario effects

5.2.9. Mean gear threat after scenario effects

5.2.10. Total gear threat after scenario effects

5.2.11.Whale densities

5.2.12. Total risk scores.

5.2.13. Low-Resolution Monthly Maps of spatial changes in risk due to mitigation measures.

An .Rdata file with the individual data objects used for creating these maps is also saved to custom maps can be created after the model run.

5.3. Output tables with the following 5.3.1. Model documentation 5.3.1.1. Model configuration settings

5.3.1.2. Contents of the input spreadsheet

These two outputs allow users to fully understand the settings of a model run as well as recreate the model run at a later time.

5.3.2. Tables with monthly values for default and scenario conditions

5.3.3. Initial and final trap numbers

5.3.4. Total number of trawls

5.3.5. Mean trawl length

5.3.6. Total vertical lines

5.3.7. Mean vertical line strength

5.3.8. Mean threat score per vertical line

5.3.9. Total gear threat

5.3.10. Seasonal whale density

5.3.11. Total risk scores

All summary statistics written to the tables are also written to a comma-separated text file for further access.

5.4. Optional extended output with full-resolution R data objects of the model run at all stages for further analysis.

Literature Cited:

Hamilton PK, Kraus SD. 2019. Frequent encounters with the seafloor increase right whales' risk of entanglement in fishing groundlines. Endangered Species Res. 39:235-246.

Knowlton AR, Robbins J, Landry S, McKenna HA, Kraus SD, Werner, TB. 2016. Effects of fishing rope strength on the severity of large whale entanglements. Conserv.Biol. 50.318-328

NMFS Co-Occurrence Model. 2019. Prepared by Industrial Economics, Incorporated for the National Marine Fisheries Service Greater Atlantic Fisheries Office and the Atlantic Large Whale Take Reduction Team.

Records et al. 2019. Rapid climate-driven circulation changes threaten conservation of endangered North Atlantic Right Whales. Oceanography32.132:169.

Roberts et al. 2016. Habitat-based cetacean density models for the U.S.Atlantic and Gulf of Mexico. Scientific Reports 6.22615

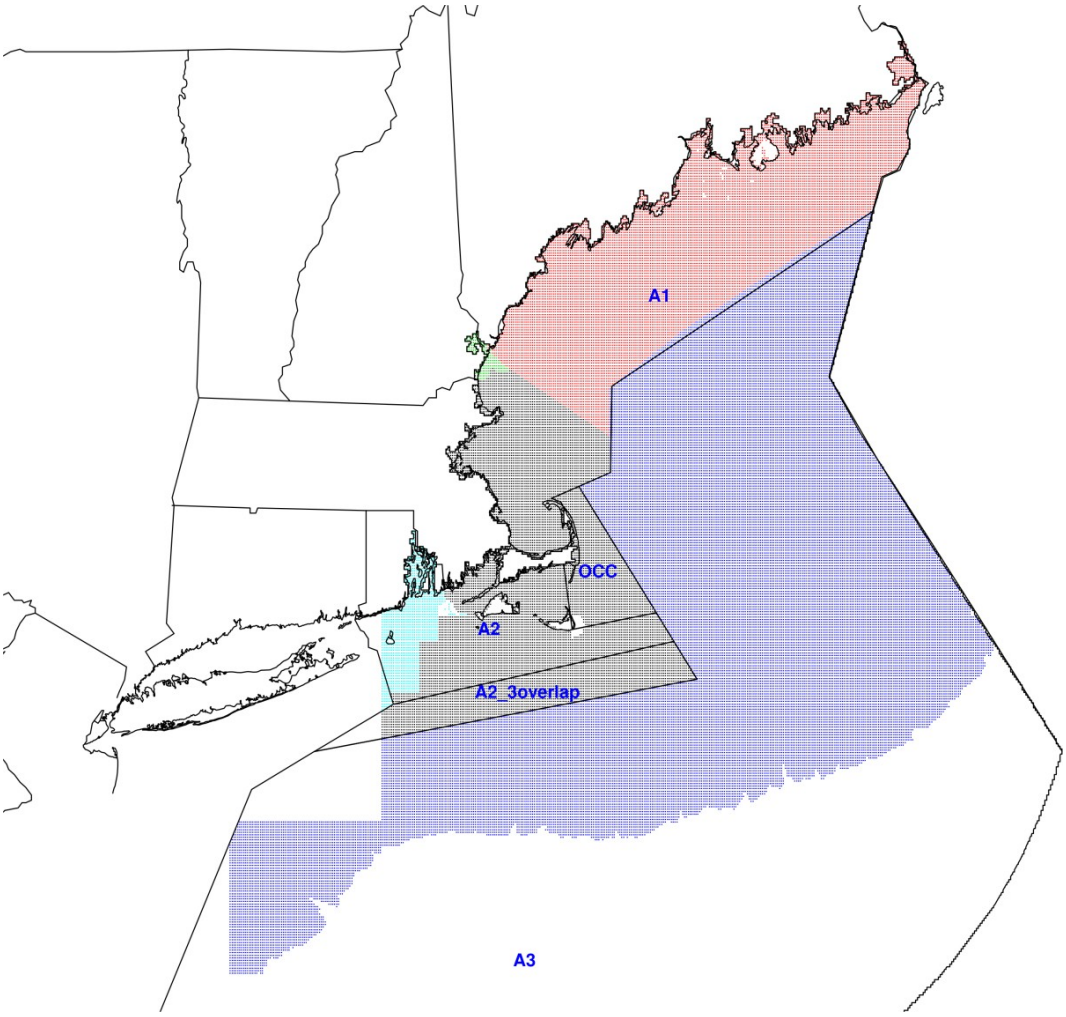

Figure 2.1.a: Spatial domain of the Decision Support Tool including the lobser management areas. Colors generally denotes the state where trap densities and traps per trawl data originated with offshore area 3 data coming from the federal government.

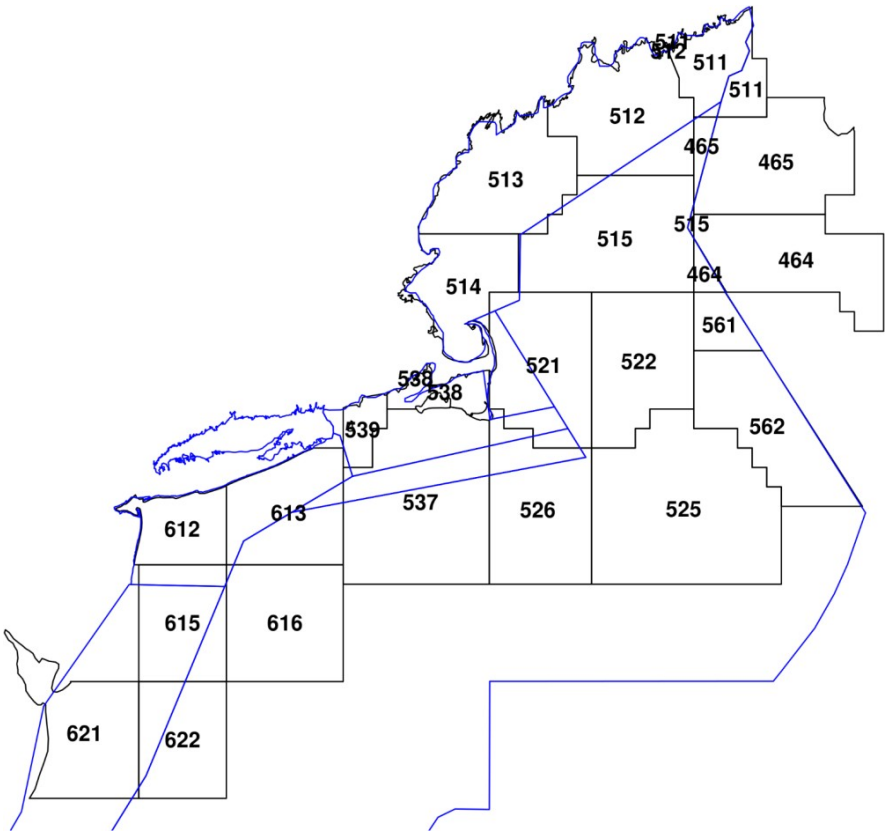

Figure 2.1.b. Reference map for the spatial relation between lobster management areas and NMFS statistical areas.

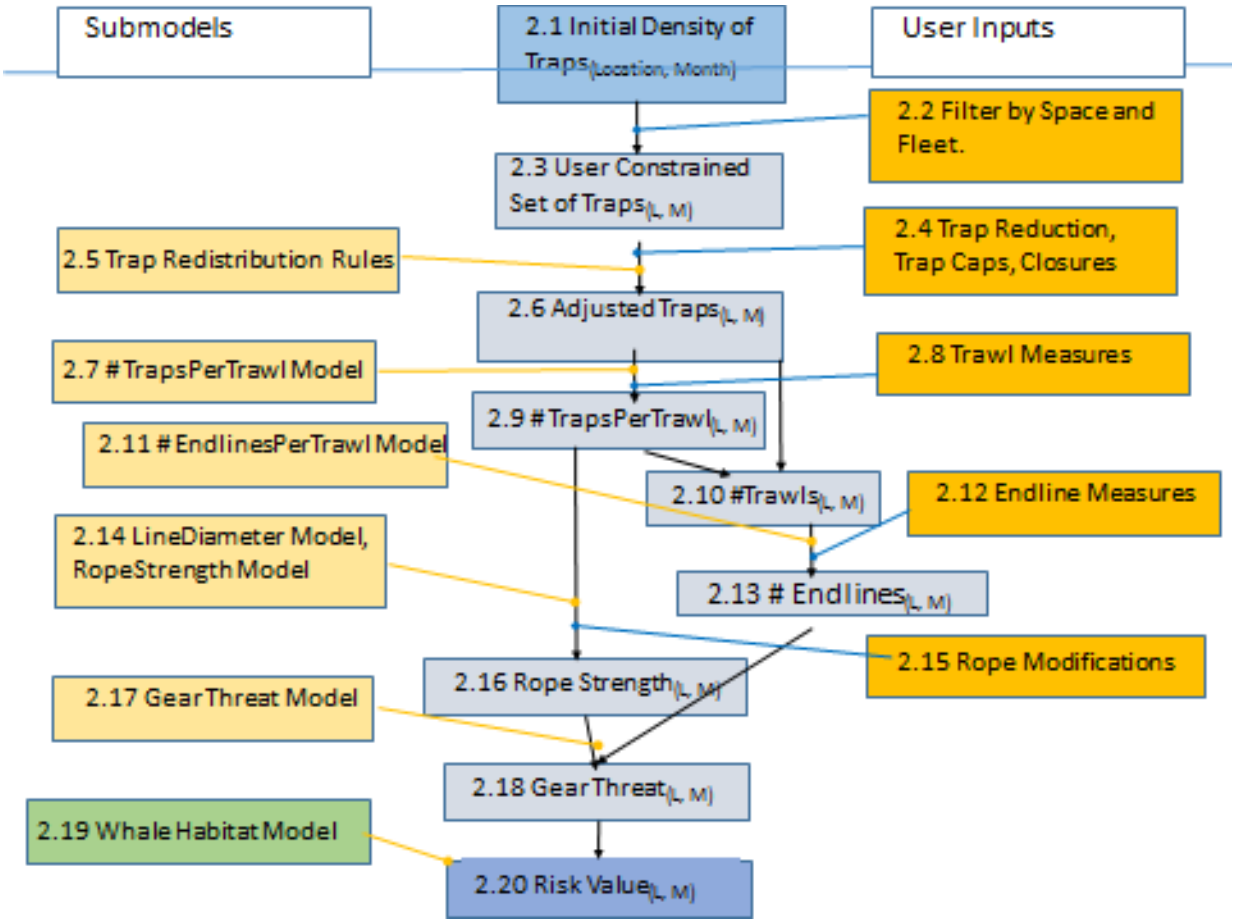

Figure 2.1. Schematic of the flow of information through the Decision Support Tool (center column) with submodels (left column) and user inputs (right column).

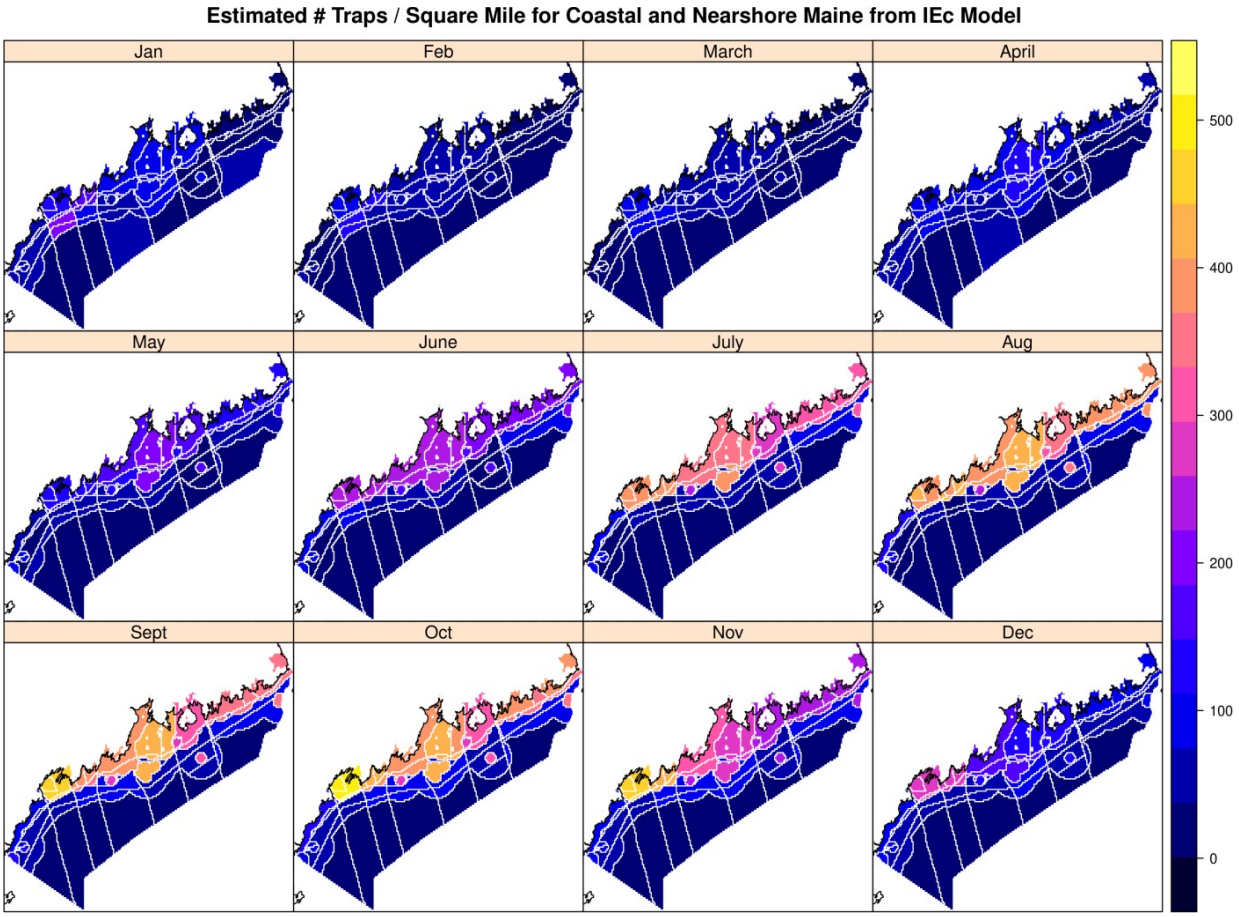

Figure 4.1.1.1.a Default trap densities and delineated regions for waters off Maine.

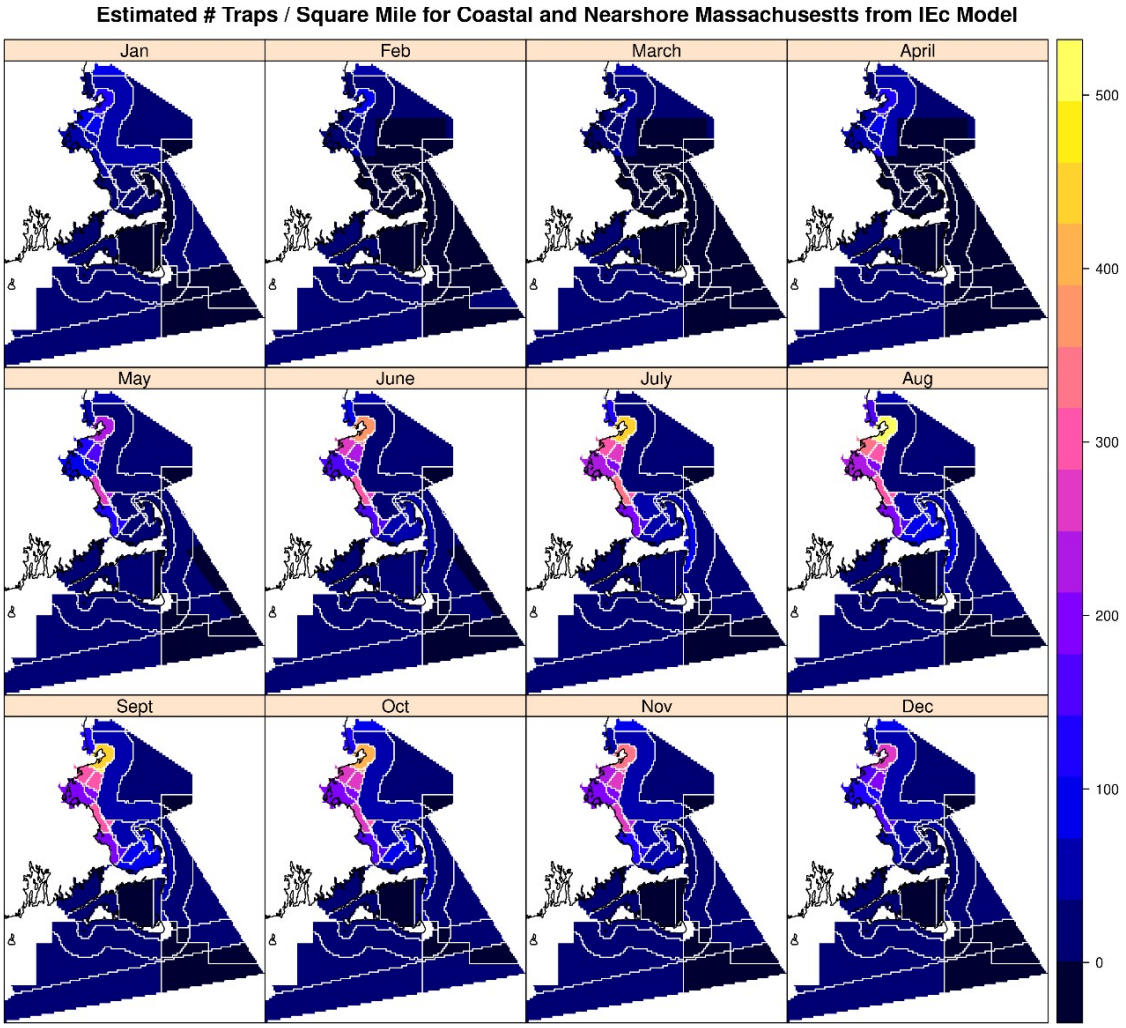

Figure 4.1.1.3.a Default trap densities and delineated regions for waters off Massachusetts.

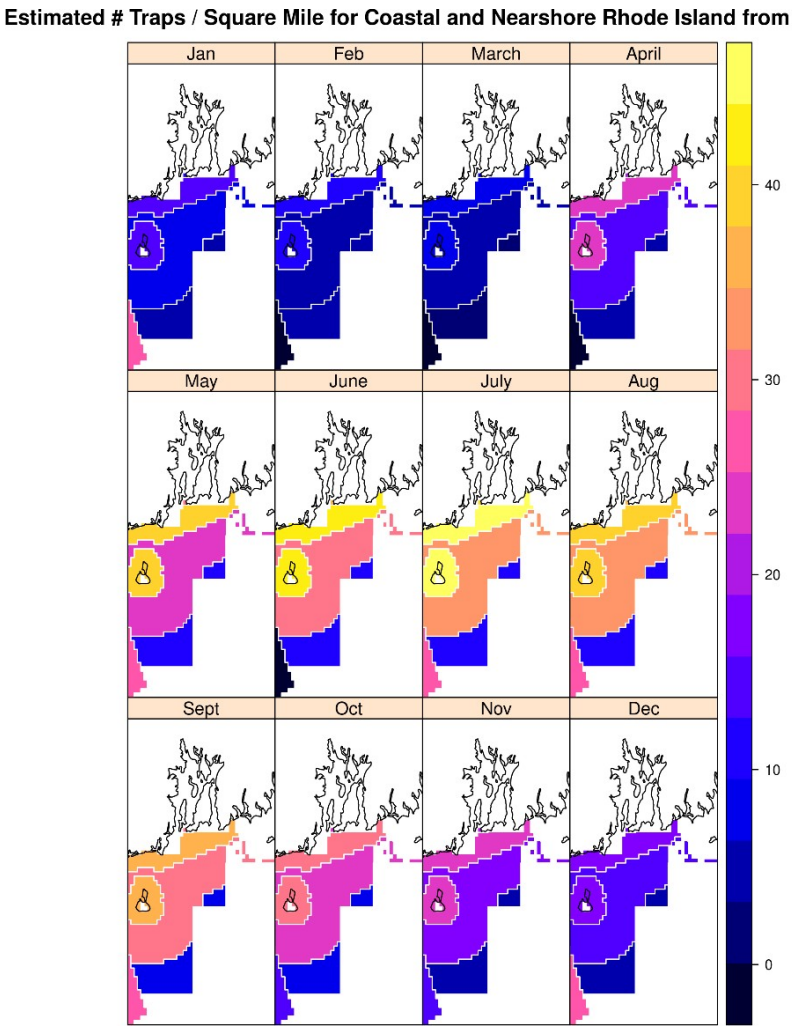

Figure 4.1.1.4.a Default trap densities and delineated regions for waters off Rhode Island.

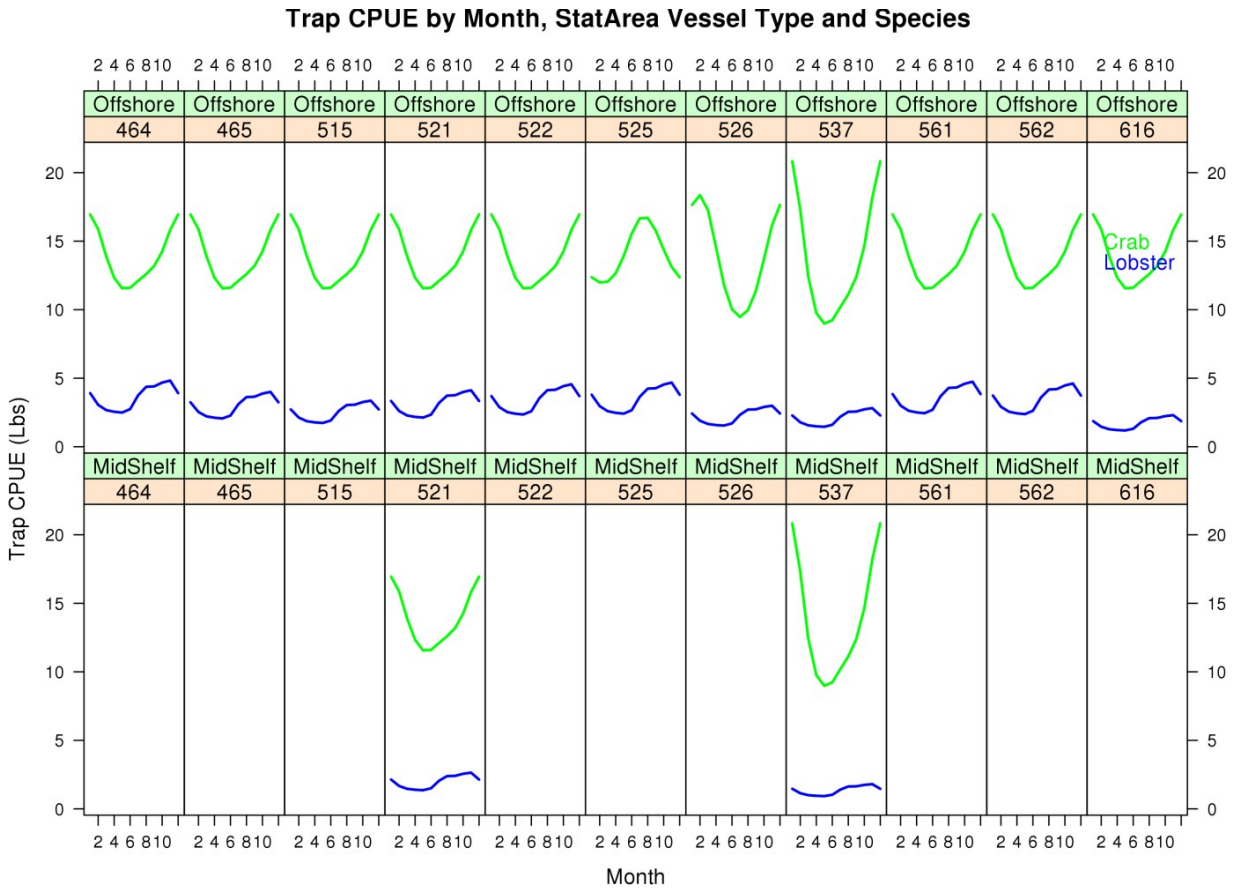

Figure 4.1.2.2.a. Modeled Catch per trap by species, fleet, and statistical area.

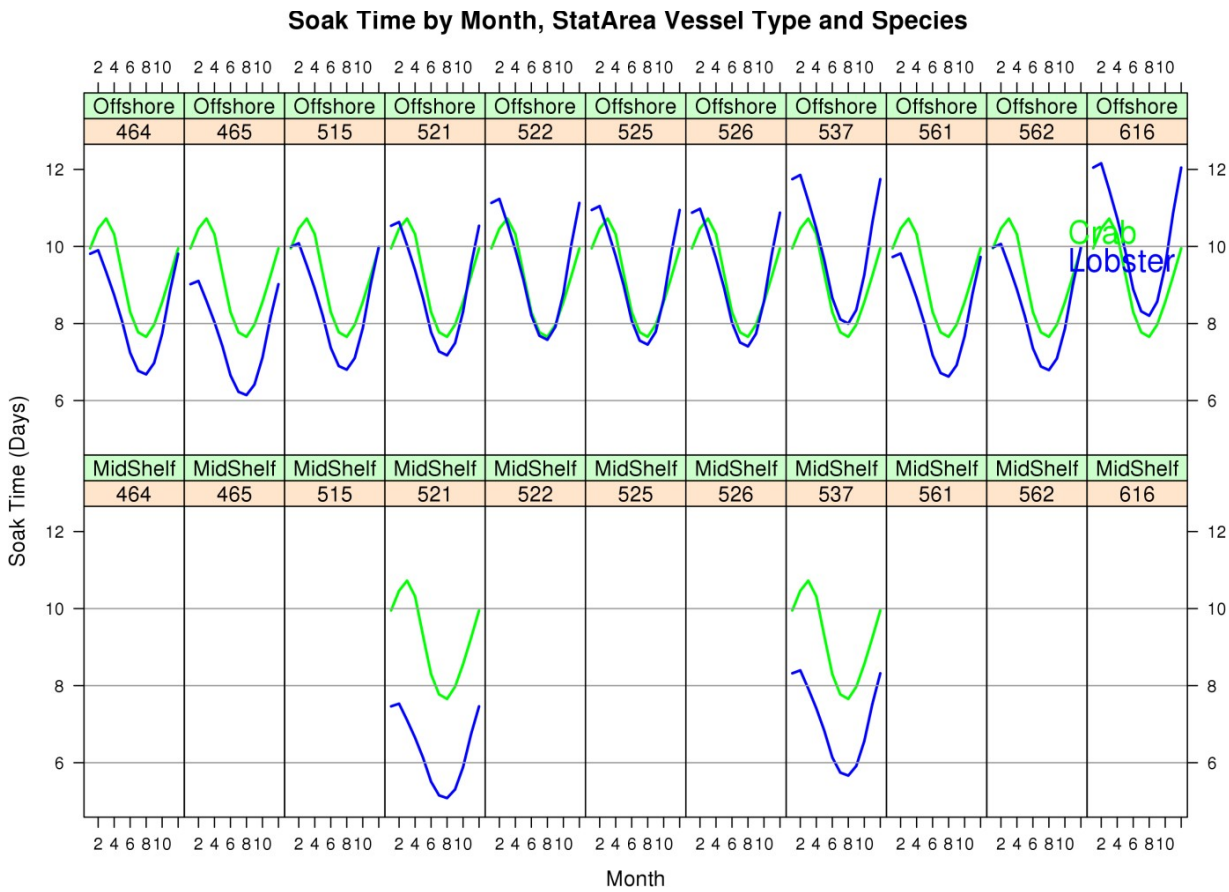

Figure 4.1.2.3.a. Model estimated soak time by species, fleet, statistical area.

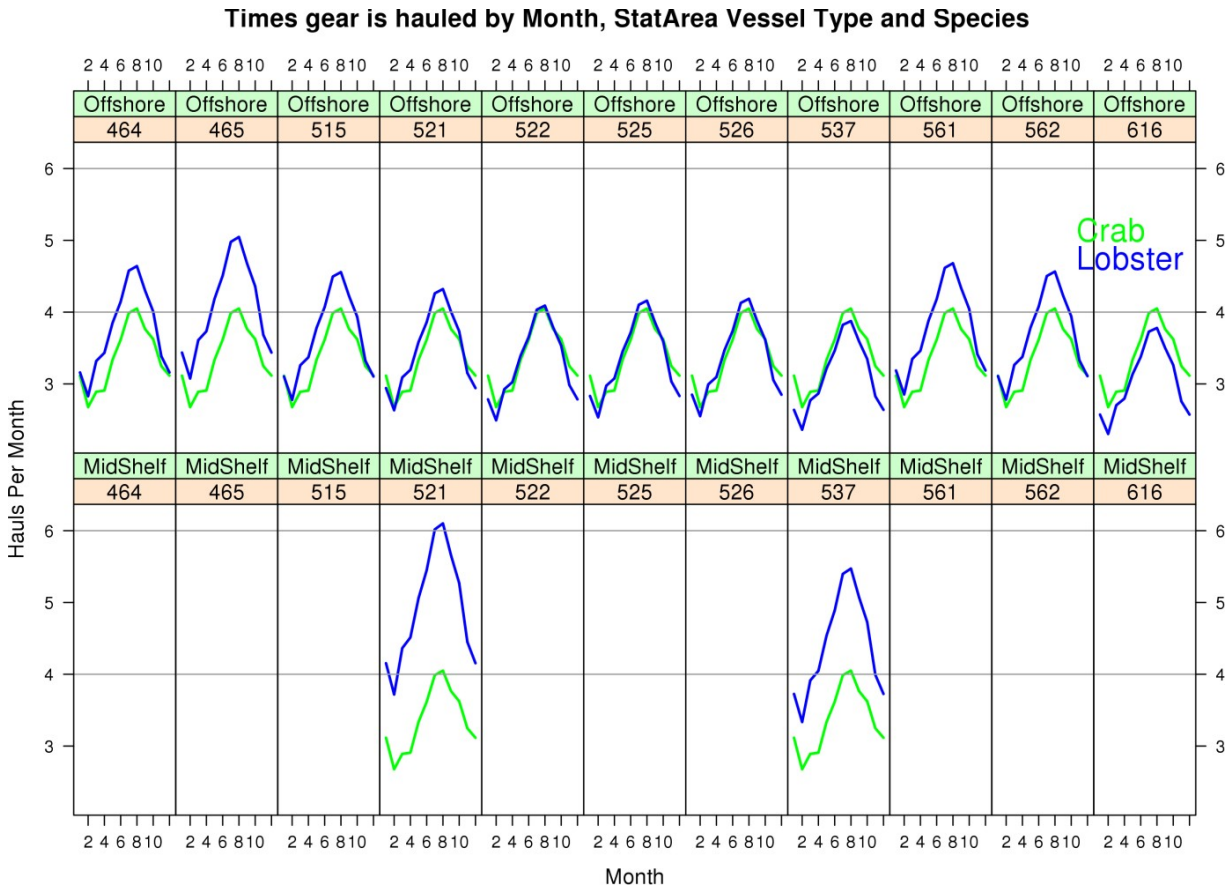

Figure 4.1.2.3.b. Resulting estimated number of times a trawl is hauled per month by species, fleet, and statistical area.

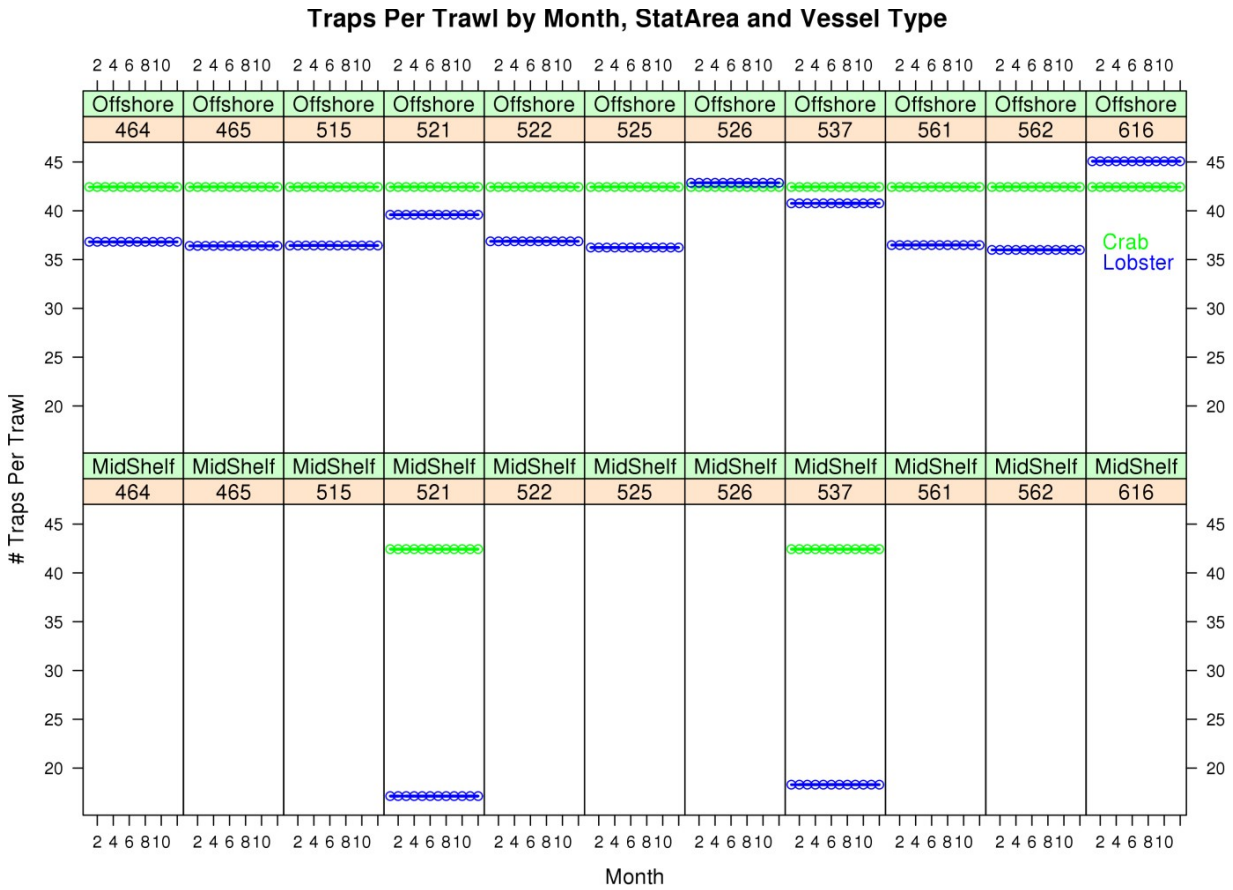

Figure 4.1.2.4.a Estimated number of traps per trawl by statistical area and fleet for the Jonah crab and lobster fishery.

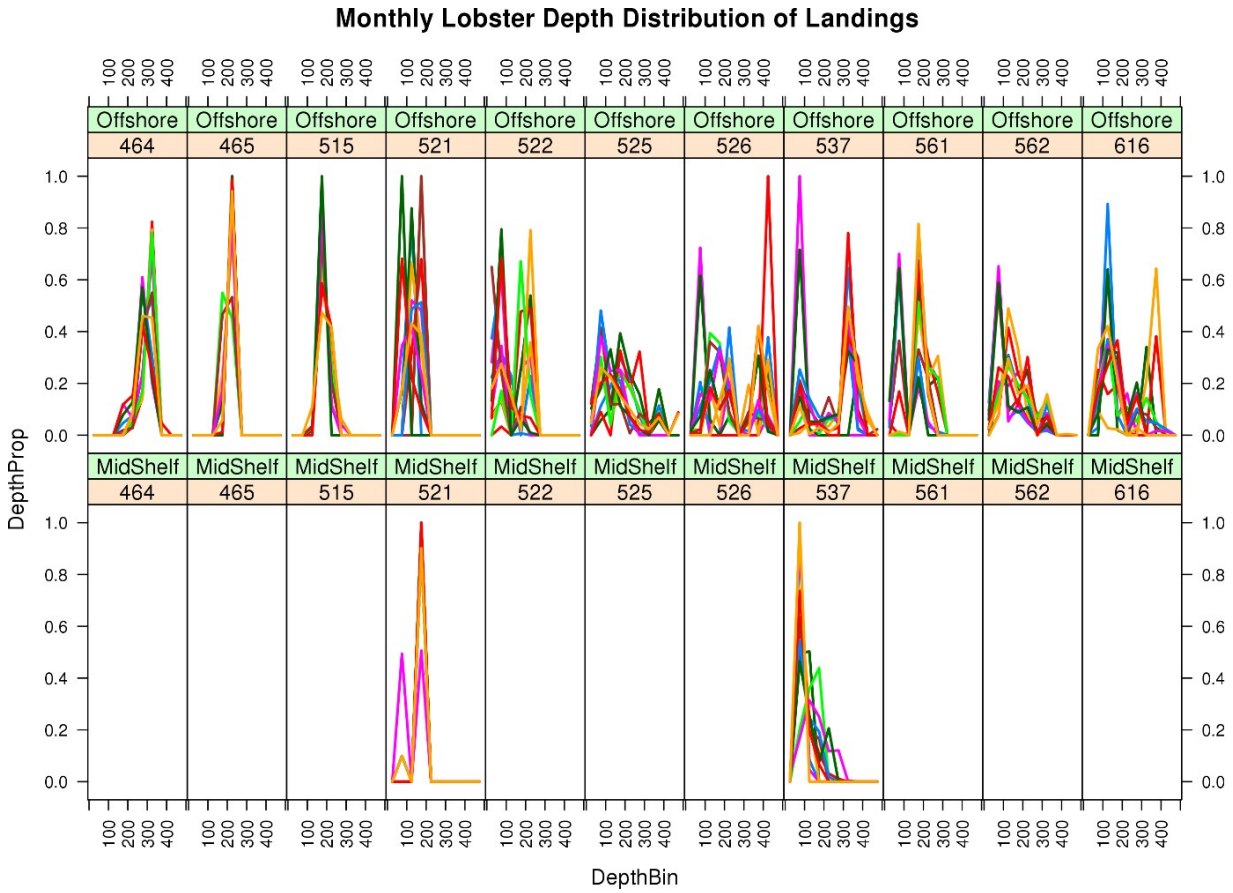

Figure 4.1.2.6.a Proportion of lobster landings by depth bin (meters) within statistical areas and fleets. With individual lines representing different months.

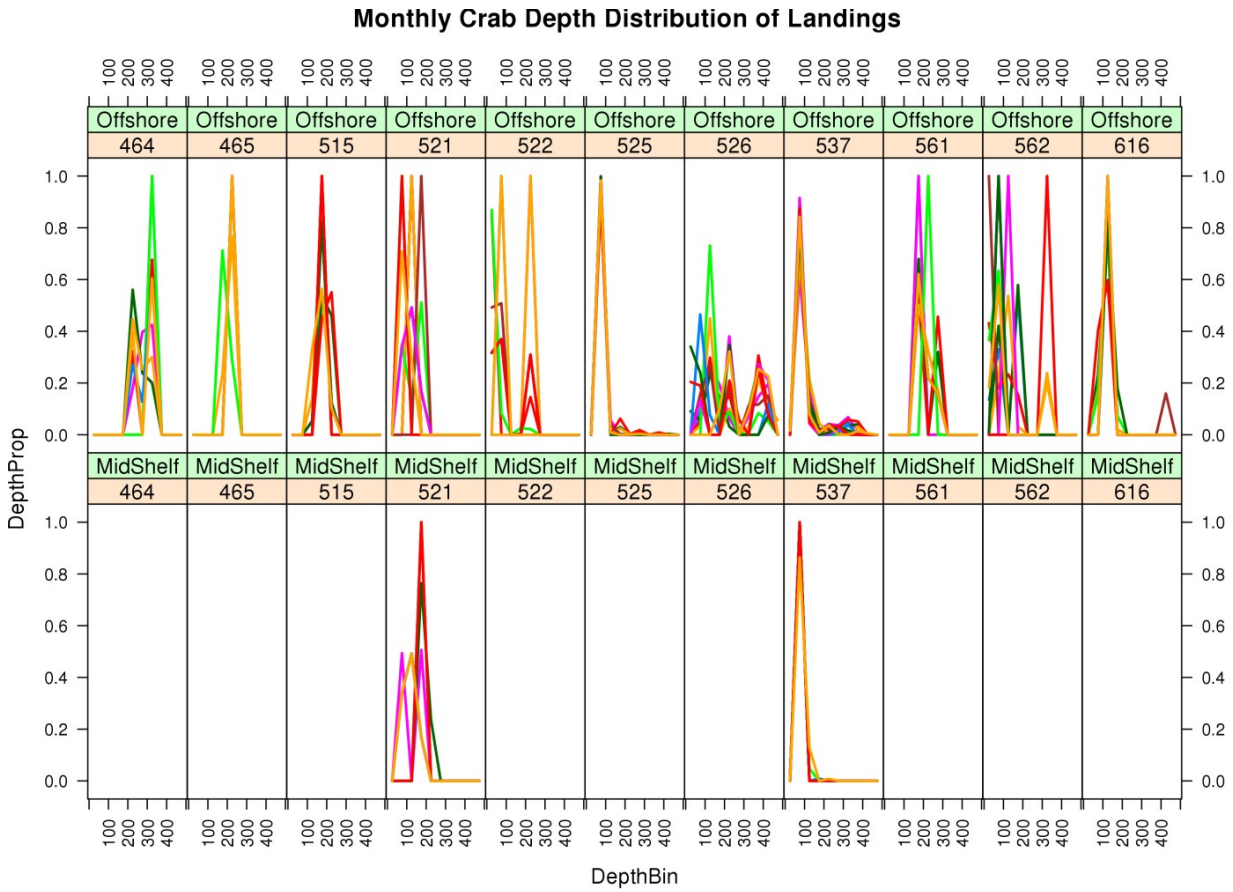

Figure 4.1.2.6.b Proportion of crab landings by depth bin (meters) within statistical areas and fleets. With individual lines representing different months.

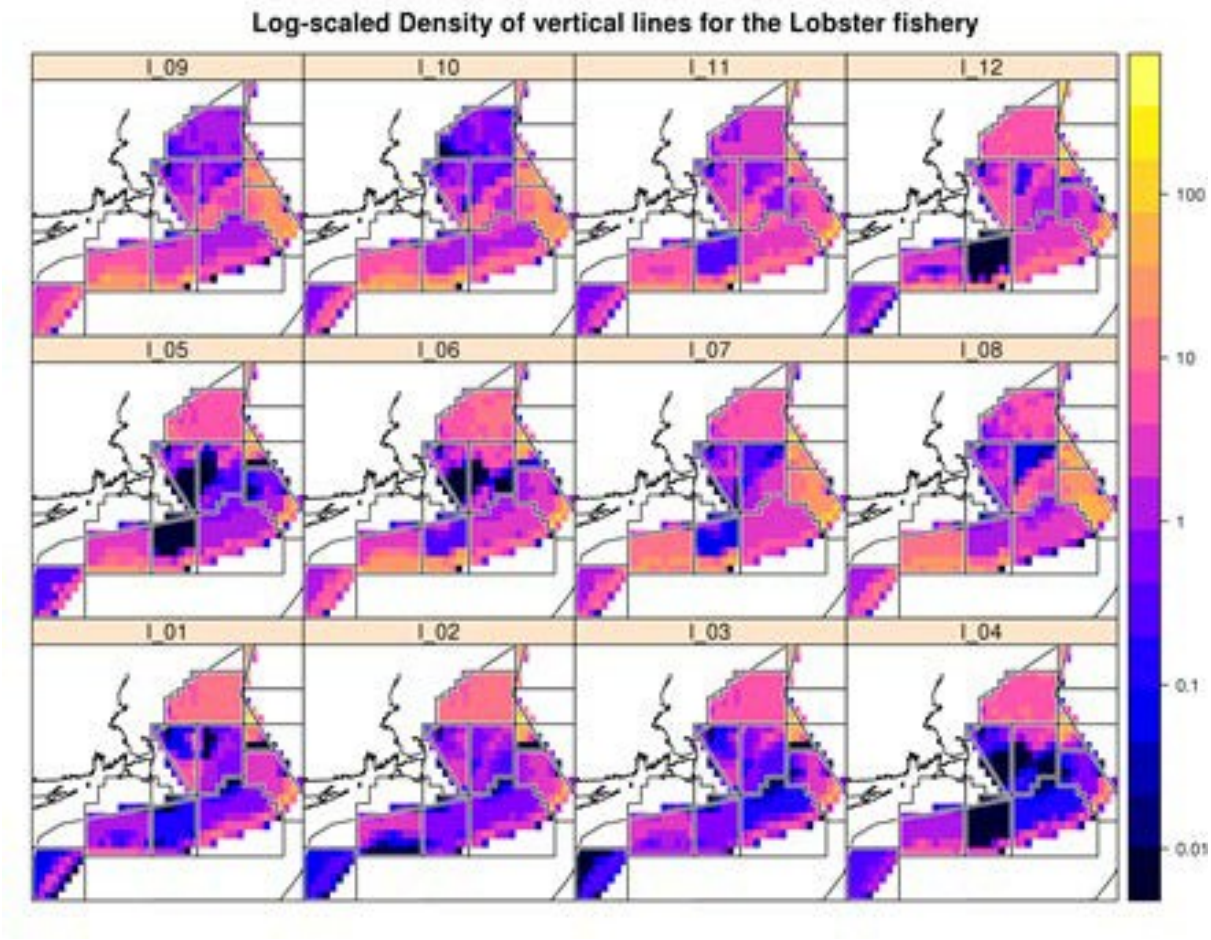

Figure 4.1.2.6.c. Finalized vertical line model for Offshore LMA3 for the lobster fishery.

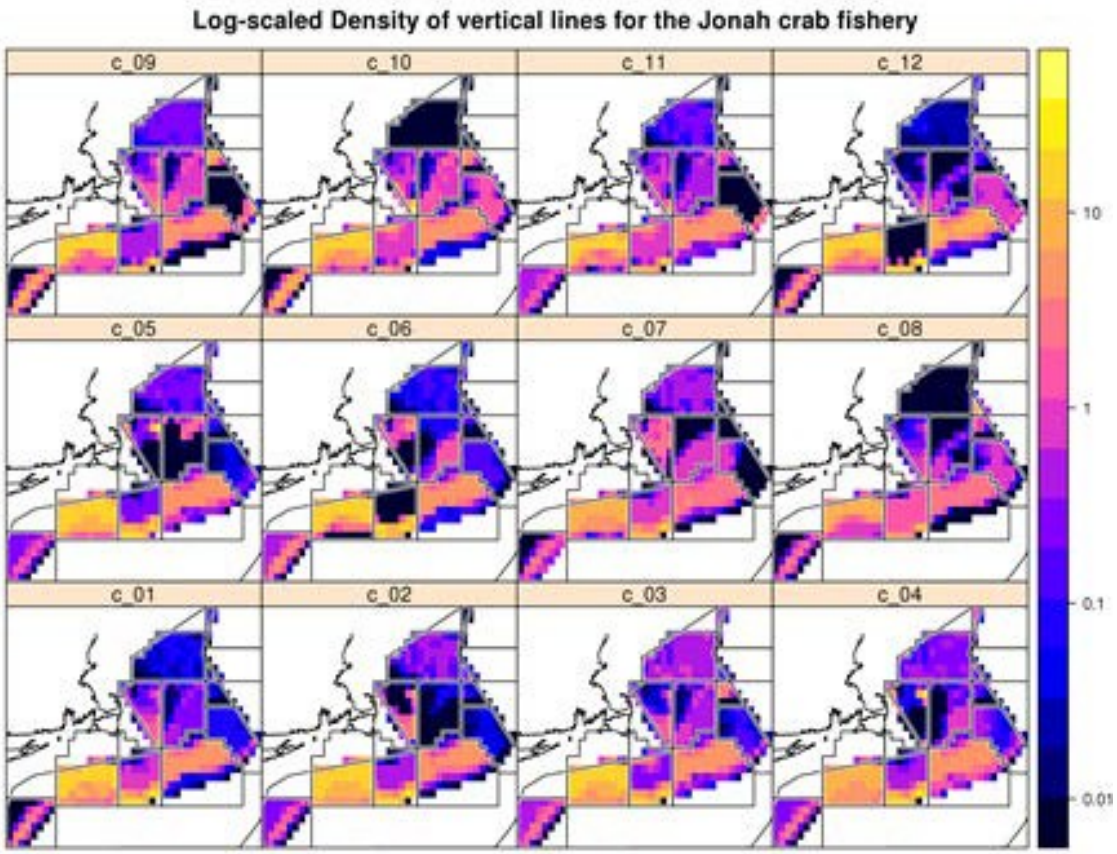

Figure 4.1.2.6.c. Finalized vertical line model for Offshore LMA3 for the Jonah crab fishery.

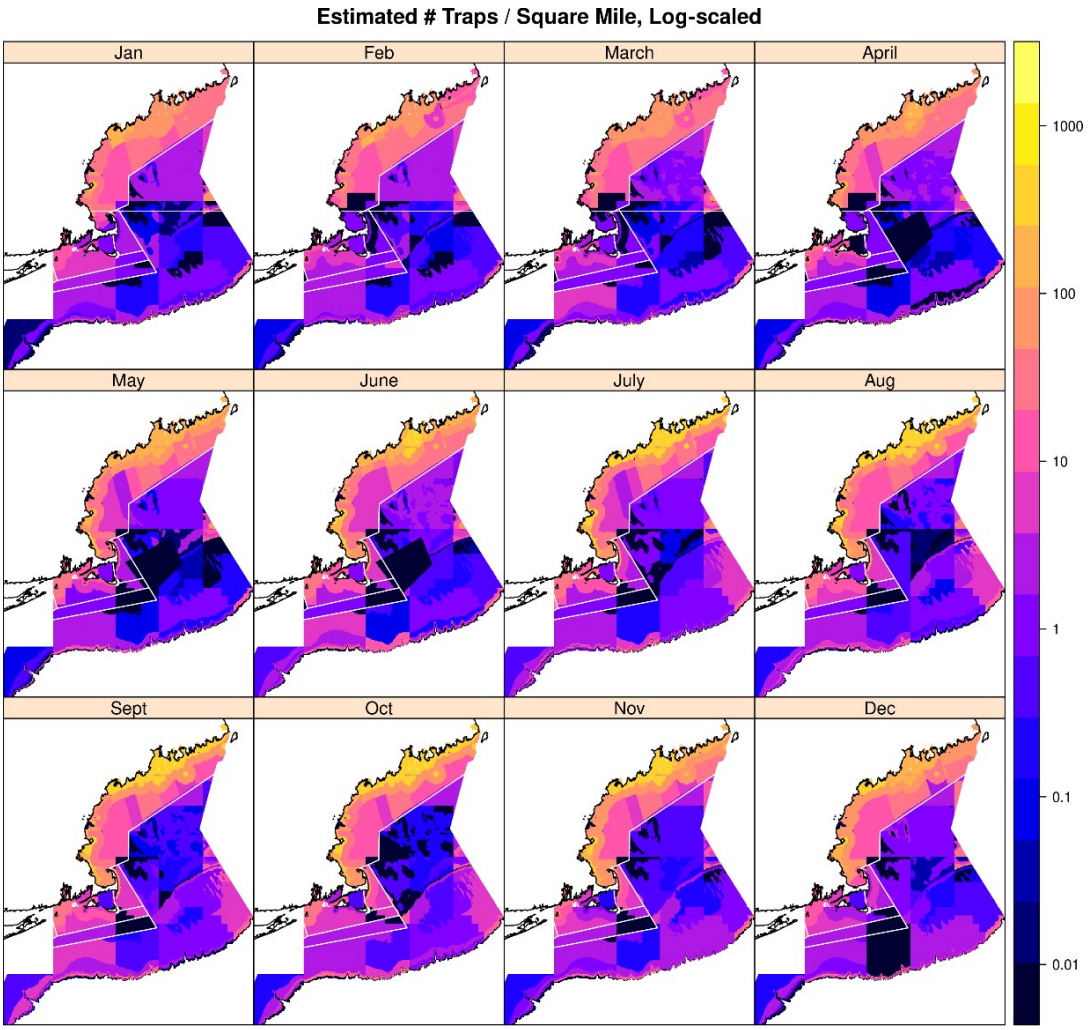

Figure 4.1.3.a. Default TrapMap input to the DST in traps per square mile.

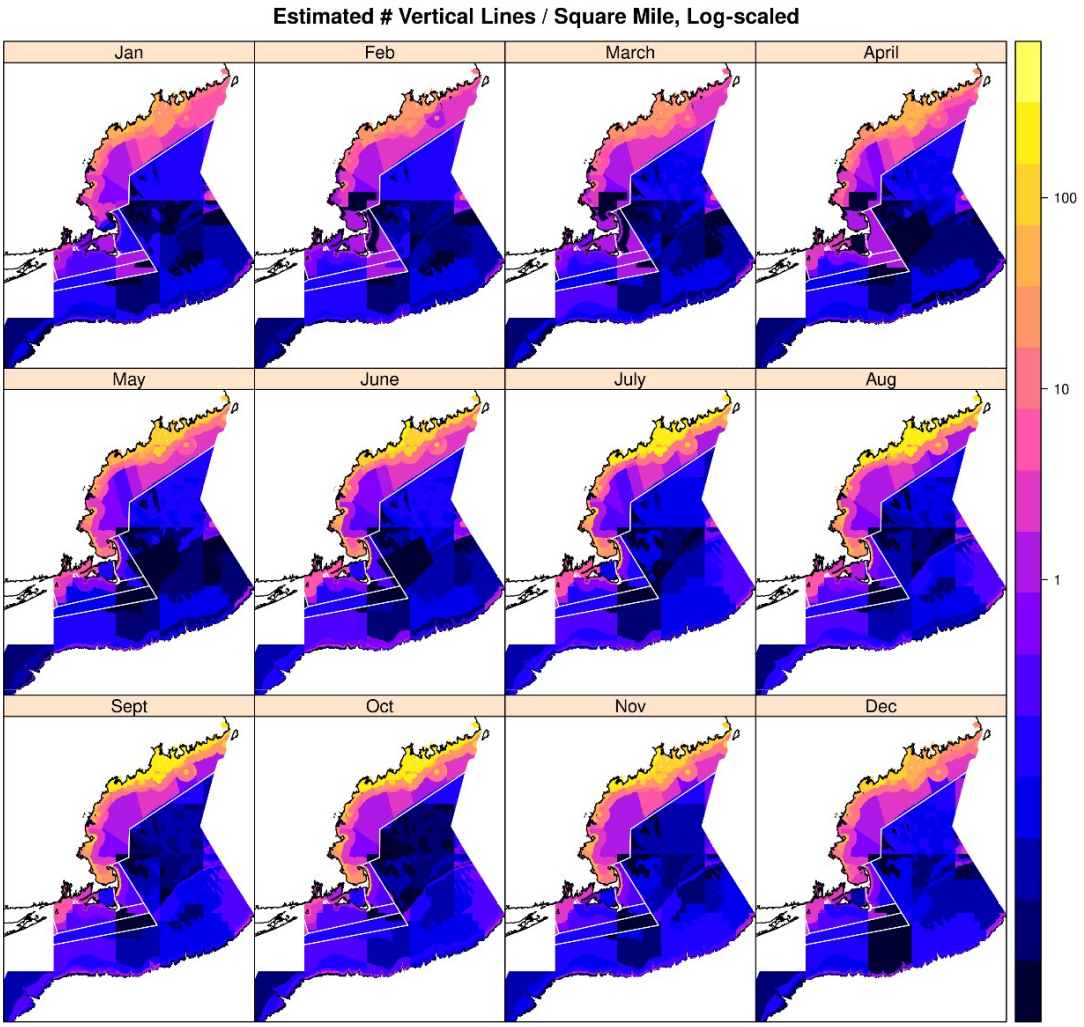

Figure 4.1.3.b. Vertical line densities (lines per square mile) under a default DST model run.

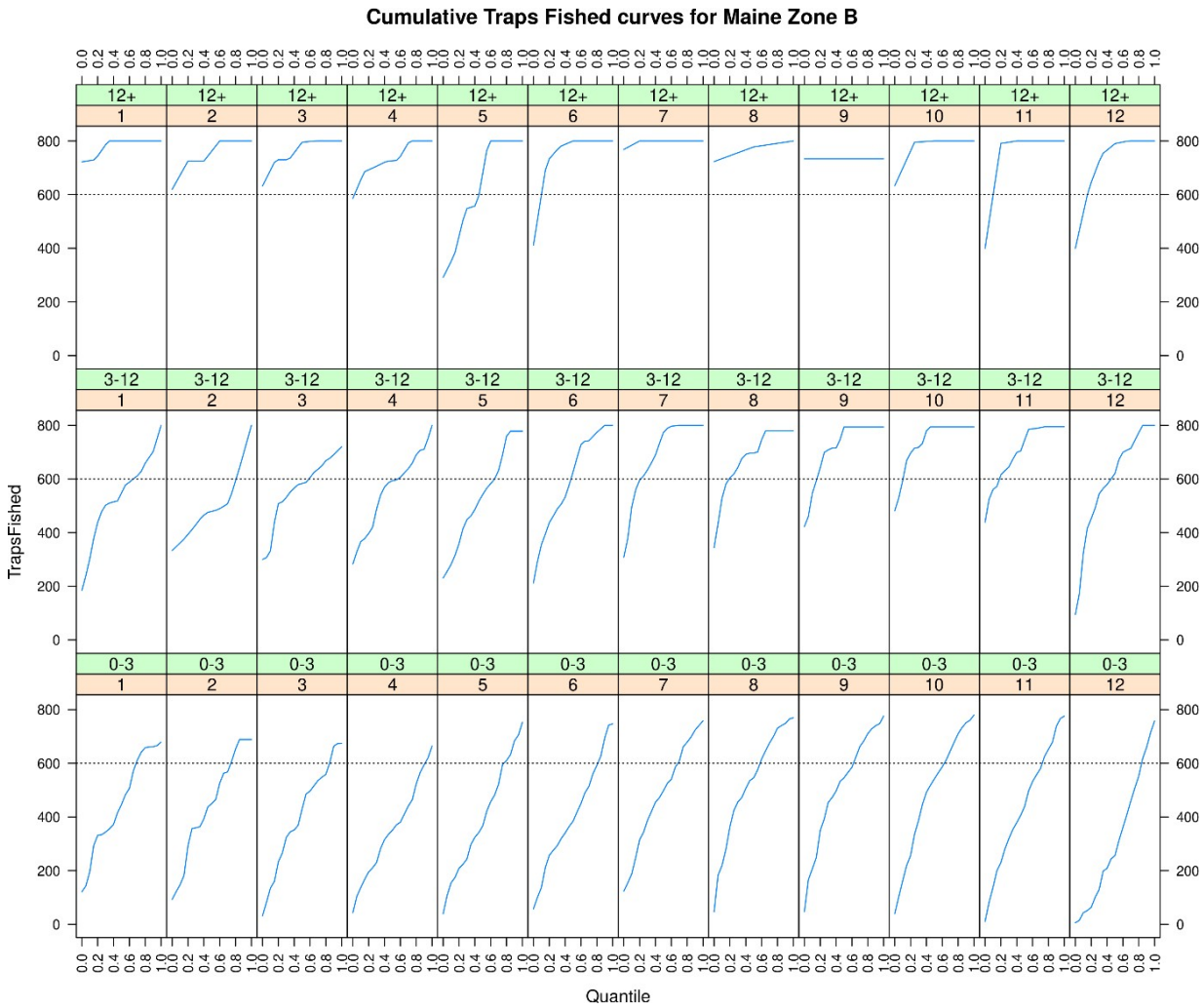

Figure 4.3.2.a. Sample quantile profiles of traps fished for Maine Zone B.

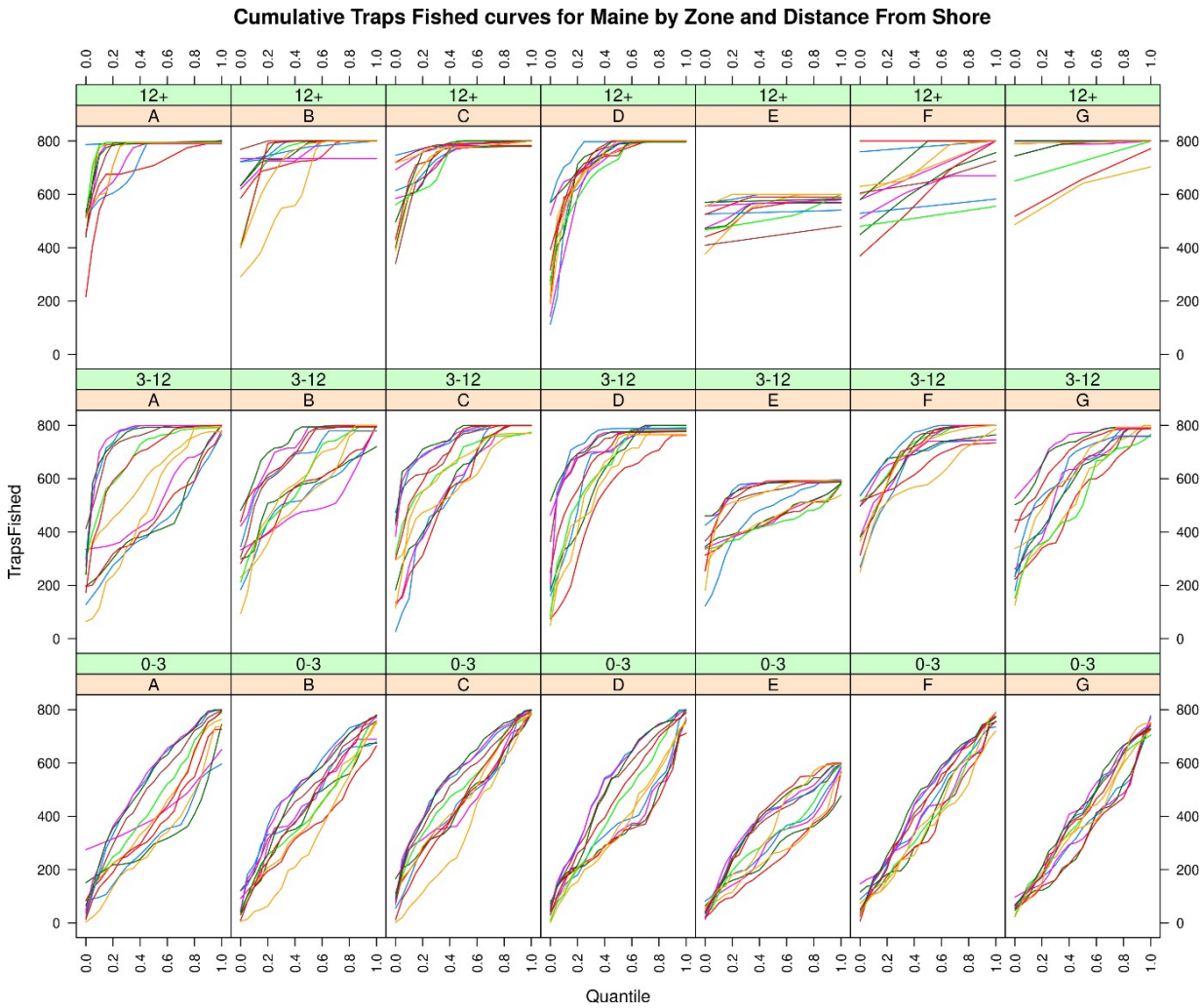

Figure 4.3.2.b Cumulative quantile curves of traps fished in Maine by lobster zone and distance from shore. Individual lines within each panel represent individual months.

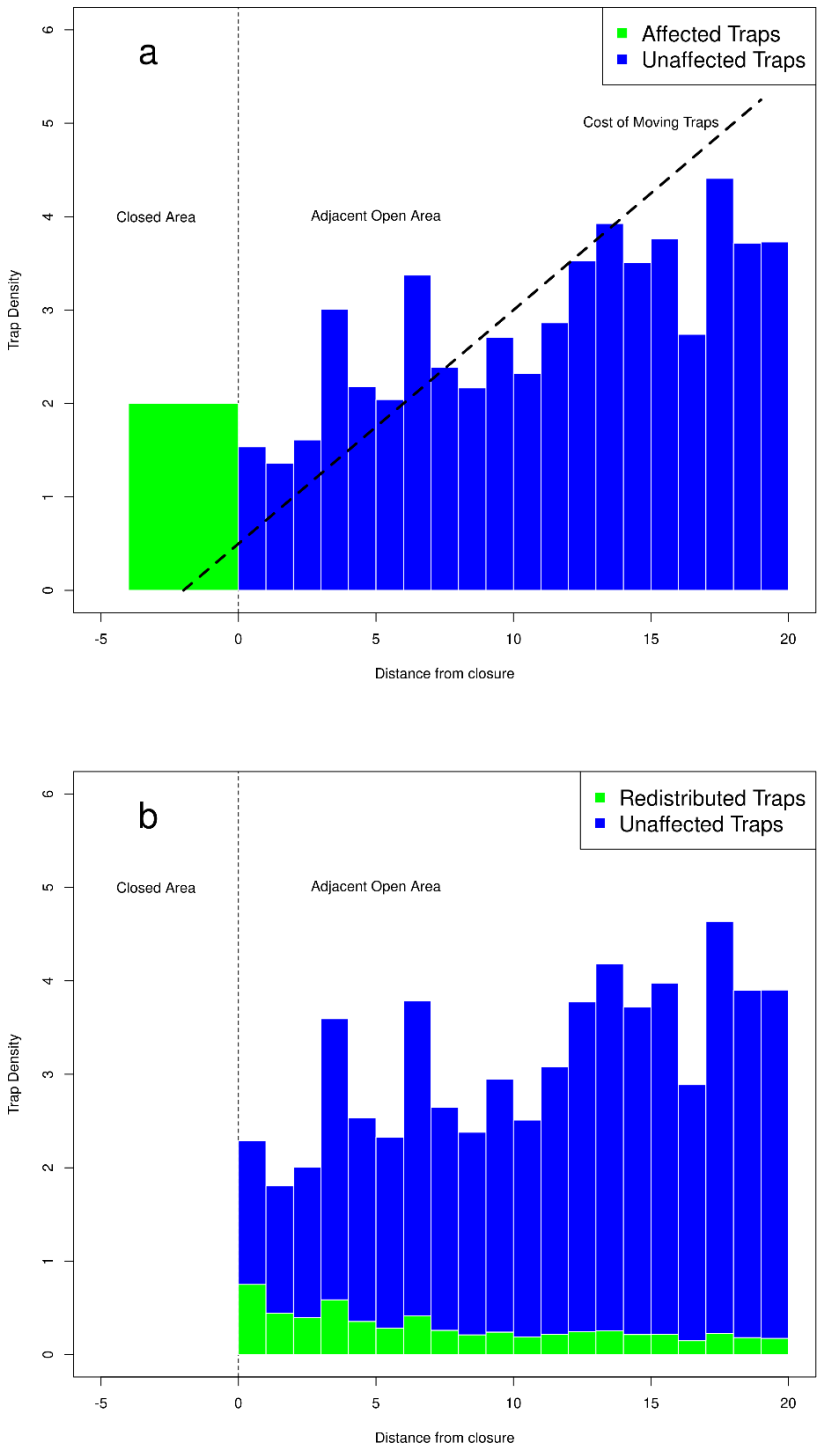

Figure 4.3.3.a. Illustration of the process of redistributing traps given a closure. (a) shows the traps inside the closure to be moved, the density of traps outside the closure, and the linear cost function of moving traps to greater distances. (b) shows the redistributed traps as a function of the density of adjacent traps and cost of redistribution.

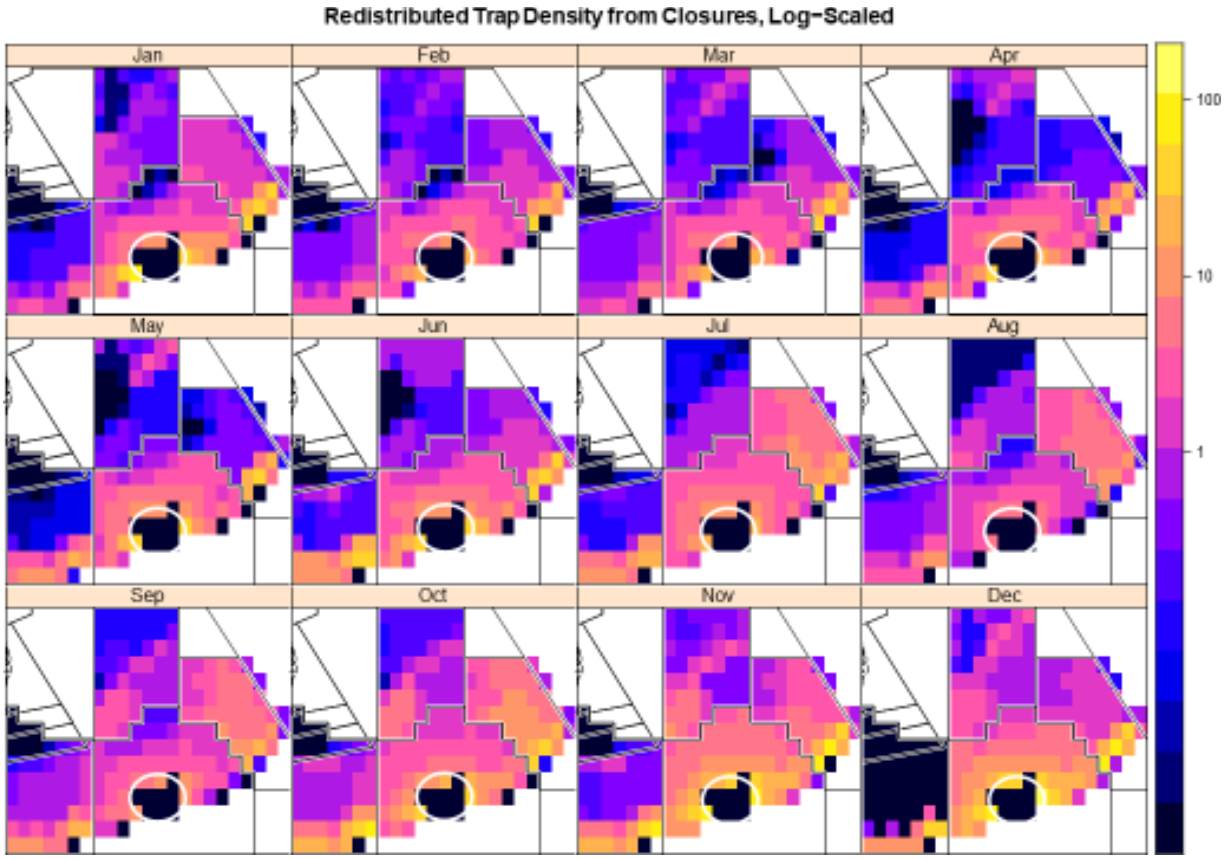

Figure 4.3.3.b. Example of trap redistribution model given the closure of the Canyons and Seamounts National Monument (white circle).

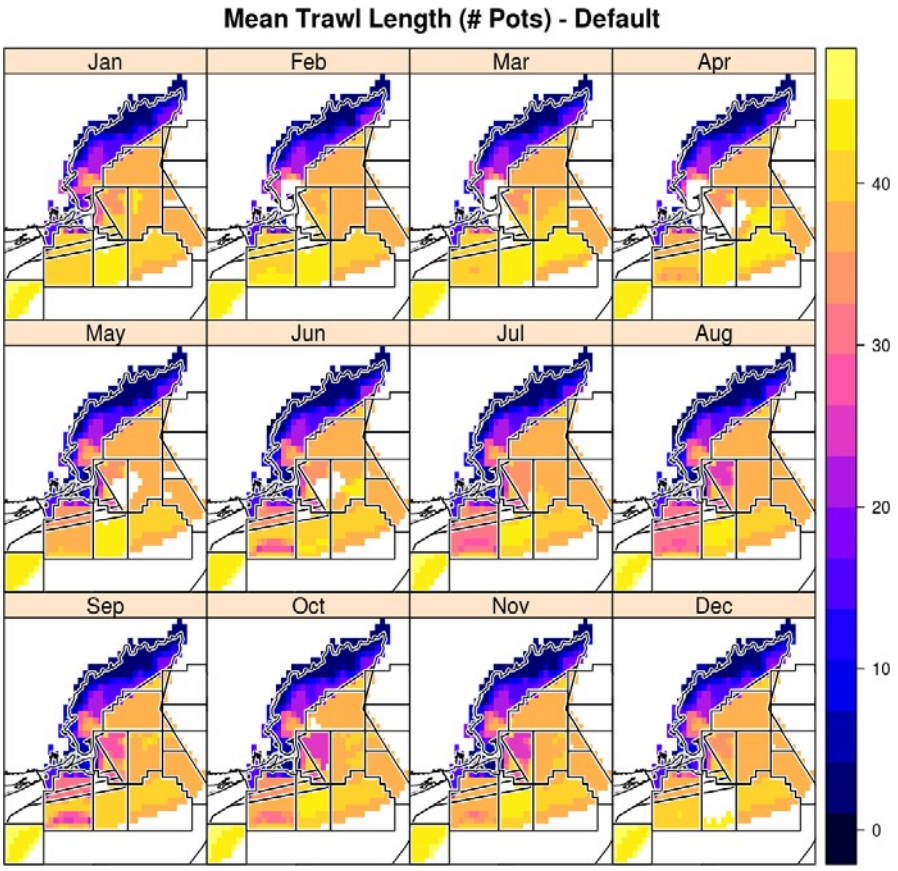

Figure 4.4.a. Mean trawl length (number of traps per trawl) for a default model run.

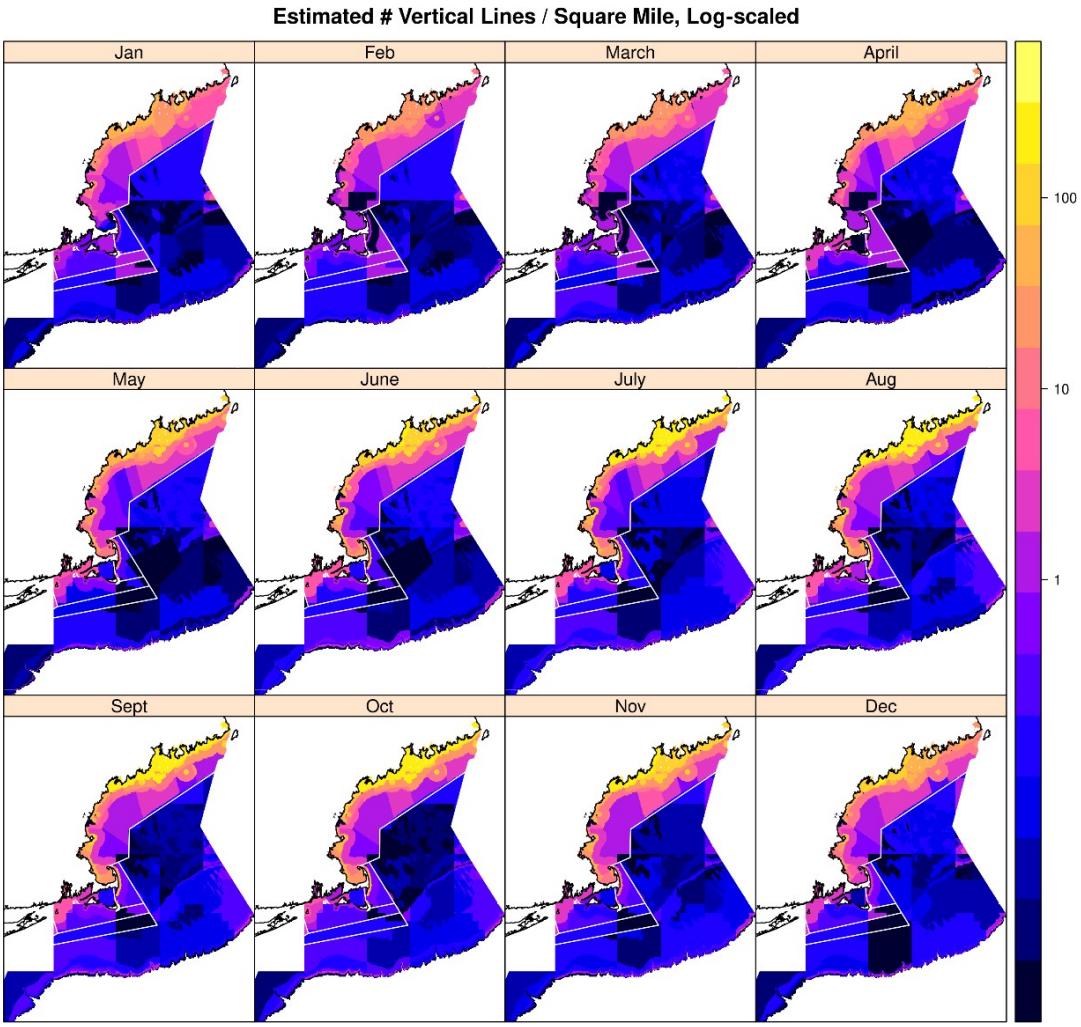

Figure 4.5.a. Number of endlines per square mile (log-scaled) for a default model run.

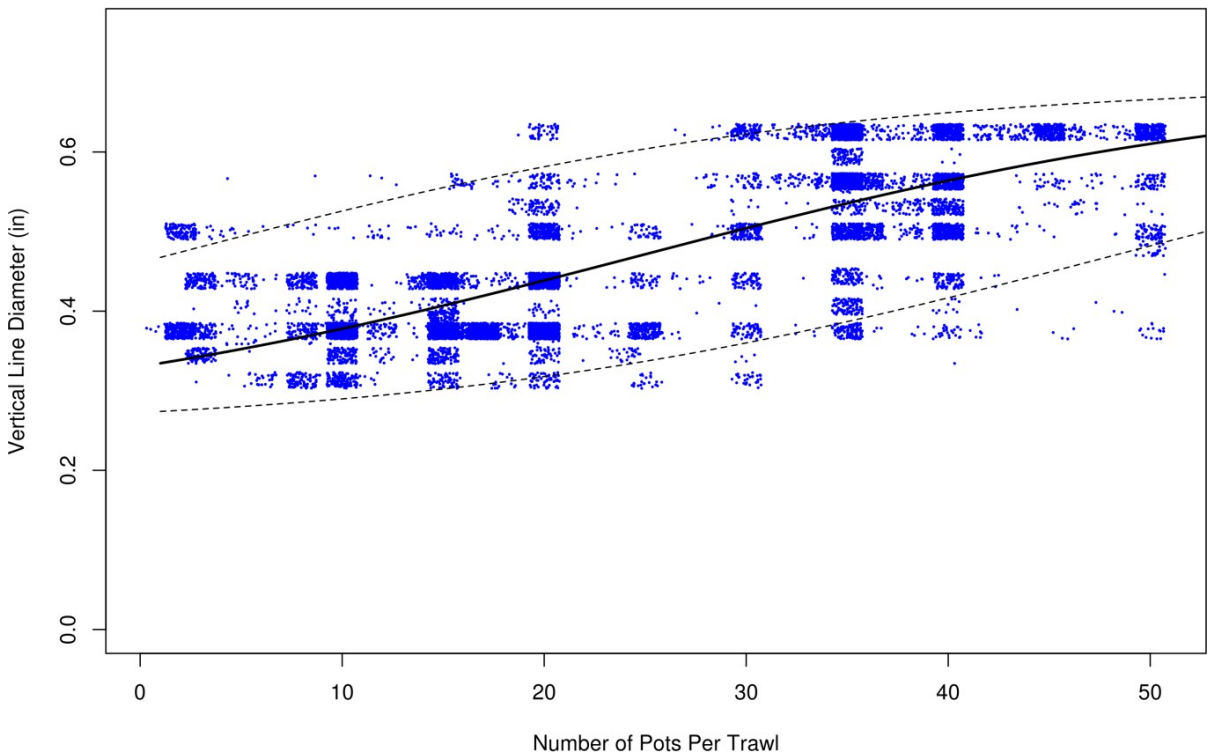

Figure 4.6.1.a Observed relationship between trawl length and vertical line diameter from observer data. Data points are 'jittered' to show density of data for discrete data intervals. Overlayed trendlines are the results of a logistic regression fitted to the data + / - 2sd.

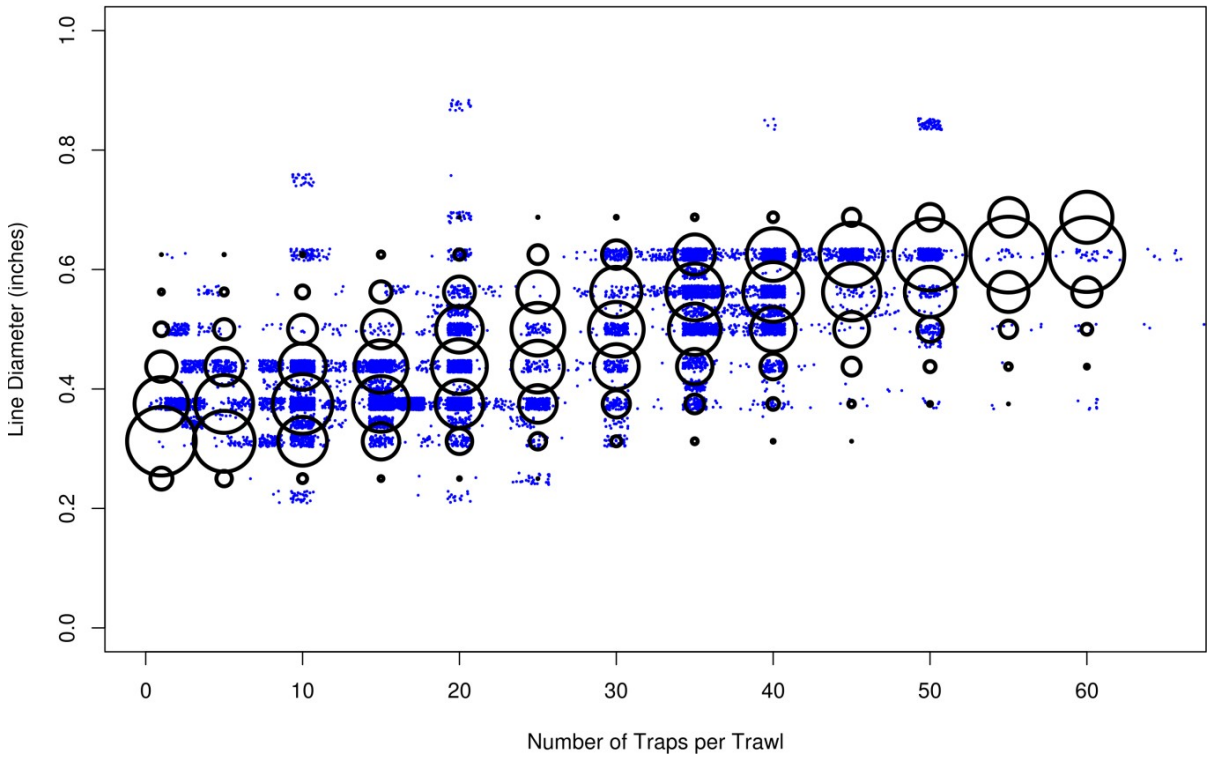

Figure 4.6.1.b. Observed (blue dots) and predicted (bubbles) relationship between trawl length and vertical line diameter.

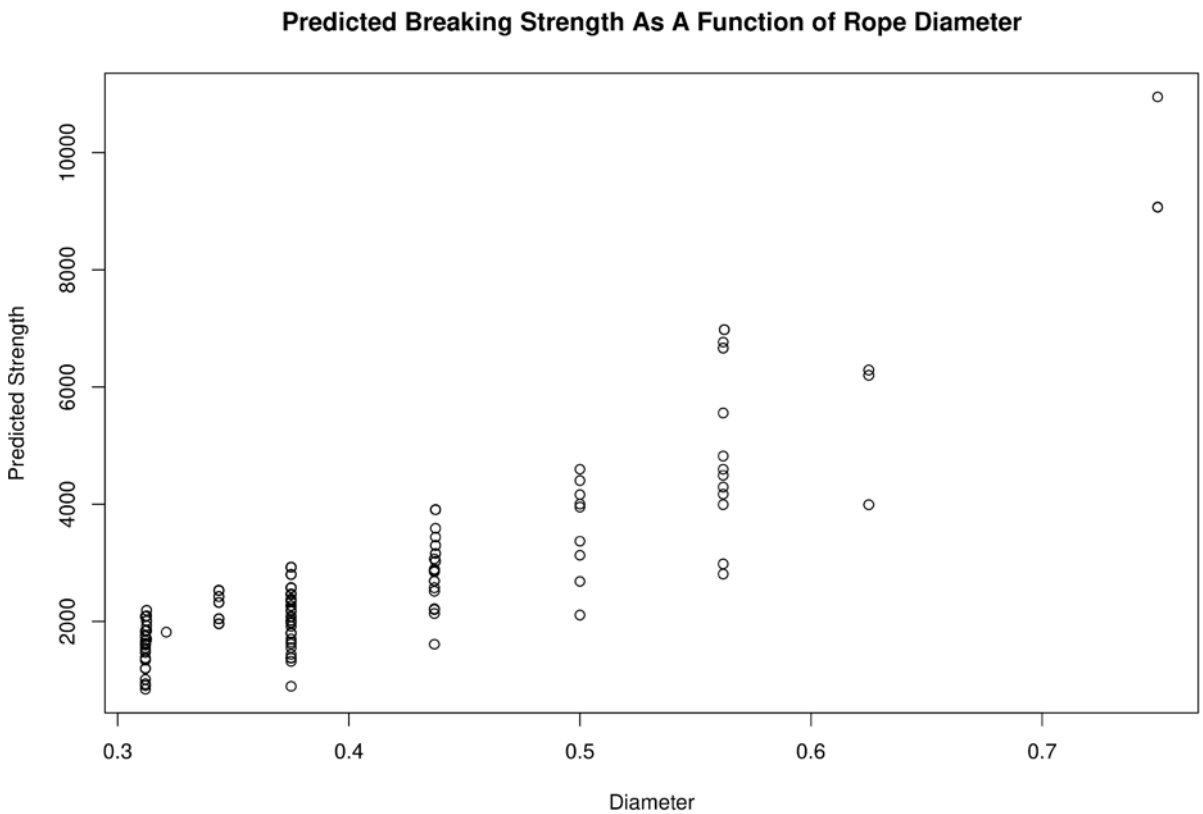

Figure 4.6.2.a. Relationship between rope diameter (inches) and observed breaking strength. Includes data for rope sections with splices and knots.

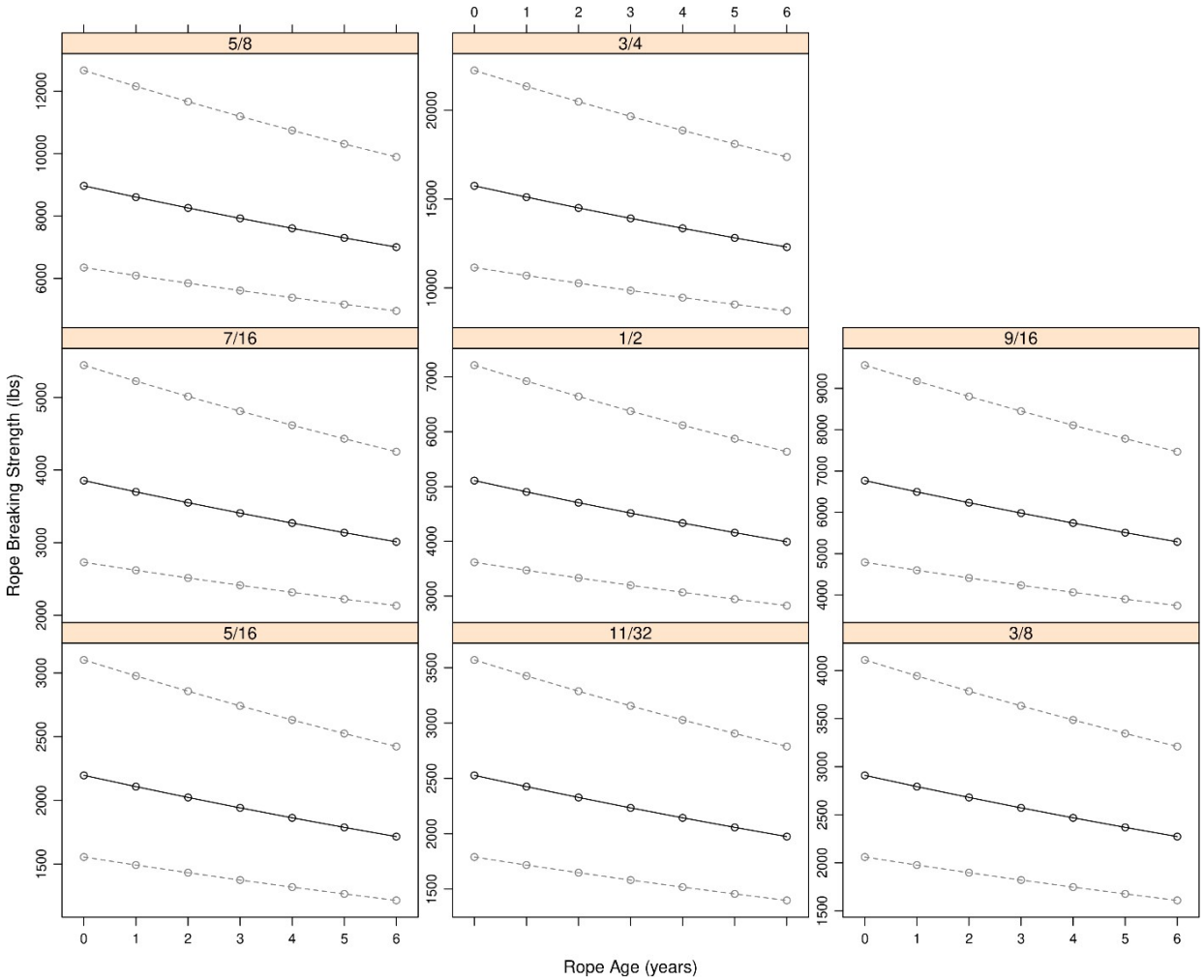

Figure 4.6.2.b. Predicted rope breaking strength (+ / - 2sd) and decreases with age from the combined rope strength data set.

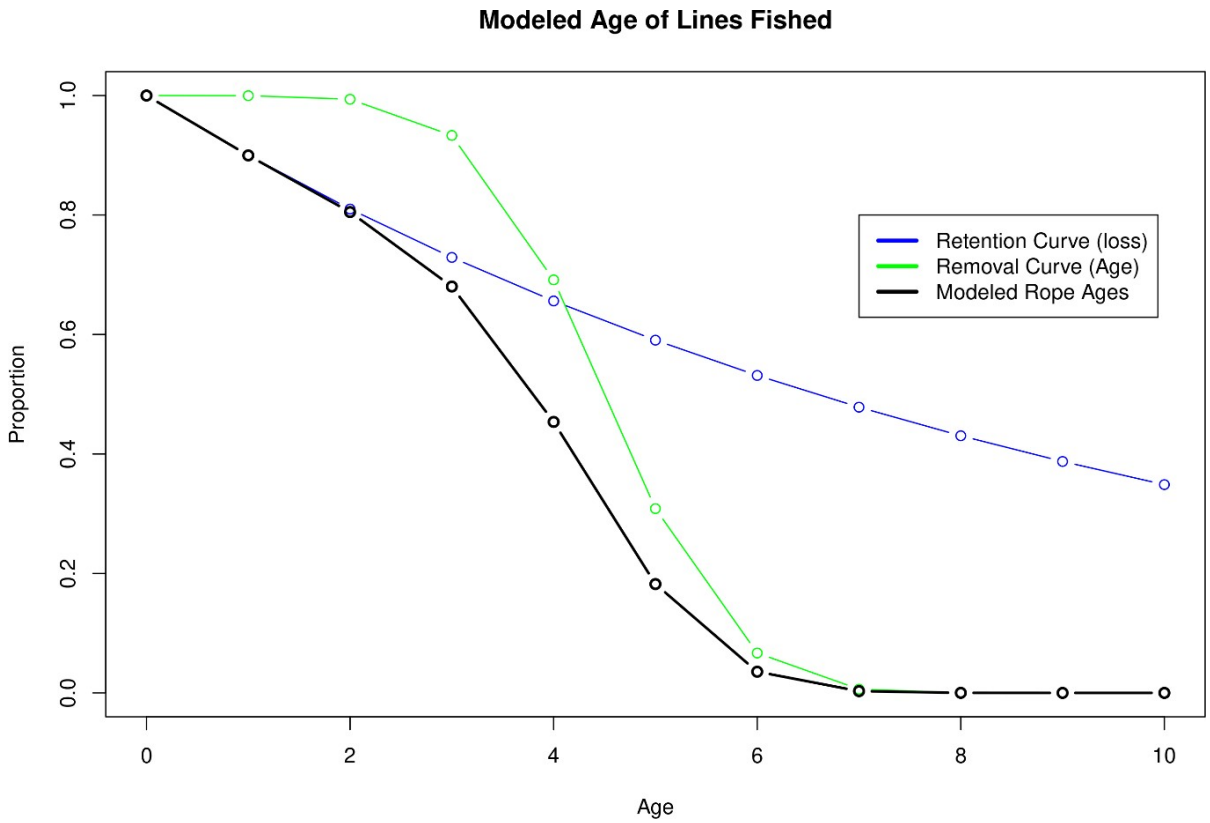

Figure 4.6.2.c. Modeled age of ropes in the active fishery as a function of random loss rates and active removal rates due to wear.

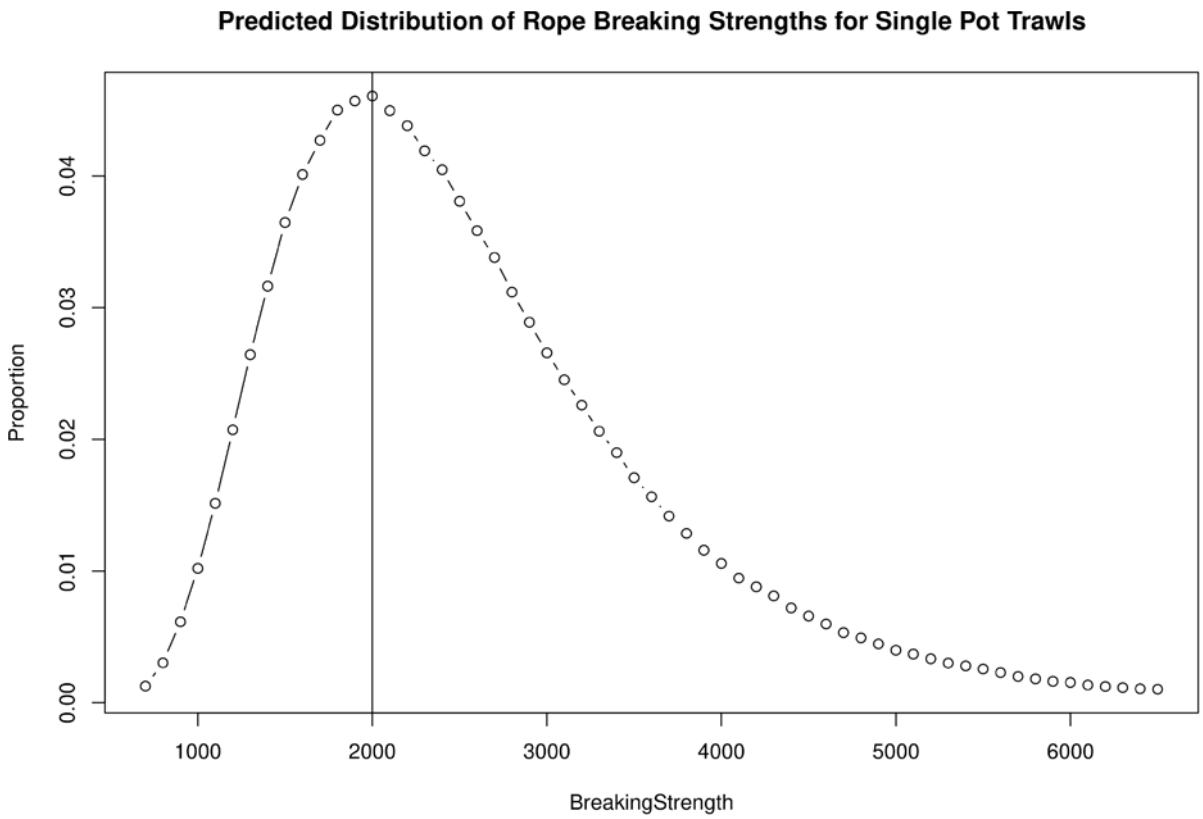

Figure 4.6.3.a. Example predicted distribution of breaking strength for endlines on single pot trawls

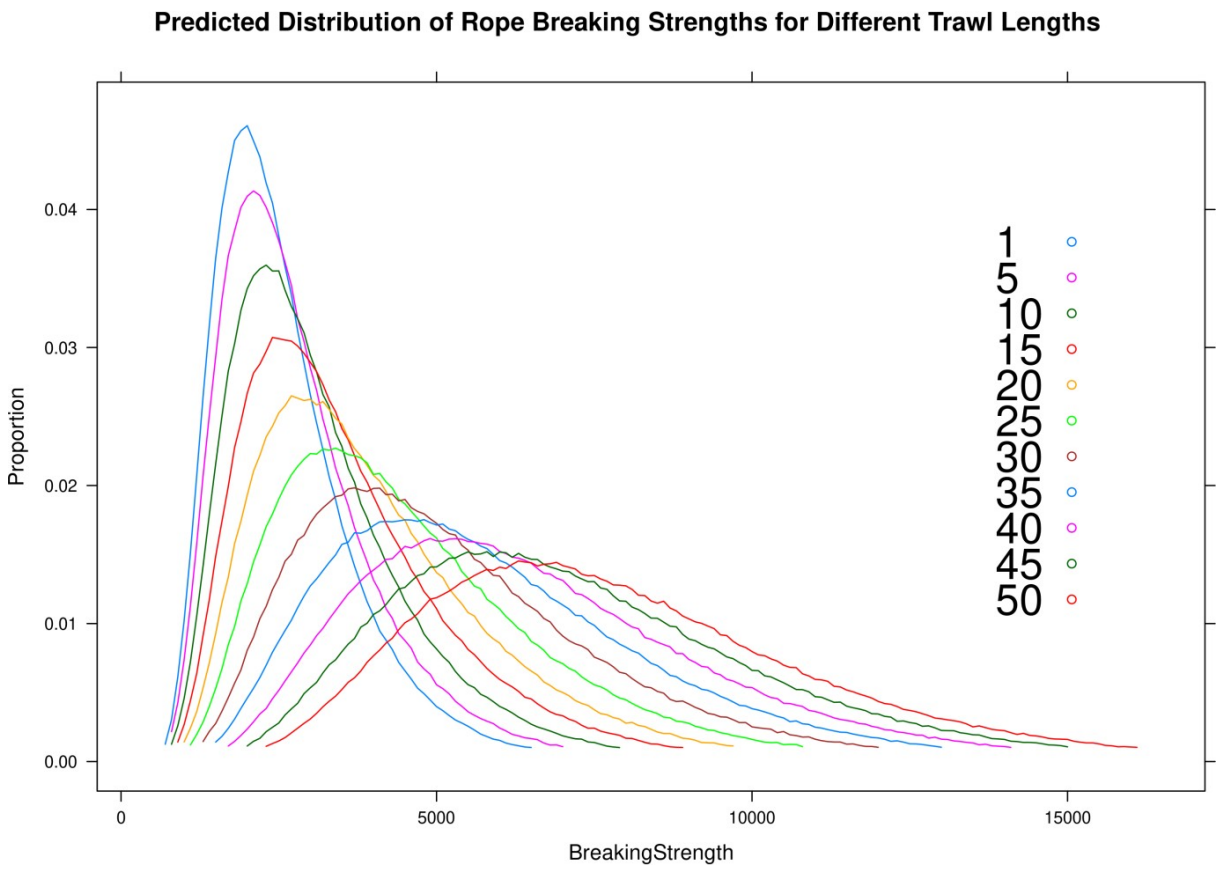

Figure 4.6.3b. Distributions of rope breaking strength for trawl lengths up to 50 pot trawls.

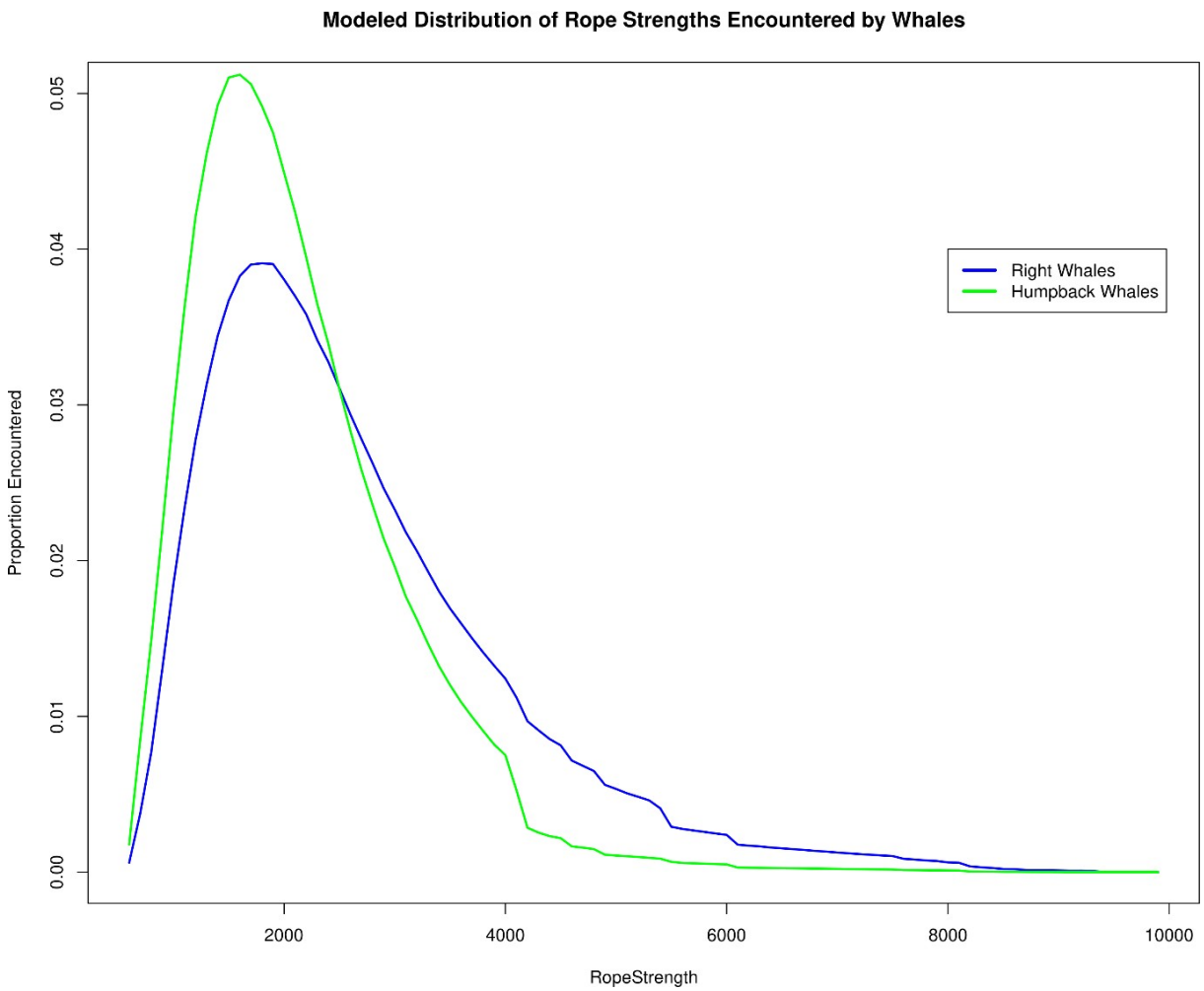

Figure 4.7.2.1.a Distribution of endline strengths whales would be expected to encounter, based on overlap of gear distributions and whale habitat models.

Figure 4.7.2.1.b Expected and observed distribution of rope strengths for Right Whales.

Figure 4.7.2.1.c Expected and observed distribution of rope strengths for Humpback Whales.

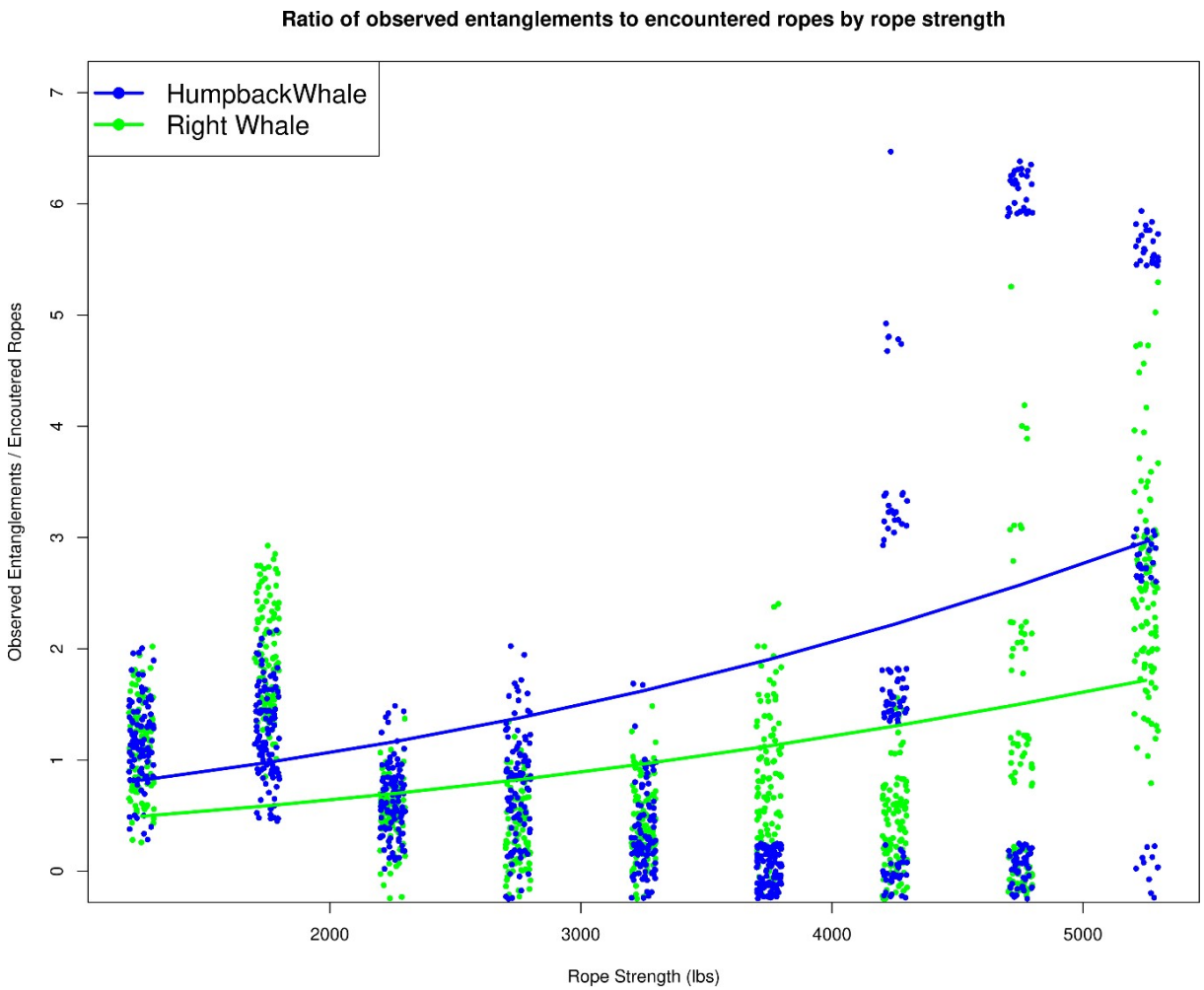

Figure 4.7.2.1.d Boot-strapped ratios of observed entanglement rope strength to expected encounter rope strength with fitted lines for Right Whales and Humpback Whales. The increase in ratio with rope strength is statistically significant but the species effect is not. Note lack of fit at intermediate and high rope strengths.

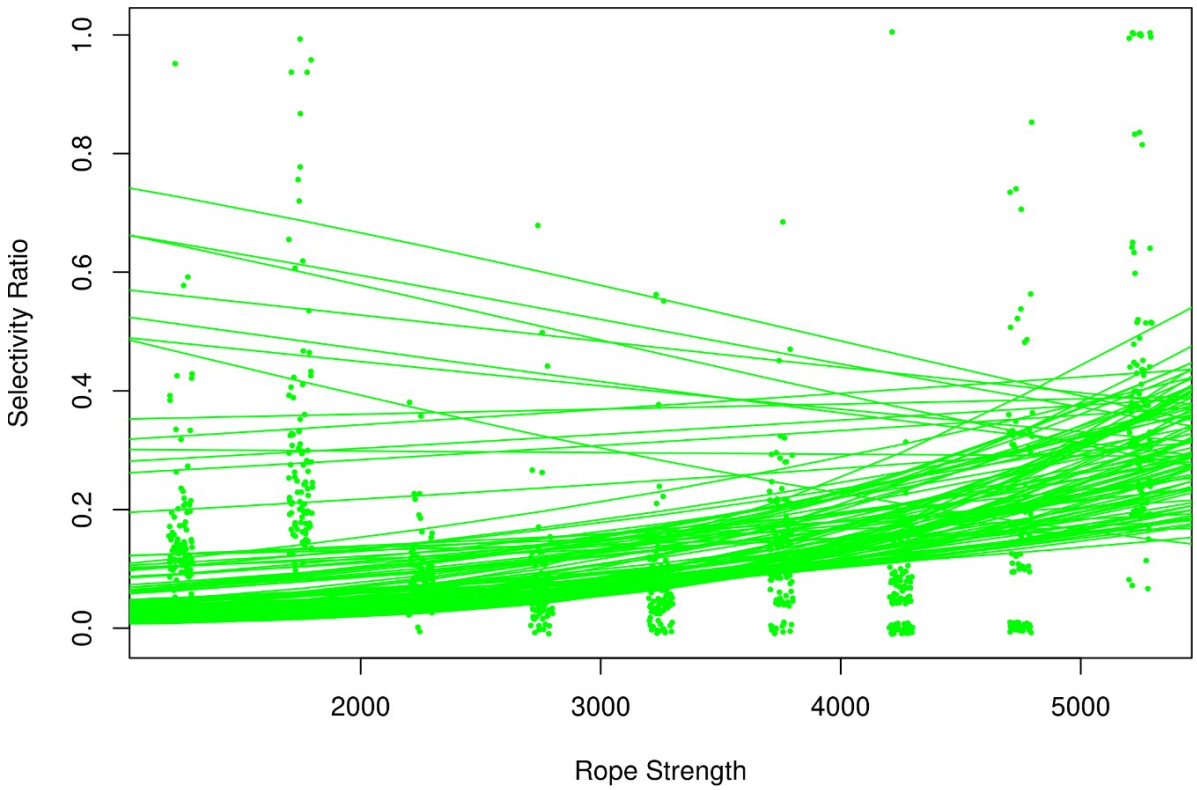

Figure 4.7.2.1.e. Example bootstrapped threat models from the relationship between rope strength and apparent selectivity ratio for Right Whales.

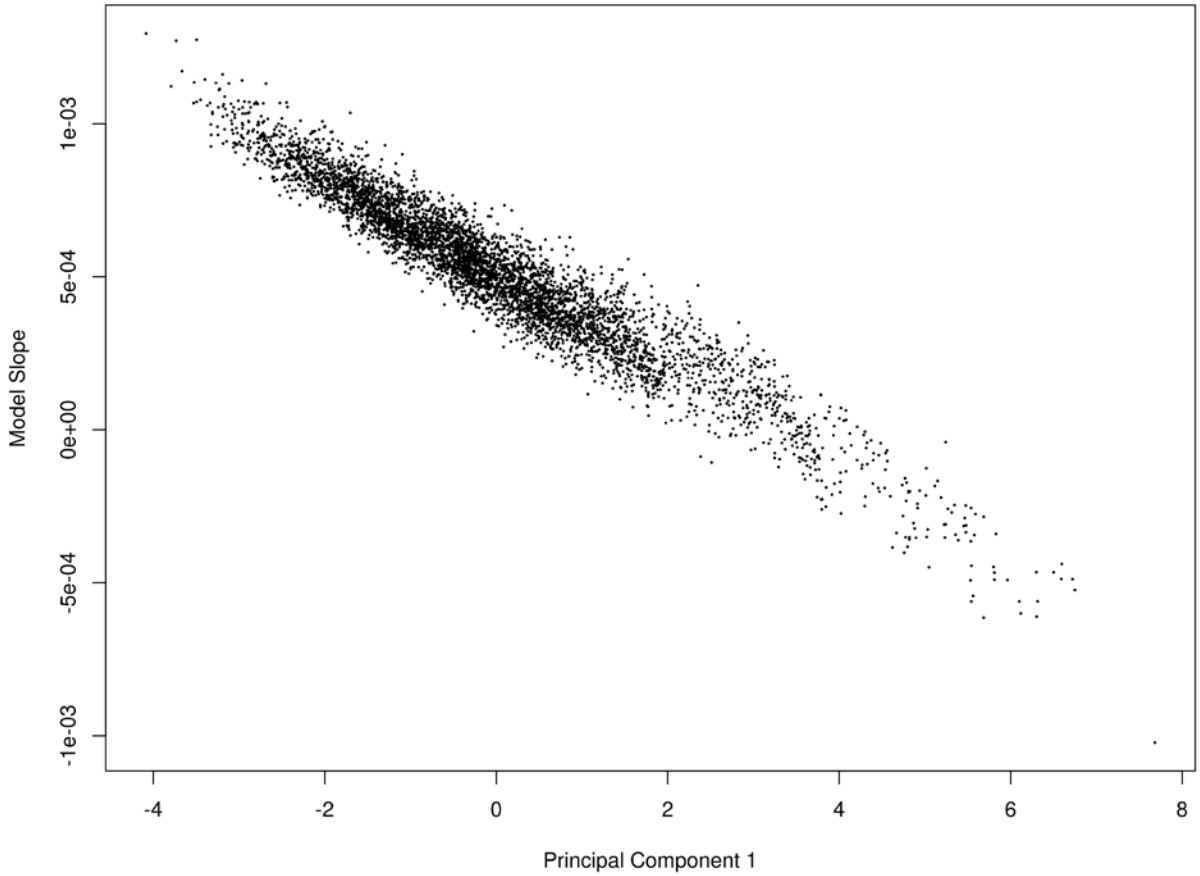

Figure 4.7.2.1.f. Relationship between threat model slope and first principal component.

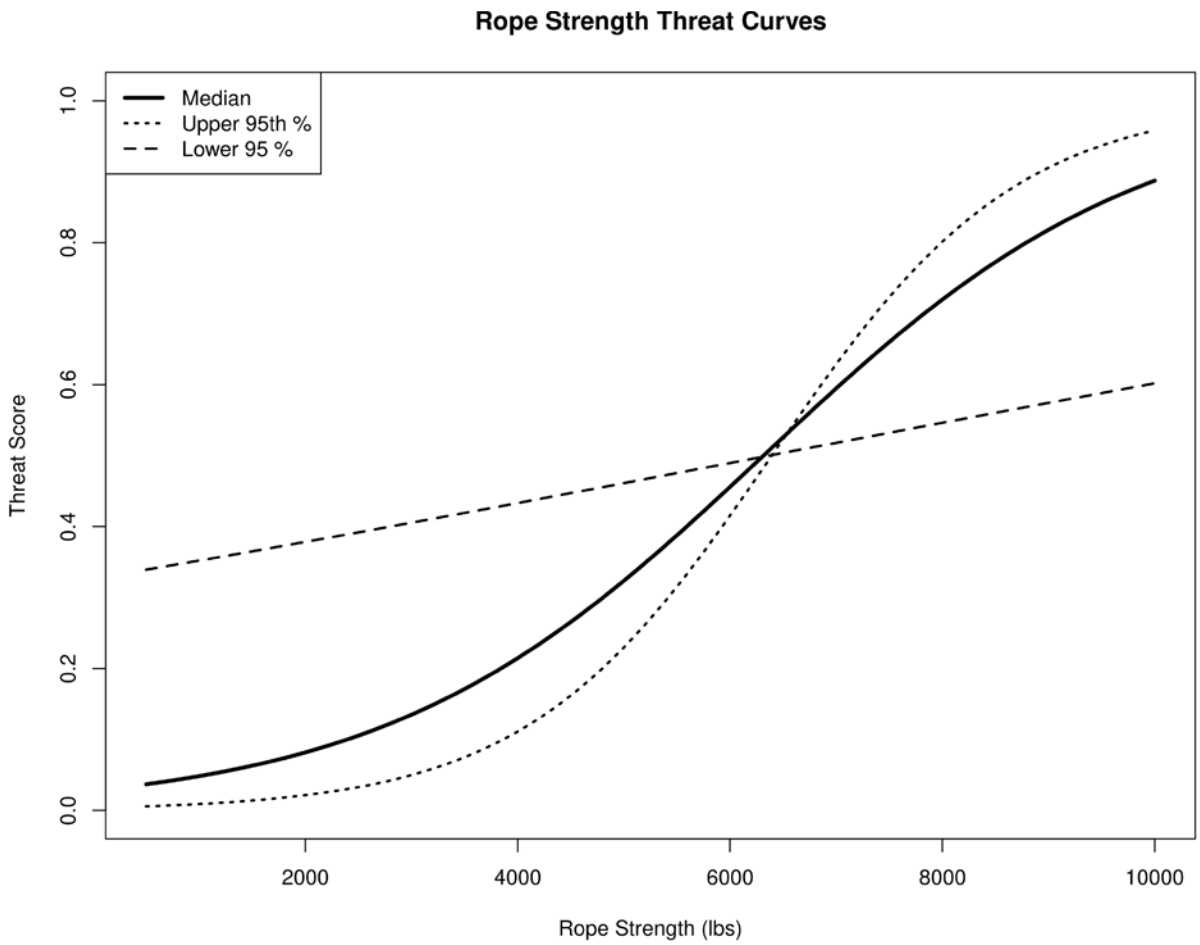

Figure 4.7.2.1.g. Alternate threat curves representing the median, upper and lower bounds on the relationship between rope strength and threat.

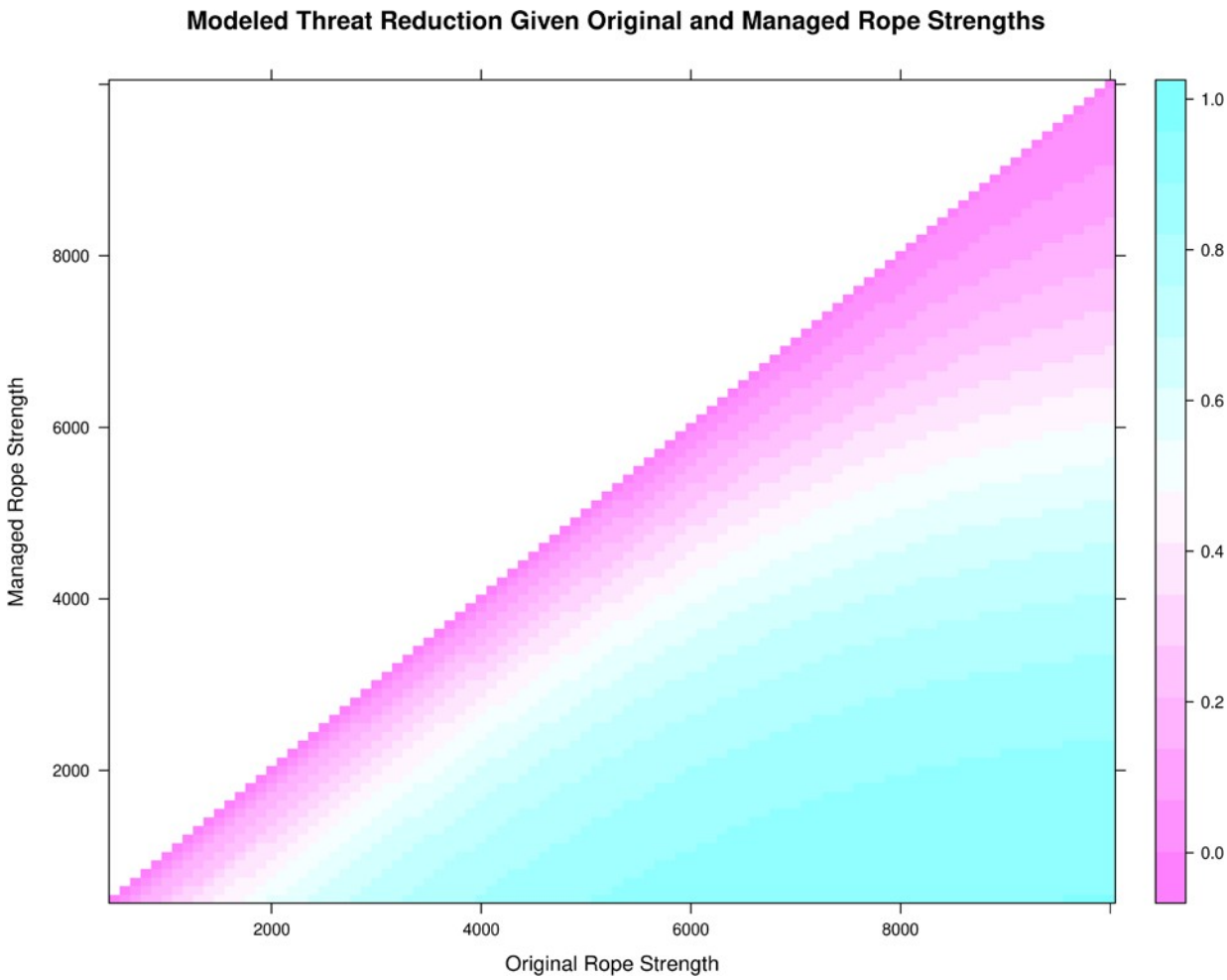

Figure 4.7.2.1.h. Relative threat surface derived from the median threat curve. Surface values represent the reduction in threat based on the ratio of threat scores between pre-management (x-axis) and post- management (y-axis) rope strengths. Thus, values along the diagonal represent no change in rope strength while the area below the diagonal represent decreases in rope strength.

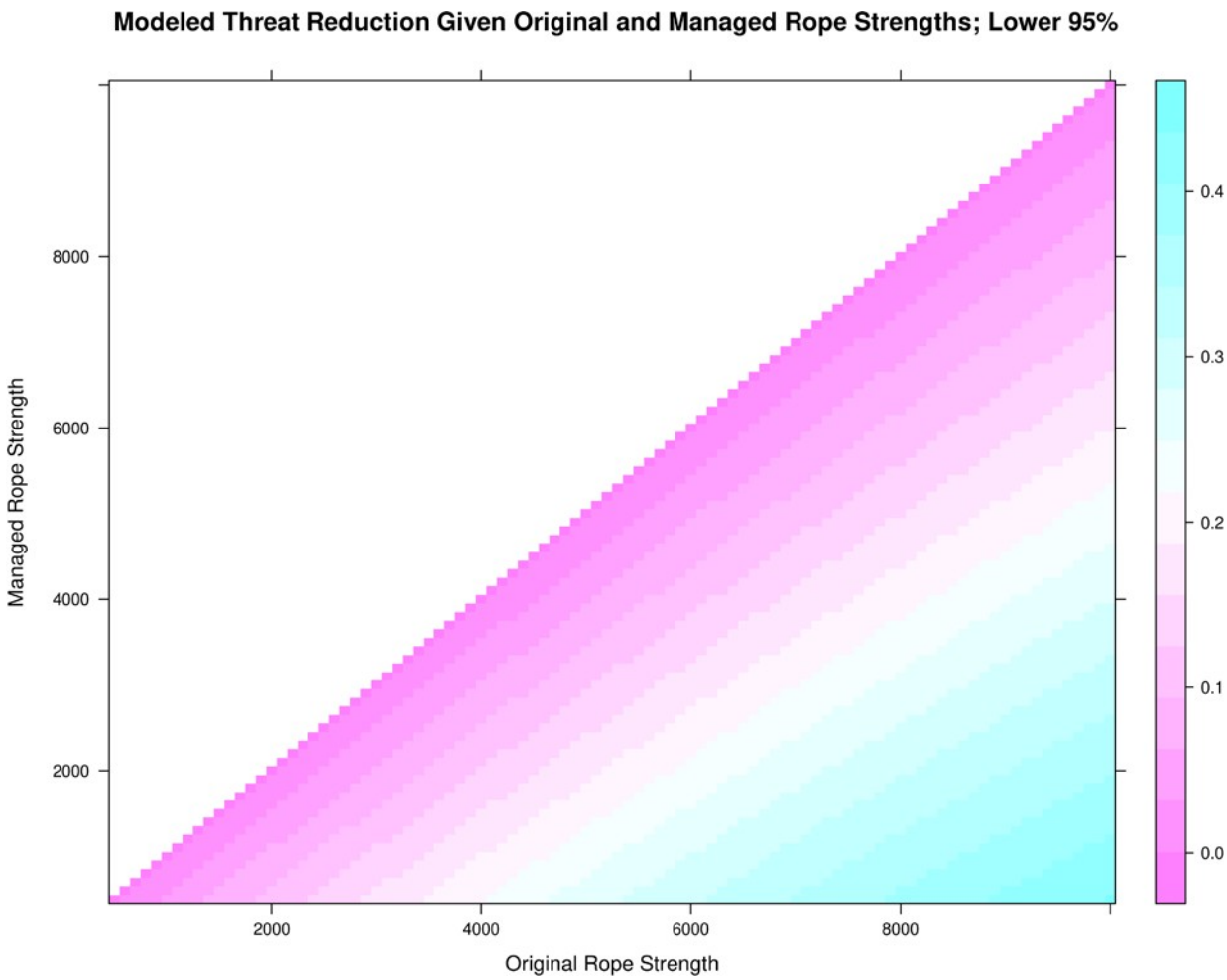

Figure 4.7.2.1.i. Relative threat surface derived from the lower bound threat curve. Surface values represent the reduction in threat based on the ratio of threat scores between pre-management (x-axis) and post-management (y-axis) rope strengths. Thus, values along the diagonal represent no change in rope strength while the area below the diagonal represent decreases in rope strength.

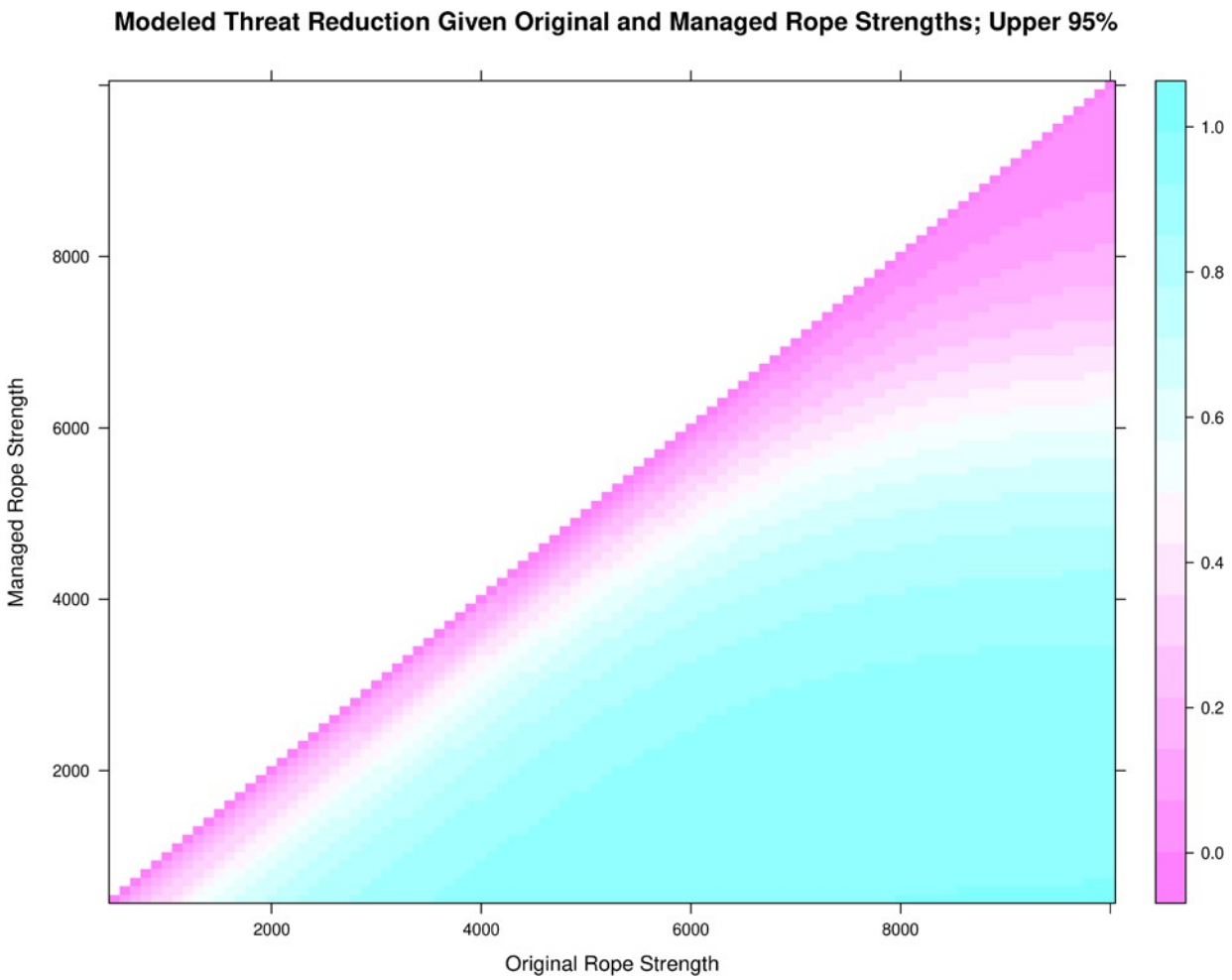

Figure 4.7.2.1.j. Relative threat surface derived from the upper bound threat curve. Surface values represent the reduction in threat based on the ratio of threat scores between pre-management (x-axis) and post-management (y-axis) rope strengths. Thus, values along the diagonal represent no change in rope strength while the area below the diagonal represent decreases in rope strength.

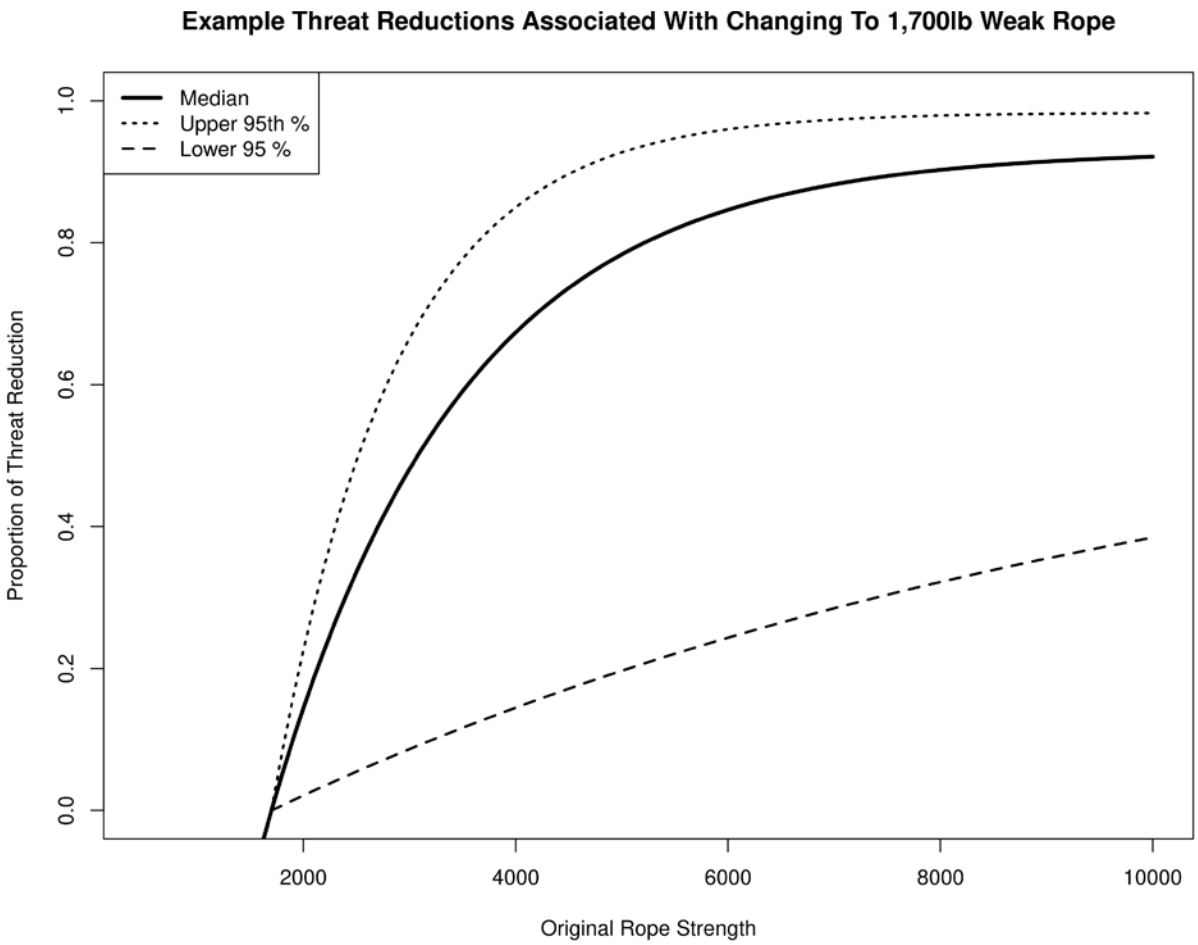

Figure 4.7.2.1.k. Threat reduction for decreasing rope strength to 1,700 lbs for the median, upper and lower bound threat curves.

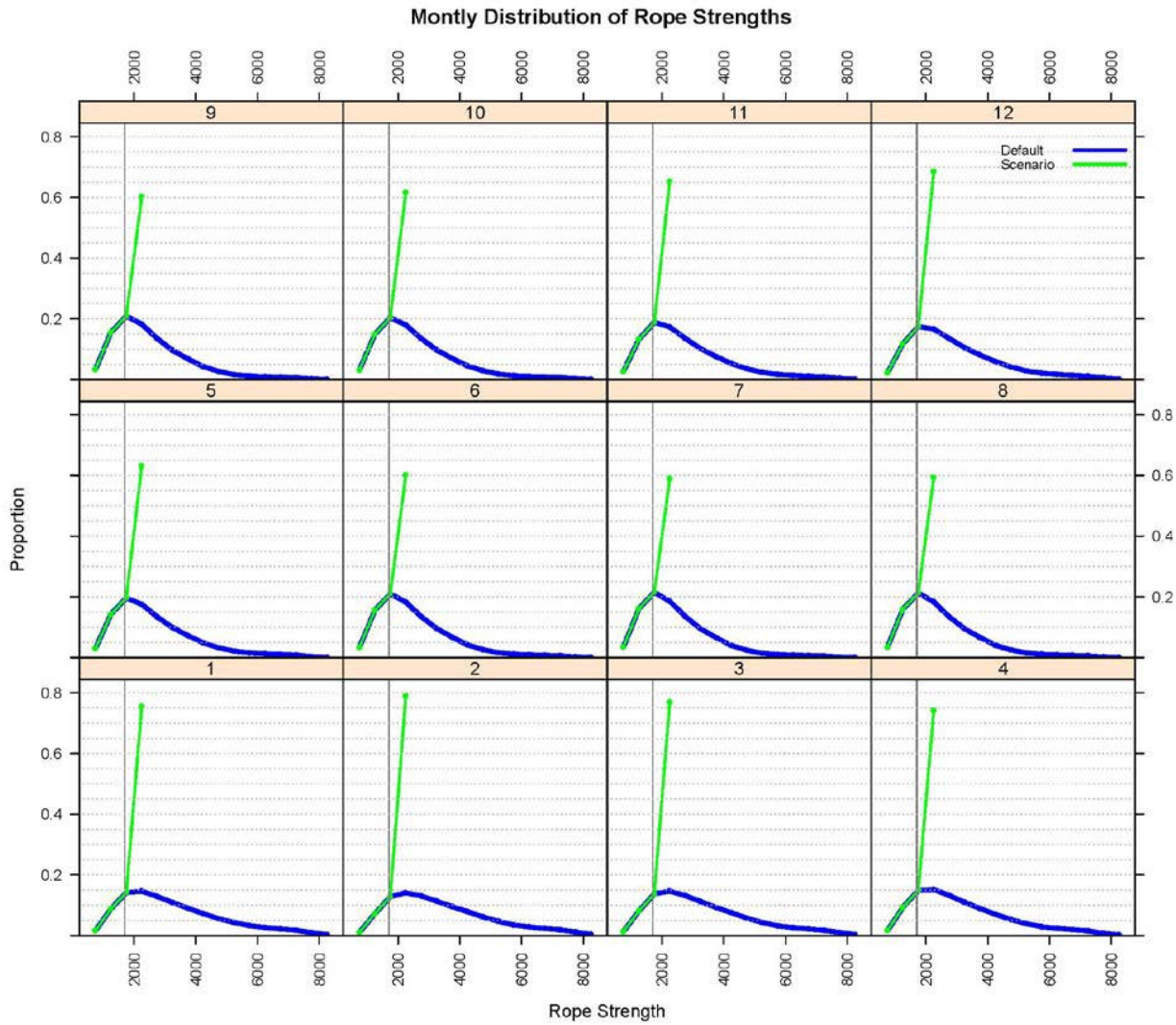

Figure 4.7.2.1.l. Distributions of rope strengths associated with a DST model run where maximum rope strength is decreased to 2,250 lbs.

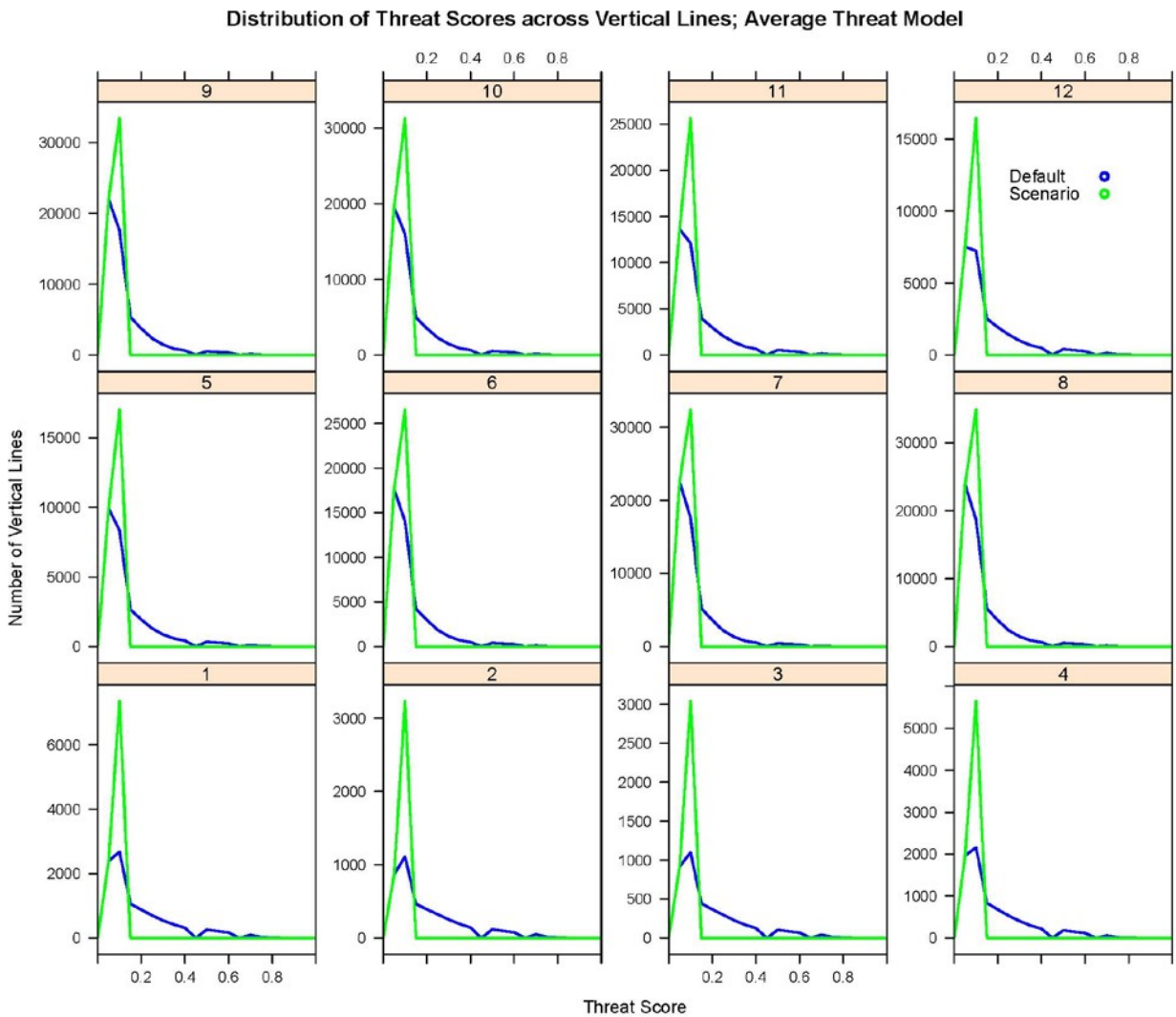

Figure 4.7.2.1.m. Distribution of gear threat scores for scenario vs default conditions for the median threat curve.

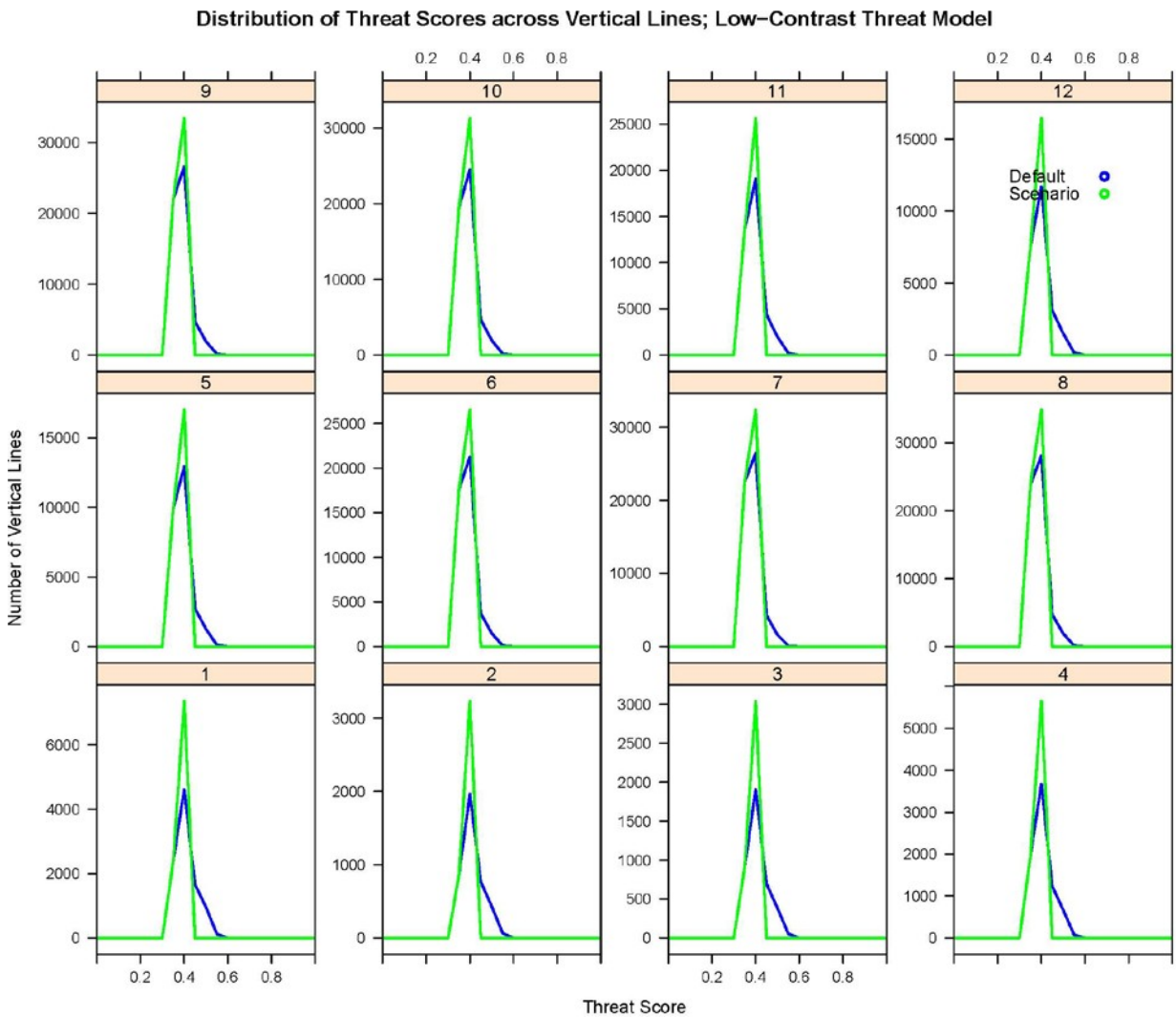

Figure 4.7.2.1.n. Distribution of gear threat scores for scenario vs default conditions for the lower-bound threat curve.

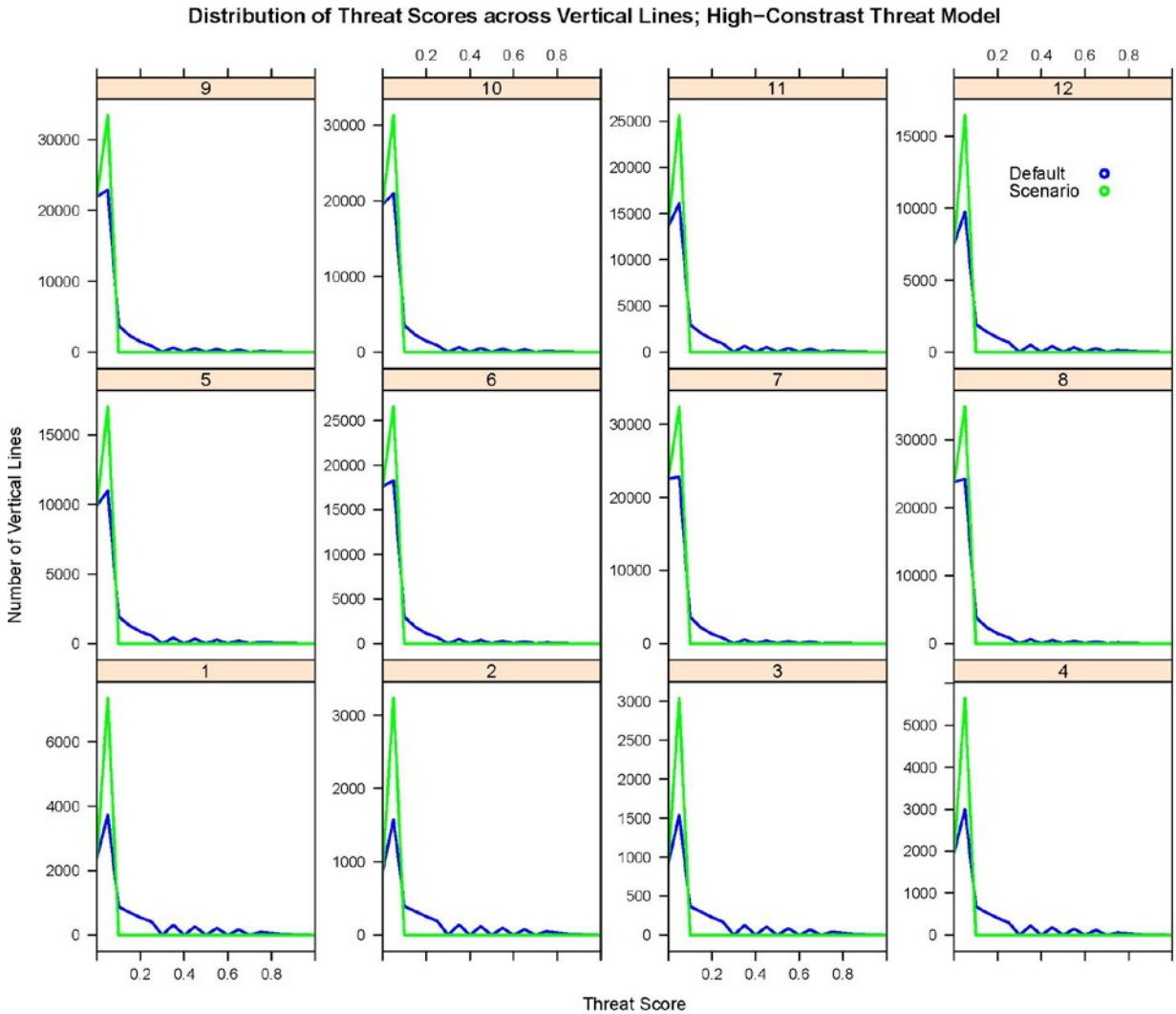

Figure 4.7.2.1.n. Distribution of gear threat scores for scenario vs default conditions for the upper-bound threat curve.

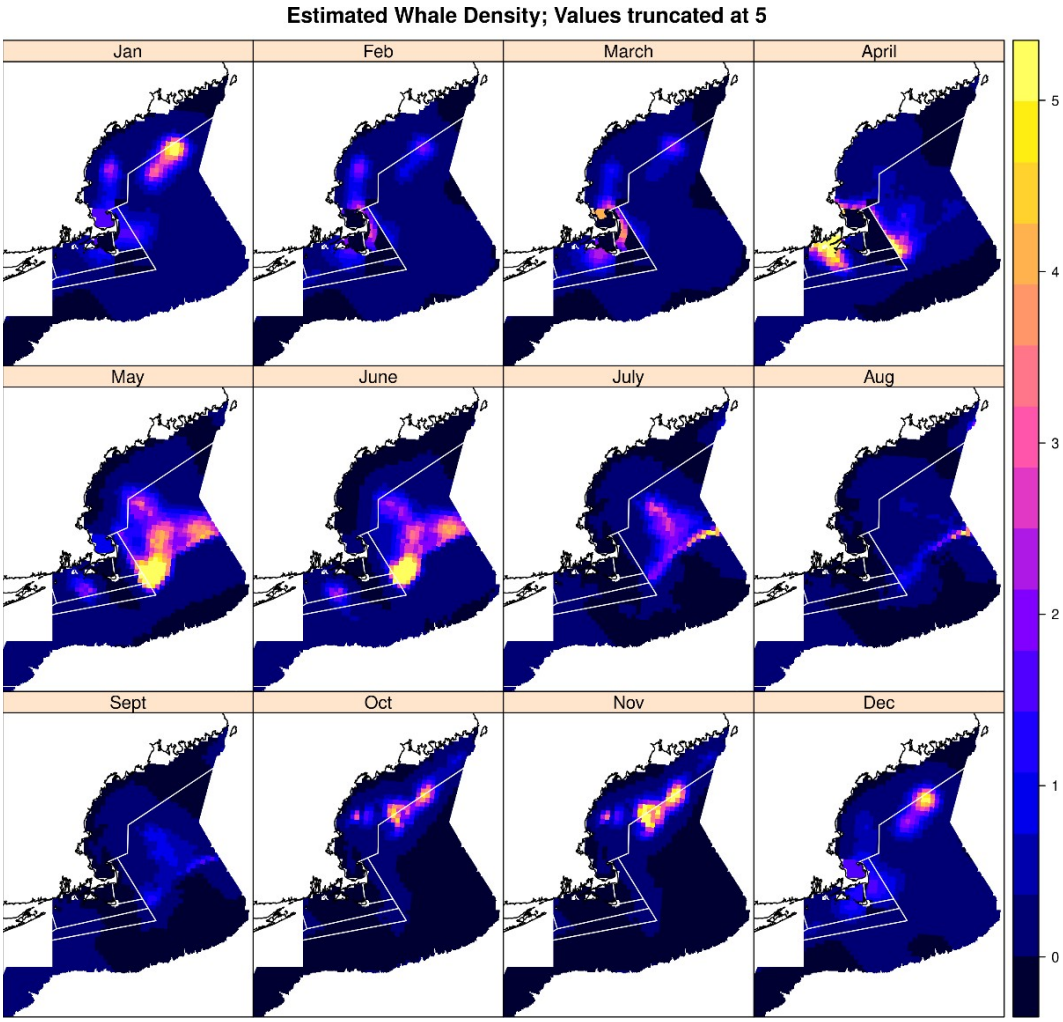

Figure 4.8.a. Monthly Right Whale density as predicted from the Roberts 2016 whale habitat model. High values were truncated at 5 to show contrast for intermediate values.

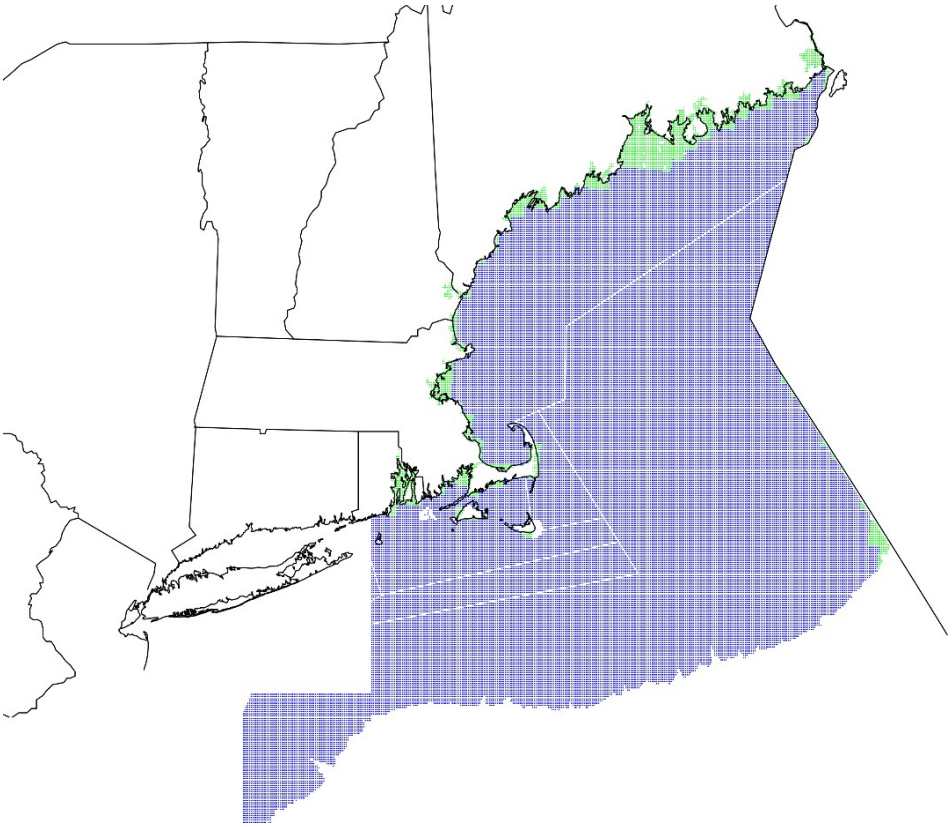

Figure 4.8.b. Spatial extent of the DST with areas in green showing where co-located whale density values are not available from the whale habitat model.

Table 4.1.2.1.a Number of trawls observed by federal observers by year and statistical area. Offshore LMA3 statistical areas are shown in yellow.

Statistical Area	2012	2013	2014	2015	2016	2017	2018	Total
464	111	115	90	284				600
465	31	16	58	49				154
511			2	470				472
512	29	46	165	797	163			1200
513	134	614	290	2155	567	223	188	4171
514	29	3	183	583	145	54	77	1074
515	76	136	161	145				518
521	66			186	15	6		273
522		7	34	155				196
525	39	41	36	196				312
526			174	738				912
537			140	589	52	1	26	808
538			23	48	1	4	32	108
539			65	93		48	7	213
561	14	241	186	293				734
562	108	77	103	739				1027
611			39	58	100	84	18	299
612			163	263	323	241	146	1136
615			50	136	88		2	276
616			149	90				239
621			55	41	17	119	73	305
622			59			42	50	151
Total	637	1296	2225	8108	1471	822	619	

Table 4.1.2.5.a Estimated number of vertical lines in LMA3 for the Jonah crab, lobster, and combined fishery, compared to line estimates from the IEc

Month	Crab_Model	Lobster_Model	NMFS_Total	IEc
1	889	2,077	2,965	3,182
2	954	1,996	2,950	3,375
3	1,036	1,667	2,703	3,357
4	906	1,360	2,266	2,786
5	988	1,957	2,944	3,008
6	967	3,083	4,050	3,428
7	659	3,316	3,975	3,543
8	503	3,309	3,812	3,570
9	861	2,916	3,777	3,414
10	914	2,988	3,902	3,406
11	775	2,448	3,223	3,503
12	**859**	**2,731**	**3,590**	3,408

Mean Rope Strength

	Variable	Month	Default	Scenario	Reduction
1	RopeStrength	1	3,262.102	2,067.242	36.6 %
2	RopeStrength	2	3,396.574	2,097.760	38.2 %
3	RopeStrength	3	3,297.022	2,081.092	36.9 %
4	RopeStrength	4	3,173.710	2,058.107	35.2 %
5	RopeStrength	5	2,692.224	1,964.928	27.0 %
6	RopeStrength	6	2,552.181	1,939.294	24.0 %
7	RopeStrength	7	2,501.185	1,929.836	22.8 %
8	RopeStrength	8	2,528.225	1,932.905	23.5 %
9	RopeStrength	9	2,563.358	1,941.344	24.3 %
10	RopeStrength	10	2,614.564	1,952.064	25.3 %
11	RopeStrength	11	2,766.172	1,983.964	28.3 %
12	RopeStrength	12	2,910.518	2,011.903	30.9 %
13	RopeStrength	Total	2,653.339	1,958.825	26.2 %

Figure 4.7.2.1.o. Example DST Model run results implementing maximum rope strengths of 2,250 lbs: Changes in mean rope strength.

Total Gear Threat Score - Mean Threat

	Variable	Month	Default	Scenario	Reduction
1	TotalGearThreat_Threat	1	1,779	818	54.0 %
2	TotalGearThreat_Threat	2	789	348	55.9 %
3	TotalGearThreat_Threat	3	729	334	54.3 %
4	TotalGearThreat_Threat	4	1,327	635	52.1 %
5	TotalGearThreat_Threat	5	3,676	2,158	41.3 %
6	TotalGearThreat_Threat	6	5,530	3,495	36.8 %
7	TotalGearThreat_Threat	7	6,654	4,327	35.0 %
8	TotalGearThreat_Threat	8	7,249	4,630	36.1 %
9	TotalGearThreat_Threat	9	6,985	4,386	37.2 %
10	TotalGearThreat_Threat	10	6,608	4,044	38.8 %
11	TotalGearThreat_Threat	11	5,562	3,170	43.0 %
12	TotalGearThreat_Threat	12	3,675	1,962	46.6 %
13	TotalGearThreat_Threat	Total	50,564	30,307	40.1 %

Figure 4.7.2.1.p. Example DST Model run results implementing maximum rope strengths of 2,250 lbs; Changes in total gear threat scores from the median threat curve.

Total Gear Threat Score - Threat Lower Bound

	Variable	Month	Default	Scenario	Reduction
1	TotalGearThreat_Threat_Lower	1	4,014	3,692	8.0 %
2	TotalGearThreat_Threat_Lower	2	1,701	1,555	8.6 %
3	TotalGearThreat_Threat_Lower	3	1,631	1,499	8.1 %
4	TotalGearThreat_Threat_Lower	4	3,114	2,880	7.5 %
5	TotalGearThreat_Threat_Lower	5	10,675	10,136	5.1 %
6	TotalGearThreat_Threat_Lower	6	17,328	16,583	4.3 %
7	TotalGearThreat_Threat_Lower	7	21,474	20,612	4.0 %
8	TotalGearThreat_Threat_Lower	8	22,988	22,027	4.2 %
9	TotalGearThreat_Threat_Lower	9	21,742	20,795	4.4 %
10	TotalGearThreat_Threat_Lower	10	20,018	19,092	4.6 %
11	TotalGearThreat_Threat_Lower	11	15,625	14,780	5.4 %
12	TotalGearThreat_Threat_Lower	12	9,645	9,051	6.2 %
13	TotalGearThreat_Threat_Lower	Total	149,957	142,701	4.8 %

Figure 4.7.2.1.q. Example DST Model run results implementing maximum rope strengths of 2,250 lbs; Changes in total gear threat scores from the lower-bound threat curve.

Total Gear Threat Score - Threat Upper Bound

	Variable	Month	Default	Scenario	Reduction
1	TotalGearThreat_Threat_Upper	1	1,121	223	80.1 %
2	TotalGearThreat_Threat_Upper	2	510	95	81.3 %
3	TotalGearThreat_Threat_Upper	3	460	91	80.2 %
4	TotalGearThreat_Threat_Upper	4	810	173	78.7 %
5	TotalGearThreat_Threat_Upper	5	1,899	575	69.7 %
6	TotalGearThreat_Threat_Upper	6	2,638	925	64.9 %
7	TotalGearThreat_Threat_Upper	7	3,068	1,142	62.8 %
8	TotalGearThreat_Threat_Upper	8	3,421	1,223	64.2 %
9	TotalGearThreat_Threat_Upper	9	3,361	1,161	65.4 %
10	TotalGearThreat_Threat_Upper	10	3,268	1,073	67.2 %
11	TotalGearThreat_Threat_Upper	11	2,948	848	71.2 %
12	TotalGearThreat_Threat_Upper	12	2,064	528	74.4 %
13	TotalGearThreat_Threat_Upper	Total	25,570	8,058	68.5 %

Figure 4.7.2.1.r. Example DST Model run results implementing maximum rope strengths of 2,250 lbs; Changes in total gear threat scores from the upper-bound threat curve.

Appendix 3.2 All State Proposals

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES 21
STATE HOUSE STATION
AUGUSTA, MAINE
04333 - 0 0 2 1

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

December 27, 2019

Michael Pentony
Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930

Dear Mr. Pentony

The Maine Department of Marine Resources (ME DMR) submits to NOAA Fisheries its proposal for regulatory changes to the Atlantic Large Whale Take Reduction Plan (ALWTRP). This proposal is in response to the finding that the removal of North Atlantic right whales is above the Potential Biological Removal established in the Marine Mammal Protection Act (MMPA). The document includes proposed regulatory modifications to the Maine lobster fishery.

The attached proposal was developed by ME DMR staff, with input from industry. It focuses regulatory change on areas where right whales are most likely to be present in Maine's coastal waters, with the goal of achieving protective measures where they are needed most and would be the most effective. It also balances this conservation with the safety concerns highlighted by industry and the economic viability of the lobster fishery. As stated at NOAA Fisheries' scoping meetings, the lobster fishery is the economic and social cornerstone of Maine's coastal and island communities. It includes not only license holders but crew, lobster dealers, processors, distributors, and a multitude of associated restaurant and tourism industries. This fishery has been a model of conservation, not only in the management of the lobster resource, but also in its two-decade participation in regulations aimed at protecting large whales. In fact, a right whale entanglement has not been directly linked to the Maine lobster fishery in well over a decade.

ME DMR's proposal is comprised of several components. They include reductions in the number of vertical lines, weakening of remaining vertical lines, increased gear marking, and increased harvester reporting. There is also a discussion regarding the enforcement benefits and potential impacts of tracking on federally permitted vessels. In combination, these measures not only minimize the risk of serious injury and mortality which may result from an entanglement but also reduce the potential of an entanglement occurring. Further, these measures improve the effort and location data collected by the Maine lobster fishery. Our hope

is that, if future conversations are needed, an improved data set will enable measures to be targeted to fisheries and regions with high right whale densities and known entanglements. The proposal also includes a provision for conservation equivalency so that regional differences in fishing practices and oceanographic conditions can be considered. This level of flexibility is critical so that safety issues not addressed in the state-wide approach can be ameliorated prior to implementation.

In addition, this proposal outlines several concerns that ME DMR has had with the ALWTRT process, the development of supporting analyses, and the timing of pending management versus needed scientific data. These concerns have prompted the Department to develop its own supporting analyses given a completed model was not available at the time of proposal submission. Given management measures related to the protection of right whales are generally reviewed on a five-year schedule, my hope in raising these issues is to ensure the process can be improved for the future.

I am confident the measures outlined in this proposal provide significantly greater protection to right whales transiting through the Gulf of Maine. As such, we request NOAA Fisheries include these measures as preferred alternatives in the upcoming proposed rule.

ME DMR remains committed to working with NOAA during the upcoming regulatory process. If you have any questions, please do not hesitate to reach out.

Sincerely,

Commissioner

Maine Department of Marine Resources' Proposal to Amend the Atlantic Large Whale Take Reduction Plan

The following proposal includes a series of measures intended to prevent right whale serious injury and mortality, and to reduce the presumed risk of entanglement posed by the Maine lobster fishery. The proposal was developed after thorough analyses regarding the location of right whales in the Gulf of Maine, the location of Maine lobster gear, the relative threat of different gear configurations, and the risk reduction associated with various management tools. Development of the proposal also considered several important criteria including safety of fishermen, feasibility, enforceability, and economic impacts to the fishery.

ME DMR has been an active participant on the Atlantic Large Whale Take Reduction Team (ALWTRT) and has routinely worked with state and federal partners to better the science and data needed to support this group's discussions. We are committed to solving issues regarding the endangered status of right whales and recognize that the ALWTRT process allows for input from multiple caucuses, including fishermen, Non-Governmental Organizations, and state agencies. While at the April 2019 meeting ME DMR supported the preliminary recommendations put forth by the ALWTRT, the Department also reserved its right to disagree with this recommendation in the future, pending analysis to determine what a 50% vertical line reduction meant in practice and to consider new, changing, or emerging data. After conducting this analysis, it became clear a 50% vertical line reduction placed the largest portion of the burden on the fishery within Maine's exemption line – an area NOAA found, based on scientific data, that endangered large whales rarely venture.[1] This large burden in exempted waters resulted because roughly 70% of vertical lines associated with the lobster fishery in Maine state waters are located within Maine's exemption line. Consequently, an overall 50% vertical line reduction forced drastic measures primarily in areas where whales do not frequent. This would have resulted in large economic hardship for inshore fishermen, a reduction in the diversity of the Maine lobster fleet, and minimal benefits to right whales.

Given this information, ME DMR completed its own analysis, using many of the same data inputs as NOAA Fisheries, to understand Maine's 'risk' resulting from the overlap between the Maine lobster fishery and the transiting of right whales through the Gulf of Maine. The results showed the risk in Maine waters increases with distance from shore, with the majority of Maine's risk occurring outside the 12-mile line. Thus, this proposal focuses measures in federal waters.

This proposal includes management measures and data collection tools. Many of the measures are differentiated by distance from shore given Maine's expansive coast and vast regional differences. Detailed explanations of these measures are provided in the sections that follow. A cornerstone of ME DMR's proposal is the request for conservation equivalency and an individual safety program. This flexibility is needed to address significant regional differences such as traditional fishing practices, tides, and vessel traffic.

[1] 72 Fed. Reg. 57104, 57162 (Response to comment 337)

Without this management flexibility, future rules will fail to take into account the diversity of Maine's lobster fleet and differing oceanographic conditions within the Gulf of Maine.

This proposal does not include any trap reductions or area closures. As outlined in ME DMR's September 2019 scoping comments (Appendix IV), both trap reductions and area closures present several concerns in Maine. Because there are often multiple traps fished on a single endline or trawl, a practice known as trawling up, trap reductions do not decrease vertical lines on a one-to-one basis. This means substantial trap reductions are needed to see a modest reduction in the number of vertical lines, prompting serious economic consequences. For area closures, their efficacy is based on the assumption that gear is brought to shore. However, the year-round nature of the offshore lobster fishery makes it unlikely this assumption would be met. Instead, it is more likely gear would be moved to adjacent fishing grounds yielding denser aggregations of gear around areas intended to protect whales. Or, risk associated with the gear could simply be shifted to another location.

ME DMR identified several challenges with the decision support tool presented to the ALWTRT. These challenges included incomplete analysis, particularly in regard to the gear threat score, and frequently changing risk reduction percentages as methodologies and data inputs changed. As a result, the Department developed its own tool (Appendix I) to calculate the risk reduction gained using certain management measures. Section B in this document describes the challenges that prompted ME DMR to develop its own tool, as well as concerns with the overall process, in greater detail.

A. Background on the Maine Lobster Fishery and Regulations To-Date

American lobster is the most valuable single species landed in the U.S. The Maine lobster fishery is a critical component of the State's economy and culture. Since the early 2000's, landings in the lobster fishery have exponentially increased from roughly 57.2 million pounds in 2000 to a high of 132.6 million pounds in 2016.[2] In 2018, 121.3 million pounds of lobster were landed in Maine, representing an ex-vessel value of $491 million dollars.[3] These 2018 landings represented 82% of the total lobster landings in the U.S.[4]

The fishery encompasses roughly 4,800 lobster license holders and 1,100 student license holders. Underscoring the importance of commercial fishing to Maine is the most recent data from the Atlantic Coastal Cooperative Statistics Program which reveals that Maine commercial harvesters took more than twice the number of commercial fishing trips than any other state on the east coast. In 2017, Maine harvesters reported 447,523 trips while harvesters from Virginia, the next highest state, reported just 217,940.[5] Importantly, participation in the lobster fishery is much greater, as is its value to Maine's coastal economy. Many individuals who do not have a lobster license are an integral part of the fishery's operations, including dealers, processors, sternmen, bait dealers, trap builders, and boat mechanics. Many more participate in the logistics and tourism businesses associated

[2] ME DMR landings data: https://www.maine.gov/dmr/commercial-fishing/landings/documents/lobster.table.pdf
[3] ACCSP Data Warehouse. Data pull on 12/23/19.
[4] ACCSP Data Warehouse. Data pull on 12/23/19.
[5] ACCSP Data Warehouse. Data pull on 12/11/19.

with the lobster industry. In fact, a recent economic study concluded the Maine lobster supply chain has an economic impact to the state of $1 billion annually.[6] Maine's coastal communities are particularly dependent on lobster fishing and related business due to low alternate wages and limited career options in those communities.[7]

ME DMR has actively contributed to the development and implementation of protective measures for right whales and has a history of expanding federal measures beyond the minimum federal requirements. Since the establishment of the ALWTRP, ME DMR has implemented 600 lbs weak links on buoy lines to ensure low breaking strengths, gear markings to identify trap/pot gear, sinking groundline to reduce entanglements, and trawling-up requirements to reduce the number of vertical lines in the fishery. ME DMR has also expanded many of these requirements to areas exempted from the federal ALWTRP. For example, ME DMR prohibits float rope on the surface for all lobster pot gear, including gear fished inside the exemption line. ME DMR has also been at the forefront of efforts to improve the spatial resolution of gear marking; the State has already adopted rules to implement new gear marking requirements which prescribe a Maine-specific purple gear mark, increase the frequency of markings on a rope, and expand gear marking requirements into exempted waters. These new regulations will be implemented in 2020, ahead of the federal regulatory process. Finally, Maine Marine Patrol and the Bureau of Marine Science collaborate with NOAA Fisheries, serving as primary regional responders to address whale entanglements on the Maine Coast. There are approximately 46 uniformed field personnel trained to a minimum of Level I that are capable of responding to entanglements for initial assessment and stand-by purposes. Nine officers and one Bureau of Marine Science staff have undergone apprentice training and hold their Level III authorizations under the Marine Mammal Health and Stranding Response Program's permit. This authorization designates the holder as a primary responder for disentanglement activities. As a part of the Atlantic Large Whale Disentanglement Network, ME DMR's primary responders work with NOAA Fisheries and other network members to engage in assessment, reporting, and response when reports of entanglements are received.

Many of the above regulations and activities have been adopted with minimal data linking the Maine lobster fishery to cases of right whale entanglement, particularly in the last decade. Since 2017, there have been thirty documented cases of right whale serious injury and mortality. None of these cases have been attributed to the Maine lobster fishery. In fact, entanglement records indicate the most recent known right whale entanglement in Maine lobster gear occurred fifteen years ago in 2004. Thus, the data from known entanglements suggest the Maine lobster fishery is not the primary source of right whale serious injury and mortality. The data also suggest previous regulations, particularly the implementation of sinking groundline which occurred in 2009, have been effective. In fact, since the sinking groundline rule went into place, there have been no right whale entanglements linked to groundlines from the US lobster fishery.

[6] Lobsters to Dollars: The Economic Impact of the Lobster Distribution Supply Chain in Maine by Michael Donihue, Colby College. June 2018.
[7] Gulf of Maine Research Institute. Understanding Opportunities and Barrier to Profitability in the New England Lobster

Industry 13 (2014), https://www.gmri.org/sites/default/files/resource/gmri_ 2014_lobster_survey.pdf.

In contrast, there is a mounting level of evidence which indicates that other fisheries, particularly the Canadian snow crab fishery, and vessel strikes are contributing to an increasing portion of right whale serious injuries and mortalities. Of the thirty documented cases of right whale serious injury and mortality since 2017, twenty-one have occurred in Canada.[8] This includes nine cases of serious injury and mortality which occurred in 2019. Further, an additional two mortalities, which were first sighted in US waters, have been attributed to Canadian snow crab gear entanglements. Looking further back to 2012- 2016, the years used by NOAA to calculate a recommended risk reduction, one of the cases of serious injury and mortality attributed to a US fishery was the result of an entanglement with netting. Additionally, evidence suggests that vessel strikes are a significant contributor to right whale serious injury and mortality. Out of the thirty cases of serious injury and mortality since 2017, eight have been attributed to vessel strikes, including a case in US waters.

Information collected from right whale entanglements also indicates the vast majority of rope taken off of right whales is not indicative of the Maine lobster fishery. Based on a 2018 industry survey, ME DMR found the most prominent rope diameters used in the Maine lobster fishery are 3/8" rope followed by 7/16" rope (Appendix V). Results of the survey also showed that over 79% of rope used in the Maine lobster fishery is less than ½" in diameter. In contrast, entanglement records indicate that, between 2010 and 2018, 81% of all recovered rope taken off right whales was greater than ½" diameter.[9] This data further suggests that the Maine lobster fishery is not a primary contributor to right whale entanglements.

Right whale habitat use and residency times in historically known feeding habitats are also changing. Since 2010, right whale occurrence in the Gulf of Maine has declined.[10] A similar decrease of habitat use has also been documented across the same time frame in what had been critical late summer feeding habitat in the Bay of Fundy.[11] Hypotheses explaining this shift include large-scale changes in food supply, namely the copepod *Calanus finmarchicus*. A recent study supports this hypothesis by documenting an increase in the bottom temperature experienced in the basins within the eastern Gulf of Maine.[12] This ecosystem change is acting to drive down the availability of the calanus copepod in the Bay of Fundy and can potentially predict whether right whales will be seen there year to year. Other

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[8] NOAA Fisheries. 2017-2019 North Atlantic Right Whale Unusual Mortality Event. https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2019-north-atlantic-right-whale-unusual-mortality-event

[9] ALWTRT October 2018 Meeting. Presentation by GARFO Staff re: Line Diameter. https://archive.fisheries.noaa.gov/garfo/protected/whaletrp/trt/meetings/October%202018/eg_line_diameter.pdf

[10] Davis, G. E., Baumgartner, M. F., Bonnell, J. M., Bell, J., Berchok, C., Thorton, J. B., Brault, S., Buchanan, G., Charif, R. A., Cholewiak, D., Clark, C. W., Cockeron, P., Delarue, J., Dudzinski, K., Hatch, L., Hildebrand, J., Hodge, L., Klinck, H., Kraus, S., Martin, B., Mellinger, D. K., Moors-Murhpy, H., Nieukirk, S., Nowacek, D. P., Parks, S., Read, A. J., Rice, A. N., Risch, D., Sirovic, A., Soldevilla, M., Stafford, K., Stanistreet, J. E., Summers, E., Todd, S., Warde, A., and S. M. Van Parijs. 2017. Long-term passive acoustic recordings track the changing distribution of North Atlantic right whales (Eubalaena glacialis) from 2004 to 2014. Scientific Reports. 7:13460 (1-12).

[11] Davies K.T.A., Brown M.W., Hamilton P.K., Knowlton A.R., Taggart C.T., and A.S.M. Vanderlaan. 2019. Variation in North Atlantic right whale *Eubalaena glacialis* occurrence in the Bay of Fundy, Canada, over three decades. Endangered Species Research. 39:159-171.

[12] Record, N., Runge, J. A., Pendleton, D. E., Balch, W. M., Davies, K. T. A., Pershing, A. J., Johnson, C. L., Stamieszkin, K., Ji, R., Feng, Z., Kraus, S. D., Kenney, R. D., Hudak, C. A., Mayo, C. A., Chen, C., Salisbury, J. E., and C. R. S. Thompson. 2019. Rapid Climate-Driven Circulation Changes Threaten Conservation of Endangered North Atlantic Right Whales. *Oceanography,* 32, 2: 162-169.

feeding habitats, outside of the Gulf of Maine, have seen increases in use by right whales over the last decade. Cape Cod Bay and the surrounding waters in Massachusetts have seen an increase in individuals sighted or detected in this important early season feeding habitat.[13]

As the use of the Gulf of Maine as a summer feeding ground has decreased, sighting and acoustic surveys have documented a shift towards summertime use of the Gulf of St. Lawrence by right whales.[14] The shifts in habitat use documented above show a decreasing reliance on the Gulf of Maine as a feeding habitat for right whales. This is likely particularly true for waters very near to shore where most of the lobster fishery is executed. ME DMR again notes that the majority of Maine state waters, where most lobster permits are held, are exempted from the ALWTRP and outside designated right whale critical habitat. This spatial designation (e.g. the exemption line and critical habitat boundary) was based on the low number of right whale sightings as well as studies which show low concentrations of calanus which do not support the aggregation of right whales.[15]

B. Review of September 2018 – Present; Challenges and Concerns

ME DMR has been an engaged partner in the ALWTRT process since the group's inception. However, over the last few years, ME DMR has expressed concerns about the thoroughness of analyses being conducted, the availability of preparatory work prior to meetings, and the existence of new, changing, or emerging data. This has impacted ME DMR's ability to fully engage in the process and make informed decisions when developing this plan.

In September 2018, the Northeast Fisheries Science Center (NEFSC) released a technical memo entitled "*North Atlantic Right Whales – Evaluating Their Recovery Challenges in 2018*". While the title of the memo suggested the document would be a comprehensive review of many challenges facing right whales, the memo focused on a single fishery in a single region: the American lobster fishery in the Gulf of Maine. Throughout the memo, hypotheses were stated as fact, with inappropriate or no data to support the assumptions and conclusions. For example, the memo incorrectly suggested the 2015 vertical line regulations increased the strength of rope used, and therefore the severity of entanglements; however, the data provided to support this assumption included a paper which looked at data from 1994-2010, well before the regulatory change. Many of the datasets cited in the memo were inappropriate for the context, including the citation of an industry newsletter which approximated the number of traps fished. This figure was then used to inform an absolute

[13] Mayo C., Ganley L., Hudak C.A., Brault S., Marx M.K., Burke E., and M.W. Brown. 2018. Distribution, demography and behavior of North Atlantic right whales (*Eubalaena glacialis*) in Cape Cod Bay, Massachusetts 1998-2013. Marine Mammal Science. 34(4): 979-996; Charif R.A., Shiu Y., Muirhead C.A., Clark C.W., Parks S.E., and A.N. Rice. 2019. Phenological changes in North Atlantic right whale habitat use in Massachusetts Bay. Global Change Biology, 00:1-12.
[14] Simard Y., Roy N., Giard S., Aulanier F. 2019. North Atlantic right whale shift to the Gulf of St. Lawrence in 2015, revealed by long-term passive acoustics. Endangered Species Research. 40: 271-284; DFO. 2019. Review of North Atlantic right whale occurrence and risk of entanglements in fishing gear and vessel strikes in Canadian waters. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2019/028.
[15] Taking of Marine Mammals Incidental to Commercial Fishing Operations; Atlantic Large Whale Take Reduction Plan Regulations, 72 Fed. Reg. 57103 (October 5, 2007); Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale, 81 Fed. Reg. 4837 (January 27, 2016).

number of traps in the memo. Many more statements were not cited. ME DMR communicated its serious concerns about the merit of this technical memo and its basis for the upcoming ALWTRT meeting in an October 2018 letter to the Director of the NEFSC (Appendix II). Unfortunately, despite ME DMR's concerns regarding the inaccuracies in the document, the Technical Memo remains published without substantial edits by the NEFSC and continues to be cited on NOAA's own website[16]. In fact, the only change made to the memo was the addition of the word "may" to a statement to indicate it is a hypothesis.

On April 5, 2019, less than three weeks before the ALWTRT meeting, NOAA released a statement indicating the agency would be seeking a risk reduction target of 60-80%. This announcement included minimal data to support its conclusions and, because it was distributed via email, did not provide an opportunity for questions and discussion. In response to numerous questions from the Maine Lobstermen's Association, a follow-up email from NOAA Fisheries staff was sent on April 18, 2019 which indicated other approaches were considered to calculate the risk reduction target; however, yet again, minimal rationale was provided for the method ultimately chosen. Of greatest concern to ME DMR was the assumption that 50% of unattributed cases of serious injury and mortality (SI&M) were the result of U.S. entanglements and 50% were the result of Canadian entanglements. This assumption did not match recent trends which show Canadian fisheries are responsible for an increasing portion of SI&M. Unfortunately, no time was set aside ahead of the April 2019 ALWTRT meeting to discuss these assumptions or the risk reduction target. At the April 2019 ALWTRT meeting, members were discouraged from discussing the risk reduction target given time constraints.

At the same time, NOAA announced weeks before the April 2019 ALWTRT meeting that it was developing a model, called the "decision support tool", to calculate risk reduction percentages achieved through various management tools. While ME DMR had no objection to this goal and fully supported additional modeling efforts to help inform the recommendations of the ALWTRT, ME DMR was concerned about the short timeframe for a model to be thoughtfully developed, tested, and reviewed. These concerns were realized on an April 16th webinar in which NEFSC staff walked through preliminary results of the model. First, ME DMR expressed concern about the components of the model. The severity score was based off a poll given to the ALWTRT members which was neither developed nor reviewed by a social scientist or someone with direct expertise in survey methodology. In addition, there was a clear incentive for ALWTRT members to inflate or deflate gear severity scores given the data would directly impact management recommendations. Unsurprisingly, ALWTRT members voted along caucus lines resulting in a wide range of scores for most gear configurations. Sensitivity analyses run by ALWTRT members during the April 2019 meeting confirmed the results from the tool were highly dependent on the gear severity scores derived from the poll. Additionally, the whale habitat component of the model raised concerns as it lacked key data components including the most recent standardized whale surveys, and available information from alternative sighting sources and acoustic deployments. It also had low effort in inshore Gulf of Maine where the bulk of the lobster fishery is promulgated. As a result, recent changes in right whale distribution were

[16] https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/right-whales-and-entanglements-more-how-noaa

not reflected in the data outputs, whale distribution data were 'stretched' within the exemption line, and there was a high level of uncertainty where the majority of vertical lines are deployed.

The compilation of these concerns resulted in puzzling risk reduction model results. While areas south of Nantucket, where right whales are known to visit but fishing effort is low, were given low risk scores, areas of inshore Gulf of Maine, where fishing effort is high but right whales are extremely infrequent, were given high risk scores. This result did not match NOAA's stated intention of identifying overlapping areas of high gear density and frequent whale presence. In the end, the risk reduction model used at the ALWTRT meeting was not a finished product; data inputs were not finalized, the code was not perfected, and the model was not peer-reviewed. In fact, the model crashed during a Maine break-out session at the meeting when the Maine delegation tried to look at measures differentiated by distance from shore. The suite of ME DMR's concerns regarding the risk reduction target and the decision support tool were outlined in a letter to the Regional Administrator dated April 19, 2019 (Appendix III).

Since the April 2019 ALWTRT meeting, ME DMR has struggled to develop a proposal due to instability in the risk reduction percentages achieved by various management measures. In April 2019, calculations from the decision support tool showed vertical line reductions received, by far, the highest percent risk reduction of the measures considered. This output was used to derive Maine's preliminary plan. However, since the April 2019 ALWTRT meeting, changes have been made, and continue to be made, to the model in response to the concern expressed by many ALWTRT members, and to changing and emerging data. While ME DMR is appreciative that NEFSC staff continue to develop and improve the decision support tool, the modifications have resulted in frequent changes to the risk reduction percentages associated with various management options. These percentages continue to change as of the writing of this proposal. Most notably, the risk reduction percentage associated with the implementation of rope which breaks at 1,700 lbs has significantly increased relative to percentages given at the ALWTRT meeting. These changes in the risk reduction percentages have not been communicated to the broader ALWTRT.

Further, the November 2019 Peer Review of the decision support tool highlighted that many of the concerns raised in ME DMR's April 2019 letter to NOAA have not been addressed. ME DMR staff attended the Peer Review in hopes of learning more about the model since no documentation has been shared with the ALWTRT. Unfortunately, it became clear from the meeting that several components of the model were not finalized. Specifically, the updated whale habitat data, which is critical to understanding the new migration patterns of right whales, is delayed and was not available for the peer review. Further, a substitute for the gear severity poll had not yet been developed or tested. In fact, a potential new gear severity score presented on the last day of the Peer Review showed confounding results in which the highest gear severity in Maine was calculated to be in a lobster zone with the fewest participants and the lowest trap allocation. As a result, it was clear that significant work was still needed on the decision support tool. Further, ME DMR was concerned to hear that, for some portions of the offshore lobster fishery, catch was being used as a proxy to estimate the number of vertical lines. While ME DMR recognizes data on effort in the offshore lobster fishery is limited, we have repeatedly commented that it is inaccurate to assume an increase in landings is correlated to an equal increase in fishing

effort (this proposal provides data regarding landings and effort on pages 14-16). This is particularly true given the exponential increase in the abundance of lobster within the Gulf of Maine/Georges Bank stock. As a result, the model is likely overestimating the number of vertical lines in the offshore lobster fishery given the increase in abundance, catch per trap, and landings.

As the decision support tool continues to be developed, it is unclear how the model results will be used in the upcoming proposed rule. While advancements are still needed on the decision support tool, the management process required to implement new ALWTRP regulations continues to move forward. As a result, there is a clear disconnect between the timeline for the science intended to support management and the implementation of new regulations. NOAA has previously acknowledged this discrepancy. During a meeting with NOAA on July 11, 2019, NOAA staff indicated the co-occurrence model, not the risk reduction model, would be used in the proposed rule. This was a significant departure from what ME DMR anticipated, particularly given the co-occurrence model was not discussed at the April 2019 ALWTRT meeting. Further, without a gear threat score, it is unclear how differences between gear configurations will be considered or how rope which breaks at 1700 lbs, a key component of the discussions at the April 2019 ALWTRT, will be evaluated. Most importantly, this change has not been communicated to the full ALWTRT.

Given uncertainty about ongoing and future changes to the decision support tool, the constantly changing percentages produced by a model which is being updated, the lack of clarity of how the decision support tool will be used in the proposed rule, and uncertainty about how the co-occurrence model will evaluate rope which breaks at 1700 lbs, ME DMR endeavored to produce its own analysis to determine the risk reduction associated with this proposal. This in-state analysis was conducted because a clear and stable alternative from NOAA was not available before this proposal was due. If ME DMR had not conducted its own analysis, it is unclear how the state would have calculated a risk reduction for various management options and engaged the industry when weighing the options. A description of ME DMR's analysis is included in Appendix I.

C. Elements of Maine's Proposal

I. Vertical Line Reductions

ME DMR proposes a vertical line reduction in the Maine lobster fishery, to be achieved through changes to the trawling up requirements. As noted in ME DMR's scoping comments to NOAA fisheries on September 16, 2019 (Appendix IV), the Department has pursued measures associated with trawling up because it appears to provide some of the strongest conservation benefits; it reduces the risk of SI&M under the MMPA and the risk of entanglement under the Endangered Species Act (ESA). The proposed trawling up requirements are separated by distance from shore in recognition of differing fishing practices between inshore and offshore fishermen, as well as the likelihood of right whale occurrence along Maine's coast the farther one gets from shore.

a. Shoreline to Exempted Waters Line (<1% of Maine's whale-days, see Appendix I)

Proposal: Status quo; maintain exempt status for all such waters.

Rationale: The addition of trawling-up regulations within Maine's exempted waters would result in significant safety concerns, reduce diversity in the fleet, and have negative economic impacts for the lobster fishery, while providing minimal, if any, protections for right whales. Established in 2007, the Maine exemption line designates inshore waters, including bays and rivers, where right whale sightings are extremely rare. It was created in recognition that additional regulations in these areas would not have a significant benefit to large whales.[17] As a result, past modifications to the ALWTRP have not included regulations in exempted waters. The exemption line was subsequently used when denoting critical habitat as it concluded "late stage copepods in quantities sufficient to trigger right whale foraging are not present inshore of the Maine exemption line".[18] Sightings data corroborate the finding that right whales are extremely rare shoreward of the exemption line. Recent data on changing and decreasing copepod abundance in the eastern Gulf of Maine further corroborates these findings.[19]

Establishing trawl minimums in exempted waters would also unnecessarily result in large economic impacts by increasing operating costs and lowering the efficiency of inshore fishermen. The majority of the Maine lobster fishery's catch and effort occurs in state waters (shoreline to 3-mile limit). In 2016, 68% of landings and 81% of trips occurred inside state waters.[20] With over 70% of state waters existing within the exemption line, a significant portion of the fishery is executed close to shore. Much of the fishery in this area uses small boats and skiffs which have limited capacity to haul and store multiple traps. Thus, consideration of trawl limits in exempted waters precipitates large safety concerns as it could force fishermen to operate beyond their boat's means, resulting in fishermen being caught in additional rope on deck, fishermen going overboard or losing limbs, and vessels sinking. Further, trawling up requirements would have significant economic consequences on the fleet. Longer trawls would almost certainly increase gear loss as trawls are set over one another, increasing marine debris. It is also likely small boat captains would have to hire an additional crew member or purchase a larger boat to safely fish under the new requirements. Finally, longer trawls would result in lower trap efficiency due to a decreased ability to maneuver traps on to specific ledges and cracks where lobsters are frequently found.

[17] Taking of Marine Mammals Incidental to Commercial Fishing Operations; Atlantic Large Whale Take Reduction Plan Regulations, 72 Fed. Reg. 57103 (October 5, 2007).
[18] Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale, 81 Fed. Reg. 4837 (January 27, 2016).
[19] Record et al., 2019.
[20] Based on harvester reporting collected in the Maine lobster fishery.

b. Exempted Waters Line to Three Miles from Shore (0.8% of Maine's whale-days and 4% Maine's of overall risk, see Appendix I)

Proposal: Require a minimum trawl length of three traps per single endline.

Rationale: A three-trap trawl considers safety concerns of small boat, state-waters fishermen with the goal of reducing the number of endlines and the associated risk to right whales. Unique safety concerns for small boat fishermen include lack of deck space and frequently operating a vessel without a crew. Particularly in mid-coast Maine, moving to a three-trap trawl minimum will be a substantial change from current fishing practices where, due to bottom type, many people presently fish doubles.

c. Three Miles to Six Miles from Shore (Three to twelve miles from shore represents 11% of Maine's whale-days and 30% of Maine's overall risk, see Appendix I)

Proposal: Require a minimum trawl length of eight traps per two endlines, or four traps per single endline.

Rationale: An eight (four) trap trawl minimum recognizes the historical sighting of right whales in the Gulf of Maine is higher in federal waters than state waters and that higher trawl length minimums are needed to reduce the risk of entanglement. Various fishing practices along the coast make the unilateral transition to an eight-trap trawl with two endlines difficult; this region includes small boat fishermen who fish just over the three-mile line, as well as larger vessels which traditionally fish offshore. The ability to fish a four-trap trawl with a single endline provides needed flexibility to the fleet and achieves the same conservation value.

d. Six Miles to Twelve Miles from Shore (Three to twelve miles from shore represents 11% of Maine's whale-days and 30% of Maine's overall risk, see Appendix I)

Proposal: Require a minimum trawl length of fifteen traps per two endlines, or eight traps per single endline.

Rationale: A fifteen-trap trawl configuration is expected to result in substantial endline reductions in this area. The flexibility to use either a fifteen-trap trawl with two endlines or an eight-trap trawl with a single endline, near equivalent configurations from a conservation standpoint, allows for greater compliance with the regulations and recognizes that fishing practices differ along the coast. This flexibility in trawl configuration also considers fishermen safety and boat capacity, as some fishing operations in the region may not be able to safely haul and stow fifteen traps on a boat. Load cell data collected by ME DMR also informed the proposal for a fifteen-trap trawl length (see Section C-II). In particular, some of the load cell data collected to evaluate the placement of weak points measured loads on the vertical line of fifteen-trap trawls. This provided a level of data to inform both the trawling-up and weak point components of ME DMR's proposal.

e. Twelve Miles from Shore to the Lobster Management Area 1/3 Boundary (88% of Maine's whale-days and 66% of Maine's overall risk, see Appendix I)

Proposal: Require a minimum trawl length of twenty-five traps per two endlines.

Rationale: This trawl length provides the lowest ratio of vertical lines to traps in Maine's proposal. It also pushes the bounds of fishermen's safety. At ME DMR's June 2019 industry meetings, fishermen from many parts of the coast expressed significant concern that few vessels are equipped to handle thirty- or forty-trap trawls in addition to the mile of rope needed to fish at these trawl lengths. Requiring fishermen to operate beyond their boat's capacity would result in dangerous fishing practices and the potential loss of human life. A twenty-five-trap trawl length recognizes that vertical lines in the offshore areas of the Gulf of Maine pose a greater risk to right whales given whales are more frequently sighted in this area; however, it also acknowledges the limits on the capacity of fishing vessels in the area. Finally, this trawl length is enforceable, but longer trawls likely would not be. With current vessel platforms, it would be nearly impossible for Maine's Marine Patrol to safely haul long trawls (i.e. greater than 30 traps per trawl) to check compliance with ALWTRP measures.

Modifications to Maine's Approach on Vertical Line Reductions

At the April 2019 ALWTRT, there was a consensus statement that each state and/or Lobster Management Area (LMA) would meet a 60% risk reduction in their respective region. At the time, one way for Maine to achieve this target was to take a 50% vertical line reduction (equivalent to a 50% risk reduction) and implement 1700 lbs breaking strength rope in the top 75% of all vertical lines in federal waters (equivalent to a 10% risk reduction).

Since that time, outputs of the decision support tool have substantially changed based on modifications to the model as well as emerging and changing data. As a result, the information available to ME DMR is different than what was available at the time of the ALWTRT meeting. Specifically, the risk reduction attributed to weak rope has steadily increased. This is corroborated by peer reviewed literature which suggests a full weak rope would significantly reduce the risk of serious injury and mortality for multiple large whale species by 72%.[21] It also matches results of the analysis conducted by ME DMR (Appendix I). Given these changes, ME DMR has relied more heavily on weak points in the line (see Section C-II) as a method to achieve risk reduction.

Furthermore, analysis by ME DMR following the ALWTRT April 2019 meeting showed that, to achieve a 50% vertical line reduction, a substantial portion of this reduction would have to be taken within exempted waters. This is because roughly 70% of state waters, where the majority of the Maine lobster fishery is licensed, are within the exempt area.[22]

[21] Knowlton, A. R., Robbins, J., Landry, S., McKenna, H. A., Kraus, S. D., and T. B. Werner. 2015. Effects of fishing rope strength on the severity of large whale entanglements. *Conservation Biology,* 30, 2:318-328.

[22] Currently, reporting requirements do not allow for effort to be discerned between exempt and non-exempt waters. It is therefore assumed that 70% of vertical lines in the Maine state waters lobster fishery are shoreward of the exemption line because this is the percentage of area that is included shoreward of that line. This is also the assumption made in the

Implementing strict vertical line reduction measures in this area does not align with right whale sightings data and the associated risk of entanglement. Right whales are rarely sighted in Maine's exempted waters and copepod abundance does not support right whale feeding aggregations[23], hence why they were designated as areas where additional regulations would not provide meaningful conservation benefits to right whales. As a result, a 50% vertical line reduction would have forced the greatest regulatory change on areas where whales do not frequent, having minimal effectiveness. In contrast, the vertical line reductions put forward in this proposal focus on areas outside of exempted waters and provide more meaningful protections to right whales. We believe this is a stronger and more defensible plan which balances right whale conservation with maintaining a viable lobster fishery.

Trends Regarding Latent Effort in the Maine Lobster Fishery

A potential concern with vertical line reductions via trawling up is that latent licenses will become active and negate the intended conservation benefits. ME DMR reviewed trends in latent lobster licenses in Maine and found them to be extremely stable (Figure 1). In particular, over the last ten years, there has been little perturbation in the number of latent licenses in the Maine lobster fishery. This corresponds to a time of record high landings when we may have expected latent fishermen to re-engage in the fishery. Furthermore, this stability persisted through previous changes to the ALWTRP, including the 2014 vertical line rule which established the previous trawling-up minimums. Given these trends, ME DMR is confident the activation of latent licenses will not negate the conservation benefit gained by the proposed trawling-up scenarios and will result in meaningful reductions in vertical lines.

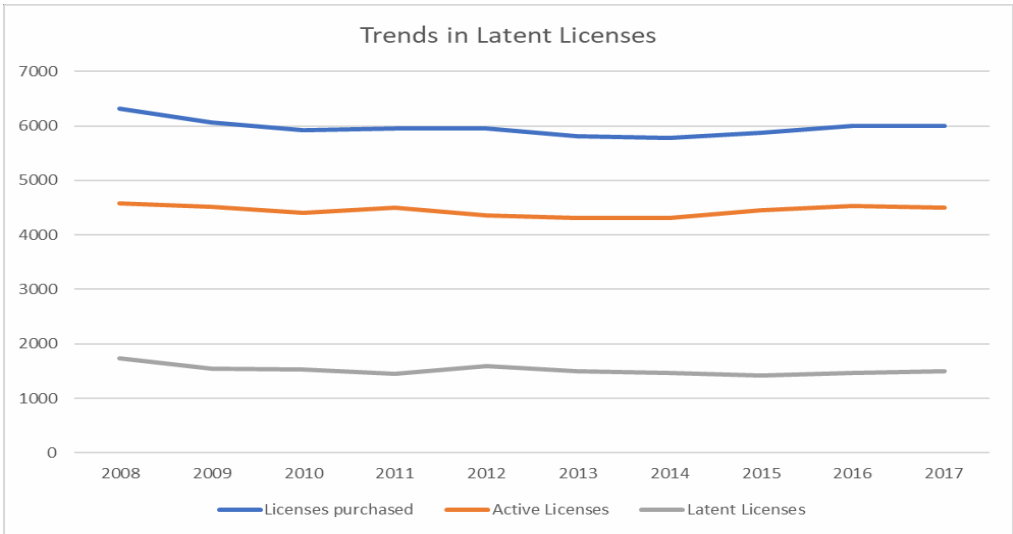

Figure 1: Trends in Maine lobster licenses, including number purchased, active licenses, and latent licenses. Data come from Maine DMR's license and 100% dealer reporting databases. Dealers are required to report purchases from all harvesters. Any harvesters without any reported purchased landings are considered latent.

Industrial Economics model of the fishery, which is used in the Decision Support Tool and accepted by both NOAA Fisheries and the ALWTRT as best available information.

[23] Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale, 81 Fed. Reg. 4837 (January 27, 2016).

Misconceptions about Changes in the Maine Offshore Lobster Fishery

It has been repeatedly alleged that effort in the offshore lobster fishery is expanding and thereby increasing the risk of entanglement posed by the fishery. In fact, this allegation is a basis for the conclusions made in the NEFSC's September 2018 technical memo. ME DMR sought to investigate this claim by looking at landings, number of trips, and catch per unit effort by distance from shore. Outside of 3 miles from shore, pounds landed (Figure 2) in the Maine lobster fishery has increased over time. However, a similar trend is not reflected in the number of trips; the number of trips in the federal Maine lobster fishery has been relatively stable (Figure 3). This suggests that there has been an increase in the landings per trip, rather than an increase in effort, which has contributed to the increased harvest offshore. This conclusion is supported in Figure 4; regardless of distance from shore, all areas have seen an increase in average catch per trap in the Maine lobster fishery. The slope of this increase is greater in federal waters than state waters. Thus, while it is accurate to say landings have increased in the federal Maine lobster fishery, there has also been a significant increase in average catch per trip.

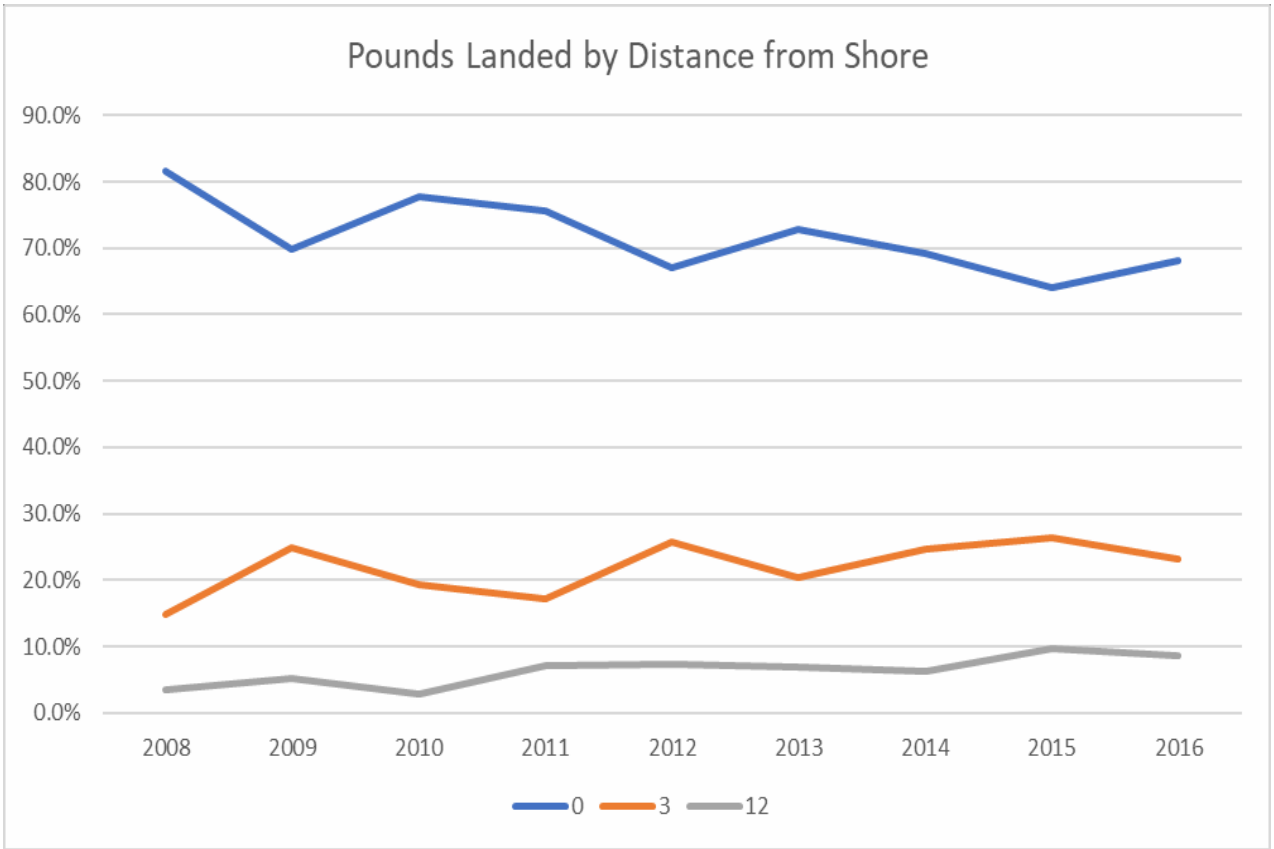

Figure 2: Proportion of pounds of American lobster landed by distance from shore in Maine. The blue line represents 0-3 miles from shore. The orange line represents 3-12 miles from shore. The grey line represents 12 miles to the LMA 1/3 boundary. Data come from Maine DMR's harvester reporting database.

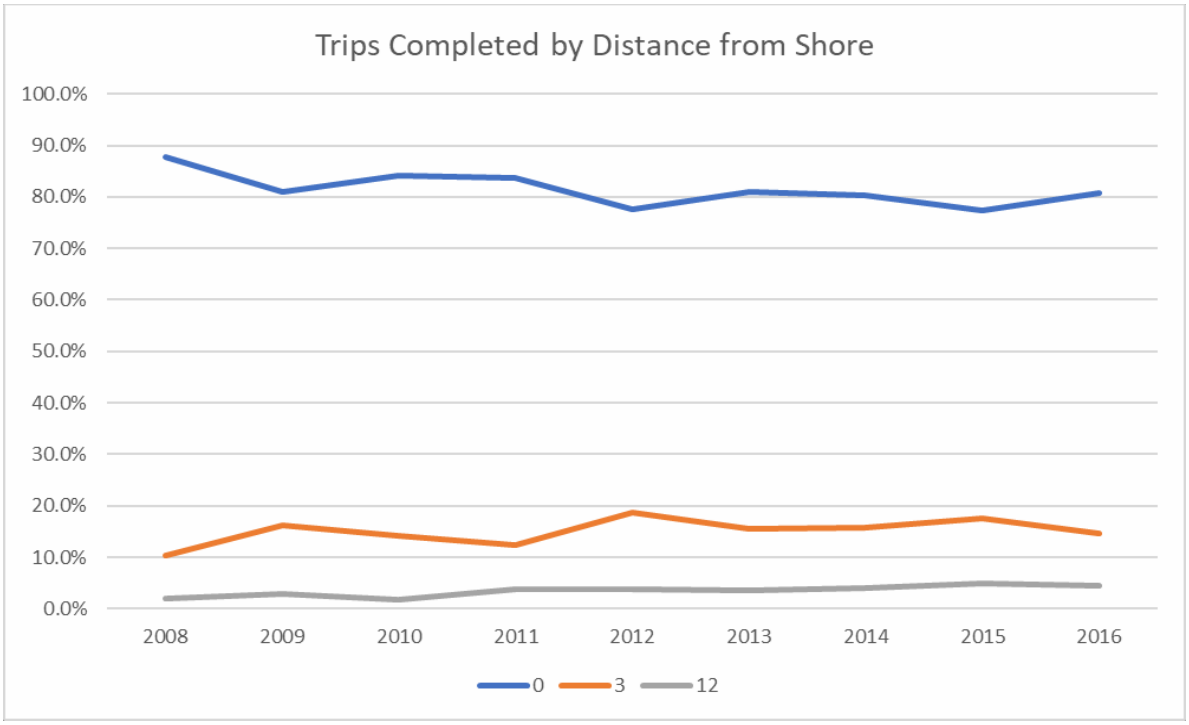

Figure 3: Proportion of directed American lobster trips in Maine since 2008. The blue line represents 0-3 miles from shore. The orange line represents 3-12 miles from shore. The grey line represents 12 miles to the LMA 1/3 boundary. Data come Maine DMR's harvester reporting database.

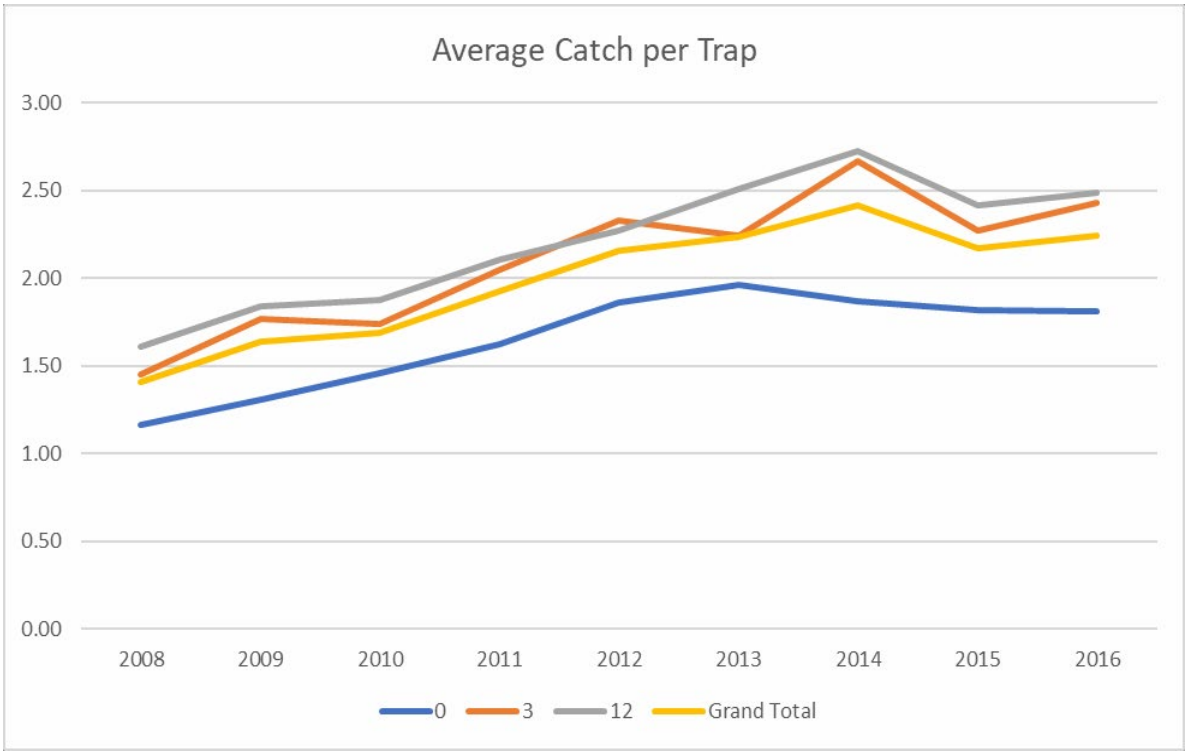

Figure 4: Average catch per trap (in pounds) in the Maine lobster fishery. The blue line represents 0-3 miles from shore. The orange line represents 3-12 miles from shore. The grey line represents 12 miles to the LMA 1/3 boundary. Data come from Maine DMR's harvester reporting database.

II. 1700-Pound Weak Points

This proposal includes the addition of weak points to remaining vertical lines in the Maine lobster fishery. This measure will result in rope breaking at 1700 lbs, a value determined in the literature to be weak enough to allow a right whale to break free.[24] Moreover, Knowlton *et al*., concluded from their research that a 1700 lbs breaking strength will significantly reduce the rate of serious injury and mortality to right whales as a result of entanglements. Thus, it offers a level of protection for all lines left in the water.

Appendix V describes results of ME DMR's research initiative to determine the breaking strength of vertical lines already being used by the fishery, as well as various rope and weak point configurations. This analysis is provided to NOAA Fisheries to begin the development of a list of 1700 lbs weak points options approved for use in the fishery. ME DMR has specifically focused on weak points which result from alterations to existing rope. This aligns with ME DMR's goal of reducing economic impacts on the fishery. As such, ME DMR plans to continue this work with the industry and requests the ability to continue to refine and add to the list of options approved for use as 1700 lbs weak points.

ME DMR highlights that weak points, in combination with the minimum trawling-up levels proposed, must be in conjunction with conservation equivalency. Due to the varying fishing conditions along the coast, a 'one size fits all' approach does not work in Maine. As a result, a method for flexibility must be included in the proposed rule so that, in consideration of local practices and challenges, fishermen can suggest modifications to the regulations to achieve the same level of protection for right whales. Conservation equivalency is particularly important for safety; without a method to modify the state-wide proposal to fit regional oceanographic conditions, fishermen will be required to partake in unsafe fishing practices. ME DMR is committed to ensuring the safety of fishermen throughout this regulatory process and feels conservation equivalency is a key to this endeavor. Sections VI and VII provide greater detail on this management flexibility.

a. State Waters (shoreward of the 3-mile line)

Proposal: Through state regulations enacted by ME DMR, a single 1700 lbs weak point will be required half way down vertical lines in the Maine lobster fishery.

Rationale: The inclusion of weak points in all vertical lines means rope will part at the 1700 lbs breaking strength recommended in literature and by the ALWTRT. In particular, including a weak point in exempted waters provides protection such that, in the rare event a right whale enters exempted waters and gets entangled, the encounter will not result in a SI&M. It is important to note that the risk reduction associated with the weak point in exempted waters is not included in ME DMR's analysis as shown in Appendix I. As a result, the risk reduction achieved from the implementation of a weak point in exempted waters is in addition to the risk reduction percentage calculated in Appendix I.

[24] Knowlton et al., 2015.

ME DMR intends for this measure to be implemented in state regulations and not in the federal ALWTRP. It is recommended NOAA Fisheries cite the state regulation when federal regulations are published. If necessary, ME DMR would support a clause that, if Maine removes this state regulatory requirement, NOAA Fisheries would take emergency action to implement the same regulatory measure in the ALWTRP.

b. Federal Waters (3-mile line out to 12 miles)

Proposal: Two 1700 lbs weak points will be required in the top half of all vertical lines in the Maine lobster fishery from the 3 -mile line out to 12 miles. One weak point should be roughly 25% down the vertical line and the other roughly 50% down the vertical line.

Rationale: The inclusion of weak points in all vertical lines means rope will part at the 1700 lbs breaking strength recommended in literature and by the ALWTRT. As a result, this substantially reduces the risk of serious injury and mortality in Maine's waters.

Based on industry comments, ME DMR is concerned that, in some areas, a weak point 50% down the vertical line may compromise fishermen safety when hauling, particularly as the minimum trap-per-trawl requirement increases. Maine's Commercial Fishing Safety Council, a body established in state statute charged with providing information and advice concerning fishing safety issues, also expressed concerns particularly when fishing in large tides. Given it is likely that a weak point 50% down the vertical line may work for some fishermen and not for others, ME DMR highlights the importance of having a method for conservation equivalency and individual safety exemptions in the federal proposed rule (see Sections VI and VII). This flexibility would allow some lobster management zones and/or individuals in Maine to achieve the same level of conservation by adopting a different measure (e.g. greater level of trawling-up, trap reduction) in order to move the weak points further up the vertical line.

c. Federal Waters (outside 12 miles)

Proposal: One 1700 lbs weak point one-third of the way down the vertical line in the Maine lobster fishery outside 12 miles from shore.

Rationale: The inclusion of weak points in all vertical lines means rope will part at the 1700 lbs breaking strength recommended in literature and by the ALWTRT. As a result, this substantially reduces the risk of serious injury and mortality in Maine's waters. Proposing one weak point further up the vertical line outside 12 miles is in response to safety concerns heard from the fishing industry and Maine's Commercial Fishing Safety Council. Trawl minimums of 25-trap trawls fished in deeper waters at this distance from shore put higher hauling loads on the vertical lines and could result in safety issues. Putting a weak point one-third of the way down the vertical line, as per the recommendation of the Maine Commercial Fishing Safety Council, puts a protection measure in place for right whales encountering the top of the vertical line, while ensuring the safety of fishermen utilizing these waters. A greater description of these safety concerns and associated data are included on pages 22-25.

Maine's proposal for weak points was developed by focusing on three factors: feasibility, enforceability, and protections to right whales. ME DMR originally began to consider the inclusion of weak points in vertical lines because a 1700 lbs manufactured rope is currently not available at marine supply stores. Further, ME DMR's testing of various functional breaking strengths (Appendix V) indicated a 5/16th diameter rope would be needed to meet the threshold of breaking at 1700 lbs. At industry meetings, fishermen consistently commented that 5/16th diameter rope would be too small for their haulers. Given these constraints, ME DMR began to consider weak points as a way to reduce the breaking strength of vertical lines.

Enforceability of Proposed Weak Point Measures

In its development of a weak point proposal, ME DMR had several conversations with law enforcement personnel to determine what types of weak point measures can be enforced on the water. Maine Marine Patrol agreed that implementing regulations requiring a specific number of weak points in broad fishing areas is enforceable; but requiring weak points based on a prescribed depth interval is not. More specifically, if a regulation were to require weak points at a specified depth spacing, each fisherman would have a different weak point requirement for each of his or her lines depending on the depth at which his or her traps were submerged. As a result, enforcement personnel would have to know the depth of water when the traps were set and then count the associated number of weak points to determine compliance. Not only is this time consuming but it is impractical given depths change throughout the day due to tides. Further, traps can be moved in large storms, meaning a trap legally set at one depth may be moved to a different depth and be in violation of the ALWTRP.

Trying to create uniformity in weak point regulations by lobster zone also poses enforcement challenges. Depths vary between and within Maine lobster zones. For example, offshore regions of Zone G (adjacent to the New Hampshire border) have much shallower sections than its neighboring Zone F. As a result, regulations based on depth would result in different weak point requirements for the two zones. This disparity between zones creates complications given fishermen can, and often do, move between adjacent areas. Under Maine's regulations, fishermen can fish up to 49% of their traps in an adjacent zone. This means, for example, a Zone G fisherman can fish 49% of his or her traps in Zone F. If fishermen setting traps side by side are subject to different regulations, enforcement of these regulations becomes extremely difficult.

Operational Feasibility for Industry

Another key consideration for ME DMR when discussing weak points was their feasibility for industry. Staff at the NEFSC compiled information showing the number of points which would result if weak points were required every 40 ft in the top half of a vertical line (Figure 5). While this analysis was intended for discussion, it highlighted the impracticality of weak points at this spacing. Specifically, fishermen in three to six miles would be required to have roughly 3 to 8 weak points in the top half of their line as water depths increased; fishermen in six to twelve miles would be required to have roughly 5 to 13 weak points in the top half of their line; and fishermen outside of twelve miles would be required

to have anywhere from 5 to 20 weak points in the top half of their line. These numbers of weak points would likely incentivize the use of more rope, increasing the risk of whales getting entangled in the water column and fishermen getting entangled in additional rope on deck. At ME DMR's industry meetings, fishermen commented that, in response to an initial proposal that 75% of their vertical line break at 1700 lbs, they would likely lengthen their vertical line to ensure a safe rope strength when hauling traps. ME DMR believes a similar response would occur if numerous weak points are required; fishermen will likely lengthen line, even at the cost of adding more weak points, to ensure 'strong' rope when hauling. This outcome is counter to the efforts of the ALWTRT as it would result in the presence of additional slack rope in the water, thereby increasing the risk of entanglement.

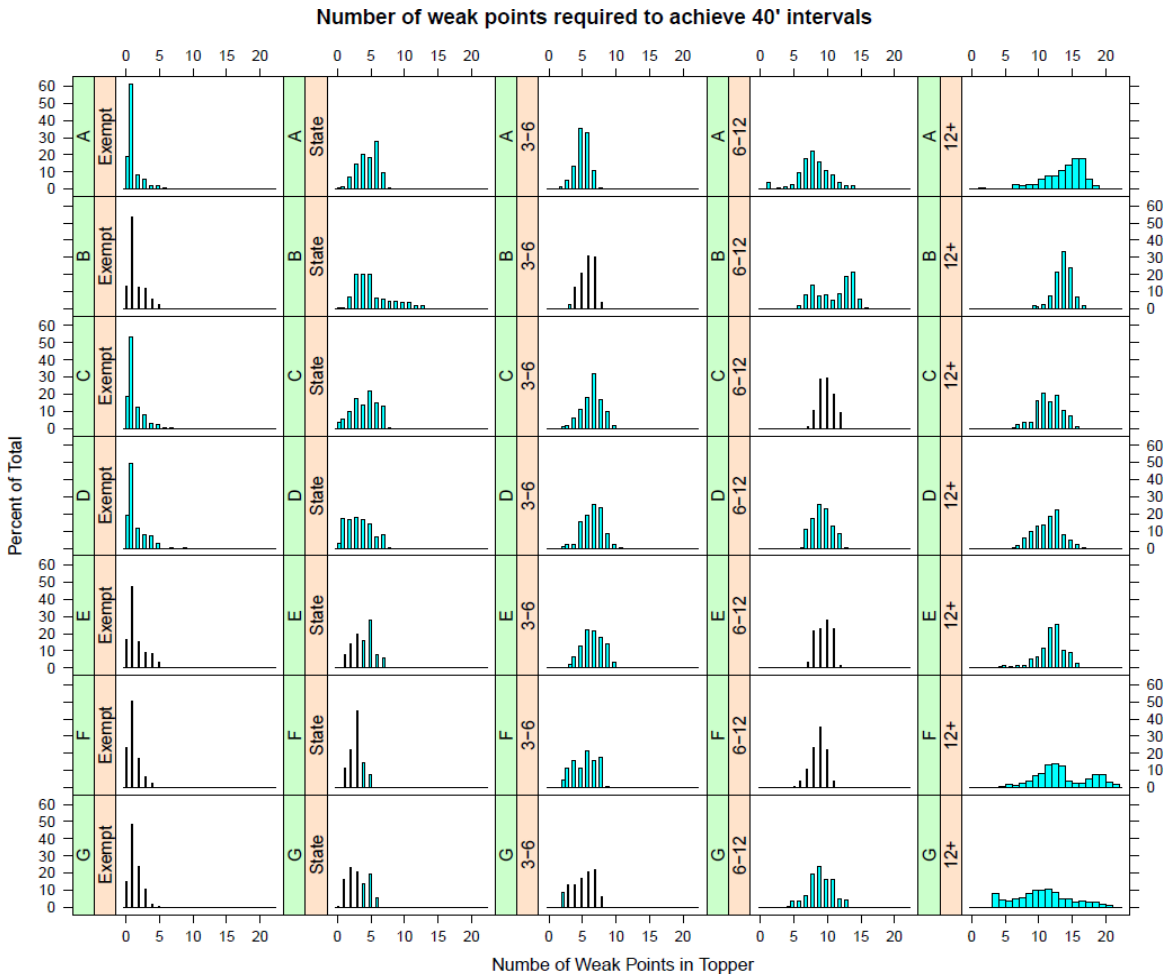

Figure 5: Number of weak points in the top half of a vertical line if required every 40 ft, by Maine lobster zone and distance from shore. Data and figure provided by the NEFSC.

ME DMR is confident that its proposal for 1700 lbs weak points is enforceable, feasible, effective and, most importantly, will not create perverse incentives which jeopardize right whale conservation. A specific number of weak points is enforceable because it is simple and uniform based on distance from shore. This proposal is also feasible for fishermen, helping to ensure compliance with the regulations. ME DMR does not anticipate it will drastically alter current vertical line lengths given rope strength is preserved in the bottom half of the vertical line where load cell data shows the strain is highest.

Development of Weak Point Measures: Data and Previous Discussion

In ME DMR's analysis for this proposal, we found a lack of data or peer-reviewed literature regarding the ideal distance between weak points. Further, the definition of weak rope, how weak points may be integrated into vertical lines, or how much risk reduction should result from these measures were not agreed upon at the April 2019 ALWTRT meeting. Review of the meeting summary for the April 2019 ALWTRT meeting showed neither a discussion regarding the appropriate spacing of weak points nor a definition of what might constitute weak rope was ever made or included in the vote.

In the history of the ALWTRT, there have been discussions and proposals which have included measures which occur every 40 ft; however, it has never been formally agreed that this is the correct spacing for any measure. ME DMR reviewed the origin of the 40 ft spacing and found it was initially a recommendation developed for potential gear marking requirements. The first mention of using 40 ft spacing for gear marking occurred in a 2009 report on experimental wire tags from the International Fund for Animal Welfare. This report was included as a part of the November 2010 ALWTRT meeting. The report suggests that because 90% of the gear recovered from whales is at least 40 ft in length, marking gear every 40 ft would result in 90% of recovered gear having a mark which can be used to discern fishery and/or set location. The data referred to in the report are from a study conducted by John Kenney, a former NMFS gear specialist. Kenney looked at gear taken off of whales from 1997-2003 which ranged in length from 5-1200 ft. He found in the 61 samples analyzed, the average length of line was 181 ft, the median length was 102 ft, and the lower and upper quartiles were 60 and 222 ft, respectively. From this analysis it was concluded that 12 ft spacing would result in 95% recovery of a mark, 40 ft would result in 90% recovery, 60 ft would result in 75% recovery, and 102 ft would result in 50% recovery.

The first place that the 40 ft spacing was used in conjunction with a weak point was in the April 2017 ALWTRP exemption request from the Massachusetts South Shore Lobstermen's Association. In this proposal, the fishermen proposed to implement a weak sleeve (breaks at 1700 lbs) every 40 ft in their vertical lines as a way to be able to fish inside the Massachusetts Restricted Area closure. The 40 ft spacing was used, not because it was determined to be the ideal spacing for weak points, but because they were proposing the sleeves double as their gear marking requirement as well. This proposal was not ultimately accepted by the ALWTRT.

There have also been comments that the 40 ft spacing is consistent with the girth or length of a right whale. ME DMR maintains this has not been discussed by the ALWTRT nor has it been published in peer-reviewed literature. Therefore, 40 ft spacing has no basis as the standard by which the addition of weak points for the conservation benefit of right whales should be held.

Modifications to Maine's Weak Rope Measures

At the April 2019 ALWTRT meeting, the implementation of 1700 lbs breaking strength rope in the top 75% of vertical lines was discussed for the federal Maine lobster fishery. This idea was presented to fishermen at ME DMR's industry meetings in June 2019 and concerns were expressed regarding the ability to safely haul gear. Specifically, fishermen

were concerned that weakening the top 75% of the vertical line in combination with the proposed increases in trawl lengths would reduce safety at sea. Many fishermen commented that, to accommodate the proposed weakening of the majority of their endline, they intended to increase the length of their vertical line to lengthen the bottom 25% of their endline and ensure enough rope strength when hauling traps. Increasing overall amounts of rope in the water is counter to the efforts of the ALWTRT, particularly when such additional line will likely be slack. Industry members that fish in federal waters inshore of the 12 mile line did express that, with existing vertical line lengths, modifications to the top 50% of the rope would be more feasible and preferable, in that it would not likely lead to fishermen's use of increased rope amounts. As a result, ME DMR moved towards examining changes to the top 50% of the rope to ensure industry feasibility and safety in addition to the protection of right whales.

ME DMR has heard from fishermen fishing outside of 12 miles that a weak point 50% of the way down the vertical line would present safety concerns given the 25-trap minimum being proposed in this area. These concerns are supported by the load cell data gathered by ME DMR and presented in Figure 8 (discussed in depth below). Loads recorded on vertical lines for gear being fished in more than 100 fathoms of water and more than 20-traps on a trawl exceeded 2,000 lbs of load. Hauling loads at a weak point 50% of the way down the line would likely result in loads routinely over 1,000 lbs of force. To accommodate weather conditions, hang downs, and set over events, ME DMR worked with industry to propose a weak point one-third of the way down the vertical line.

Using Load Cell Data to Inform Protections for Whales and Safety for Fishermen

The strategy to achieve a conservation benefit for right whales in the top portion of the line, while maintaining safe hauling practices for fishermen, is supported by data collected through ME DMR's vertical line research initiative. Beginning in 2018 and extending through 2019, ME DMR worked with fishermen throughout the Gulf of Maine region to deploy load cells on lobster vessels and document the hauling loads experienced by vertical lines during common fishing conditions. Of the 14 fishermen who fished with load cells on their boats, six of those were from Maine, documenting over 140 hauls in five of the seven Maine Lobster Management Zones (Figure 6). The Maine portion of the dataset occurs in federal waters and includes trawl lengths ranging from 15 to 20 trap trawls in depths of 55-125 fathoms.

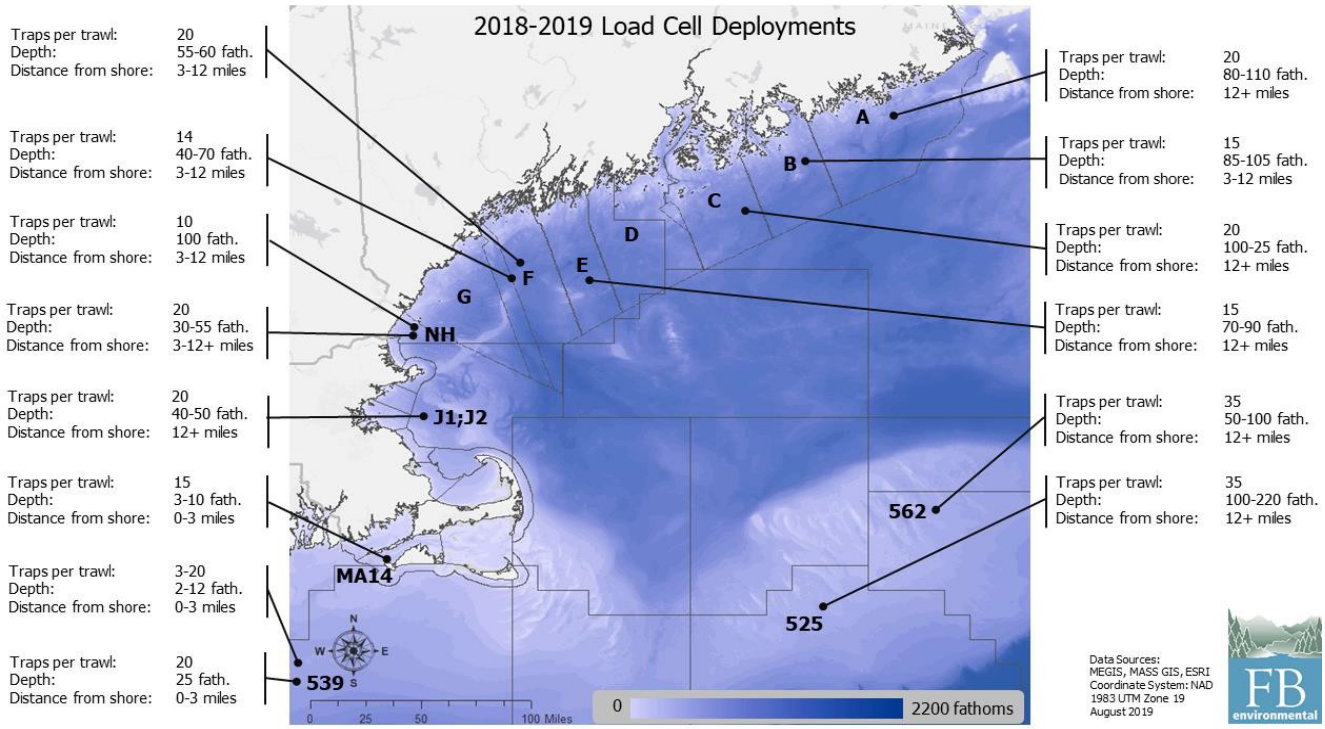

Figure 6. Summary of load cell deployments throughout the Gulf of Maine and New England with associated information on the trawl lengths, depth, and distance from shore.

Results of the load cell deployments show peaks in the load asserted on the line as the trawl is being hauled (Figure 7). Often, the highest peaks in the loads are in the first section of the haul, including the vertical line, because this corresponds to when the maximum number of traps are suspended in the water column. Most of the hauls recorded were in calmer weather and, while some gear set overs (where a trawl is laid over another) were recorded, these results shouldn't be expected to show the highest possible loads that would be experienced by fishermen in more extreme hauling events.

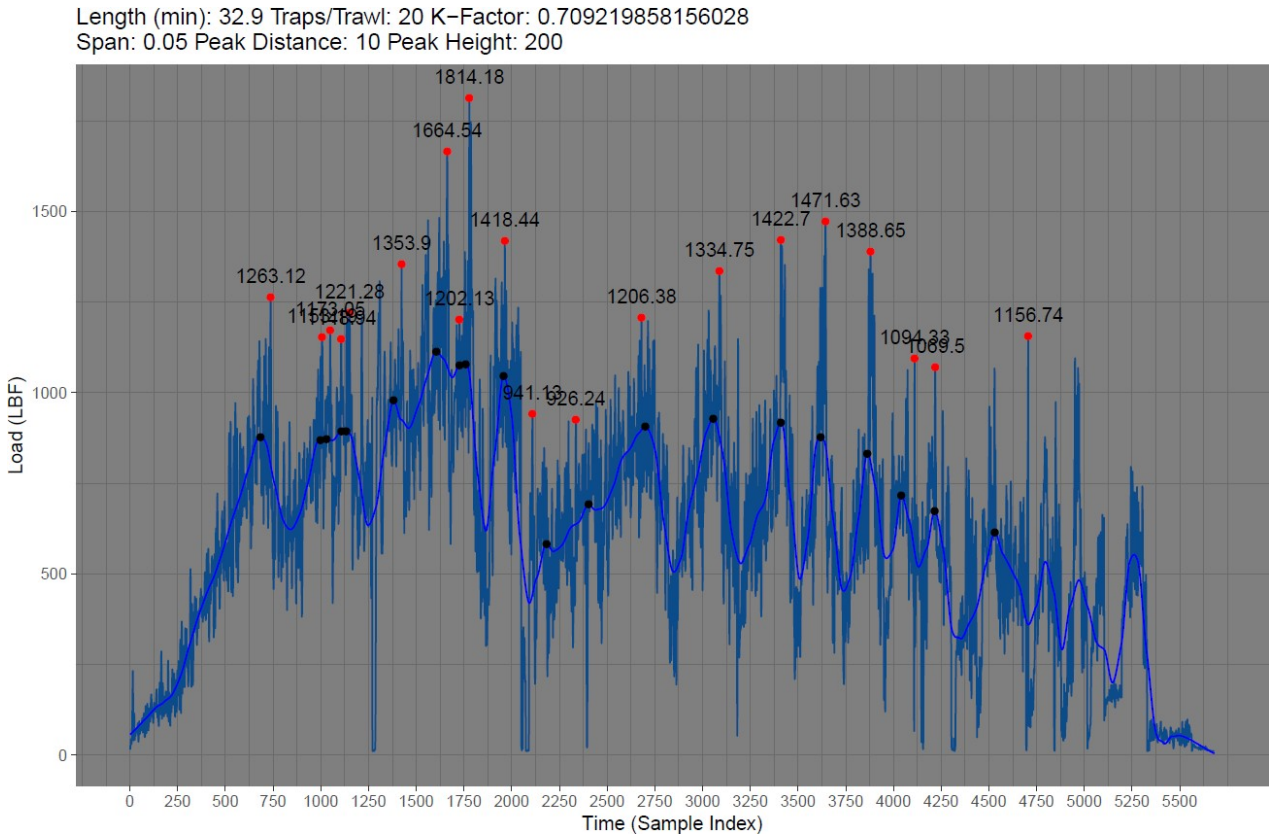

Figure 7. An example of a load cell output from a 20-trap trawl. The portion of the haul that is the load on the vertical line occurs between 0-750 on the time axis and increases steadily as traps are picked up off of the bottom. The first trap coming onboard the vessel is denoted by the red circle and was validated by observers on the vessel. The peak load on the vertical line occurred at the first trap with a load of 1,263 lbs. Loads after this point were hauled on the groundline.

The results from the load cell deployments in Maine federal waters support the concerns expressed by fishermen, namely that the combination of increased trawl lengths and weak points half way down the line could compromise safety. Figure 8 shows the average and range of hauling loads on the vertical lines for a variety of trawl lengths and how those loads are affected by the depth of the trawl. Trawl lengths of 20 traps in more than 100 fathom depths have average vertical line loads greater than 1700 lbs and range over 2000 lbs. As a result, it is essential that this portion of the fishery be allowed a sufficient length of vertical line at the bottom to be able to haul these common working loads safely.

The average hauling loads documented for trawls between 5-20 traps in 50-100 fathoms are below the 1700 lbs threshold for loads. However, this does not allow a safety buffer for more extreme hauling events that include weather, gear set-overs, and getting hung-down (or caught) on rocky bottom. There were 60 hauls of 15-trap trawls in this depth range with the load cells. The maximum load recorded on a vertical line was 2,152 lbs, which is over the weak point 1700 lbs threshold. The average vertical line hauling load of these trawls was 1365 lbs, just 335 lbs below the 1700 lbs target. 25% of these hauls recorded vertical line loads over 1500 lbs and 97% of hauls were over 1000 lbs. Additionally, 100% of hauling loads for the 5-trap trawls in this depth bin were also over 1000 lbs of load.

ME DMR supports the industry's request for safe buffers in working line loads to allow for variables that impact both the load put on lines during hauling and the likelihood that a line may break. These variables include the natural degradation of line strength over time, extreme hauling events, weather, and tides.

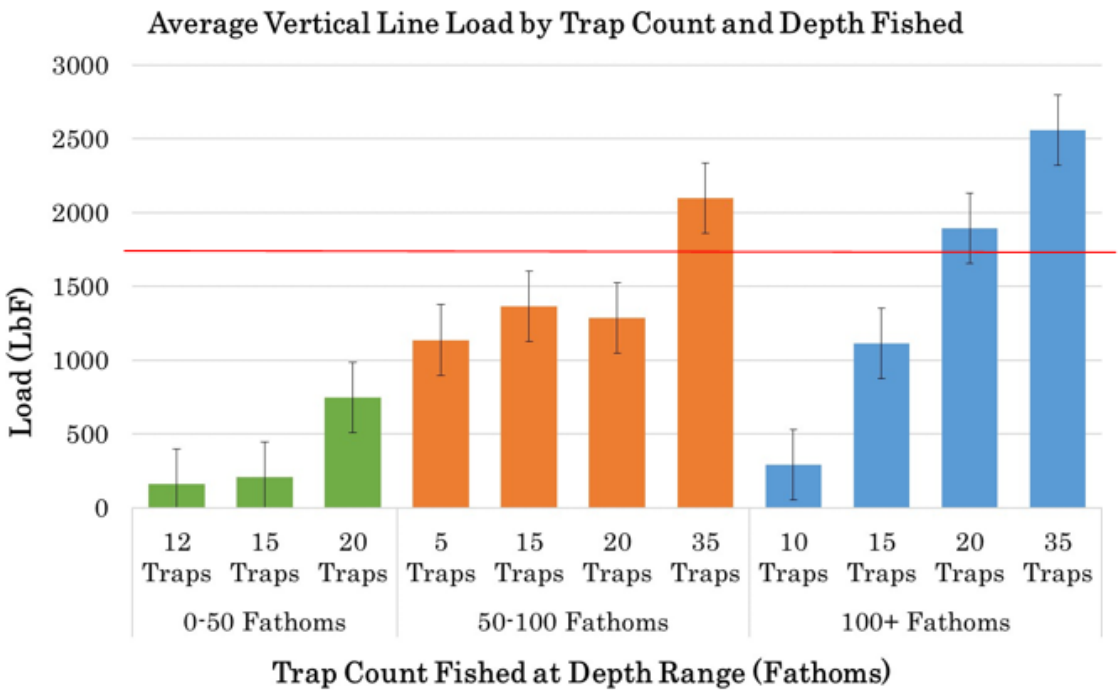

Figure 8. All recorded vertical line loads binned by trawl length and depth fished. Average vertical line loads for more than 20-trap trawls in 100 fathoms of water are above the 1,700 lbs weak point threshold. Trawl lengths from 5-20 in the 50-100 fathom depth bin average below the 1700 lbs threshold, but almost reach over 1000 lbs almost 100% of the time.

Implications for Drag Should Entanglement Occur

In this proposal, varying lengths of vertical line have the potential to be left on a right whale in the event it becomes entangled and the rope breaks at a weak point. The length of the trailing line depends on the initial length of the vertical line and the number of weak points required in the area. Figures 9-11 were developed by the NEFSC for discussion around this topic and show the spectrum of line lengths which could be left on right whales under this weak point proposal. Figure 9 should be used for the state waters (all exempt and non-exempt state waters) proposal of one weak point half way down the vertical line. In general, less than 100 ft of line would be remaining after a break inside the exemption area. Only slightly more, up to 150 ft, could be left on a right whale in Maine's non-exempt state waters.

Figure 10 shows the lengths of line that could result from three to twelve miles in federal waters where two weak points in the upper 50% of the vertical line are required. The results

vary by distance from shore, which is mainly attributable to the differences in depth and therefore the scope of the vertical line in each area. From 3-6 miles from shore the length of line left on a whale could range from about 50-125 ft. The more offshore section from 6-12 miles increases to a range of 100-200 ft.

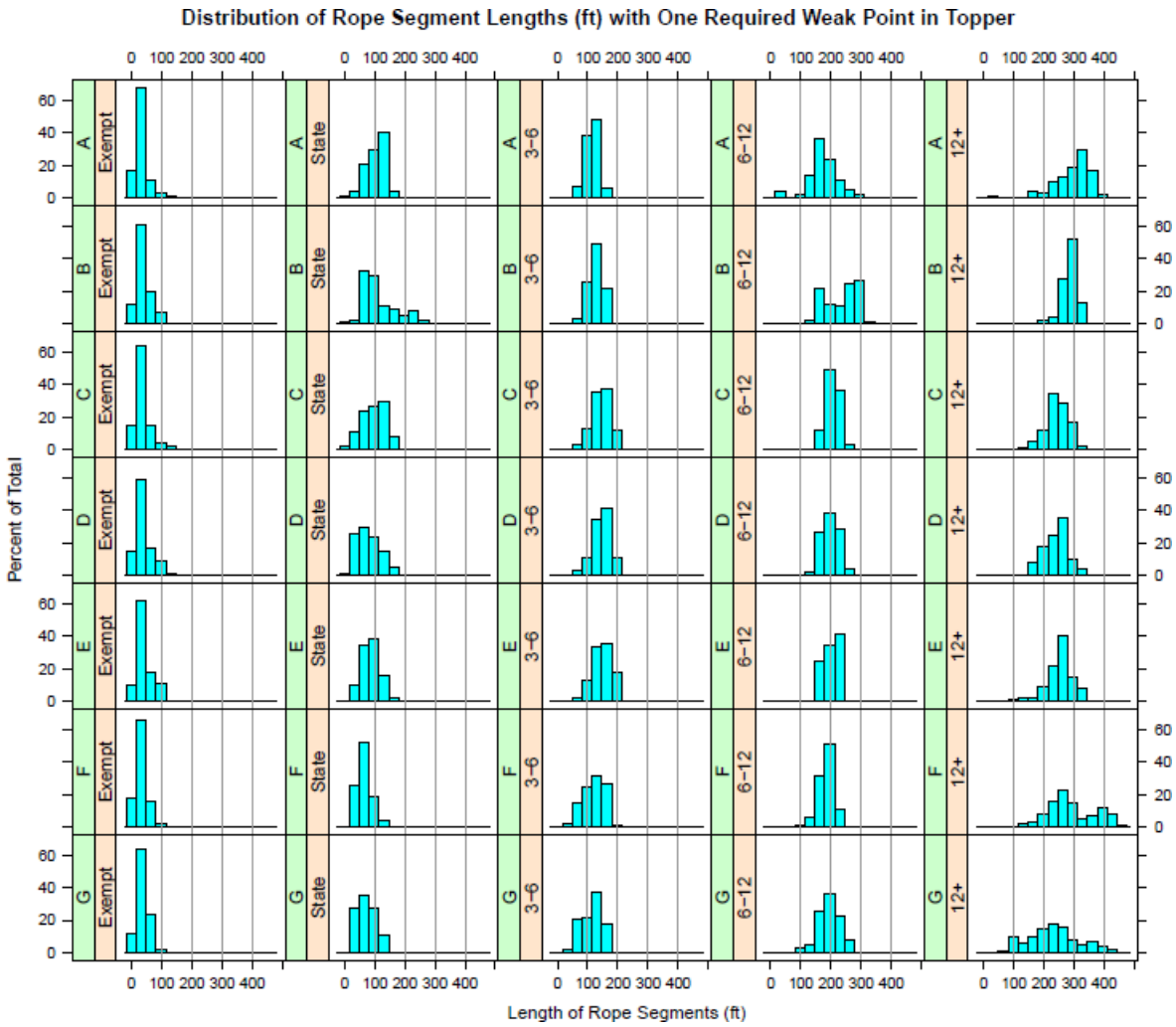

Figure 9. This figure was prepared by the NEFSC for discussion purposes. The first two columns, "exempt" and "state", show the range in lengths of lines that could be left on a right whale after a weak point breaks. This is assuming one weak point 50% down the vertical line in state waters and is categorized by the amount of gear in a given depth. Most gear inside the exemption line would result in less than 100 ft of line remaining on a right whale after a break. Gear in non-exempt or "state" waters would result in slightly longer lengths of line, generally ranging from 100-150 ft.

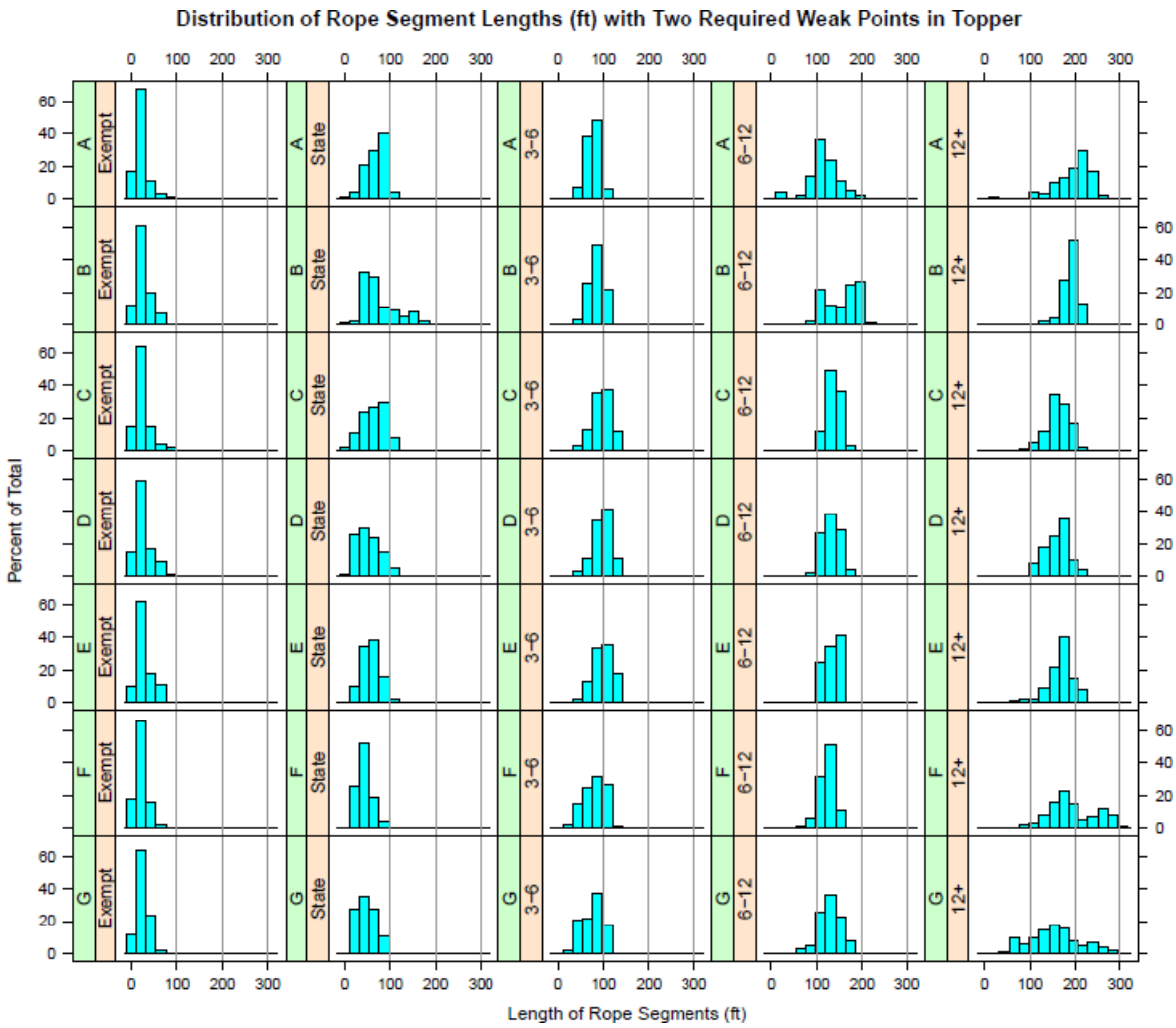

Figure 10. This figure was prepared by the NEFSC for discussion purposes. The columns labeled "3-6" and "6-12" show the range in lengths of lines that could be left on a right whale after a weak point breaks from three to twelve miles in federal waters by distance from shore. This is assuming two weak points in the top 50% of the vertical line in this area and is categorized by the amount of gear in a given depth. Most gear in the 3-6 mile band would range in remaining line length from 50-125 ft. A break in the distance range 6-12+ could result in lines left from 100-200 ft.

Under this proposal the area outside of 12 miles from shore will have one weak point 1/3 of the way down the vertical line from the buoy to accommodate the safety needs of the fleet operating in deeper depths with longer trawls. Figure 11 shows the distribution of vertical lines occurring at different water depths by distance from shore in Maine waters. The fishing area outside of 12 miles can generally range from 50-125 fathoms depth, but most of the vertical lines occupy the depths around 100 fathom. Assuming a 1.5 scope of vertical line length to depth, a common practice in the fishery, the vertical line lengths would range to 188 fathom. A weak point breaking 1/3 of the way down this vertical line could result in a line 62 fathom in length on a right whale.

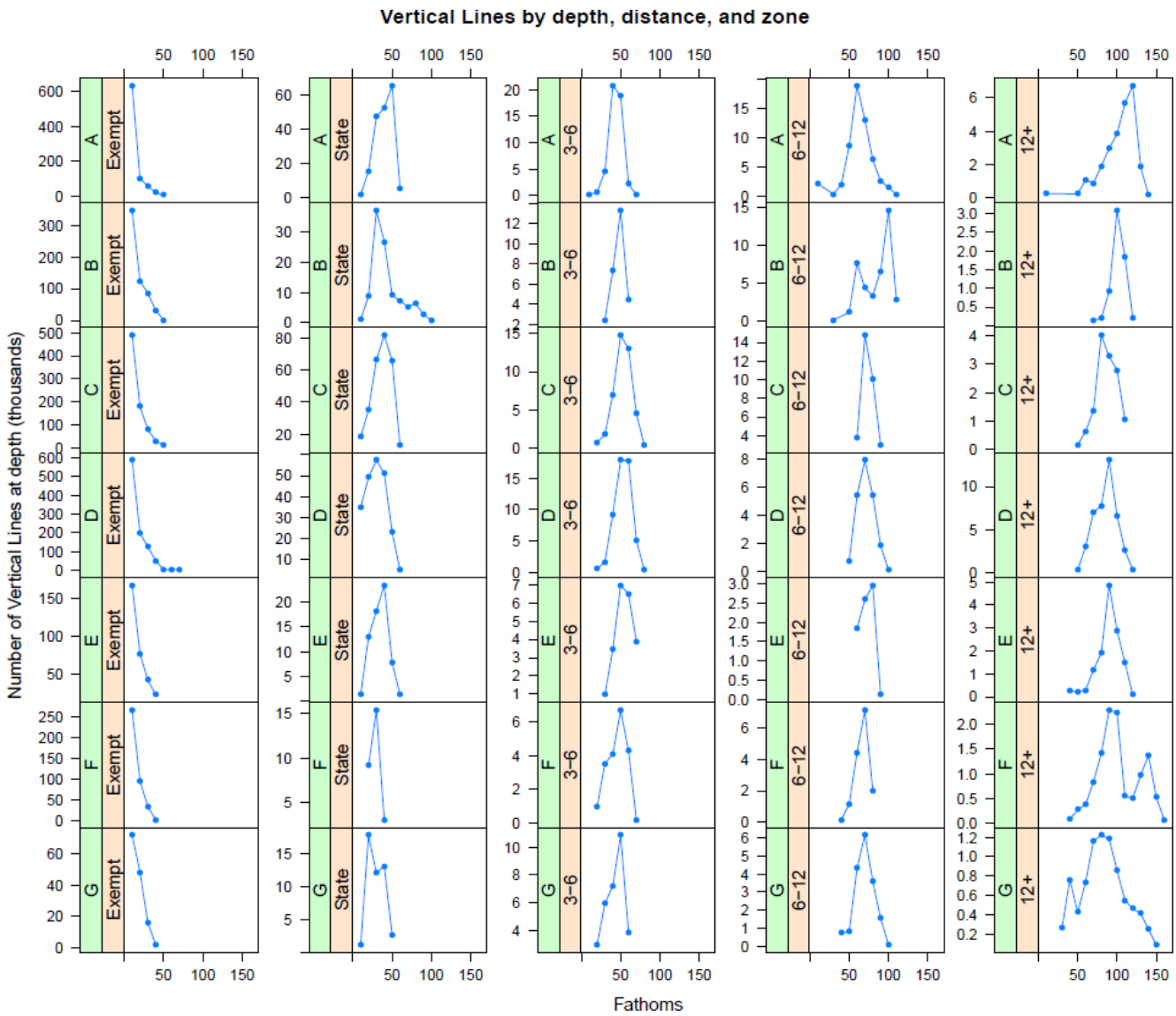

Figure 11. This figure was prepared by the NEFSC for discussion purposes. The last column label "12+" by Maine Lobster Management Zones A-G, shows the number of vertical lines distributed in that area by depth in fathoms. Most of the gear set in the 12+ distance from shore is set in a range around the 100fa depth strata.

Van der Hoop *et al.* (2015)[25] shows some results of the drag resulting from different lengths of 5/16" line and concludes shorter lengths of line are better for whales due to less drag forces being applied to the swimming whale. ME DMR attempted to duplicate these results using two different diameters of rope most common in the fishery: 3/8" and 7/16" sink rope. Van der Hoop used a range of line lengths including 82-480 ft. DMR used a set of three lengths which included 60, 120, and 240 ft. In the ME DMR study (Figure 12), the different diameters and lengths of line were tested using a load cell to measure the pounds of drag force exerted on the lines at varying vessel speeds. The slow speed, around 2.5

[25] Van der Hoop, J. M., Corkeron, P., Kenney, J., Landry, S., Morin, D., Smith, J., and M. J. Moore. 2015. Drag from fishing gear entangling North Atlantic right whales. *Marine Mammal Science,* 32, 2:619-642.

knots, simulates the swimming right whale. The higher speeds may be confounded by the wake created by the vessel exerting more drag force on the lines.

The results show that, at the 2.5 knot speed, drag forces are at or below 10 lbs of force for any of the line lengths in both studies. DMR's results show that at the line lengths of 60 and 120 ft, line drag is less than 5 lbs of force. Lengthening the line out to 240 ft only increased the drag a couple of pounds, up to 7 lbs of drag force. DMR believes that increasing the number of weak points and, therefore, shortening the distance between them will have minimal effect on the potential drag for right whales, but would come at a much greater cost to the fishing industry.

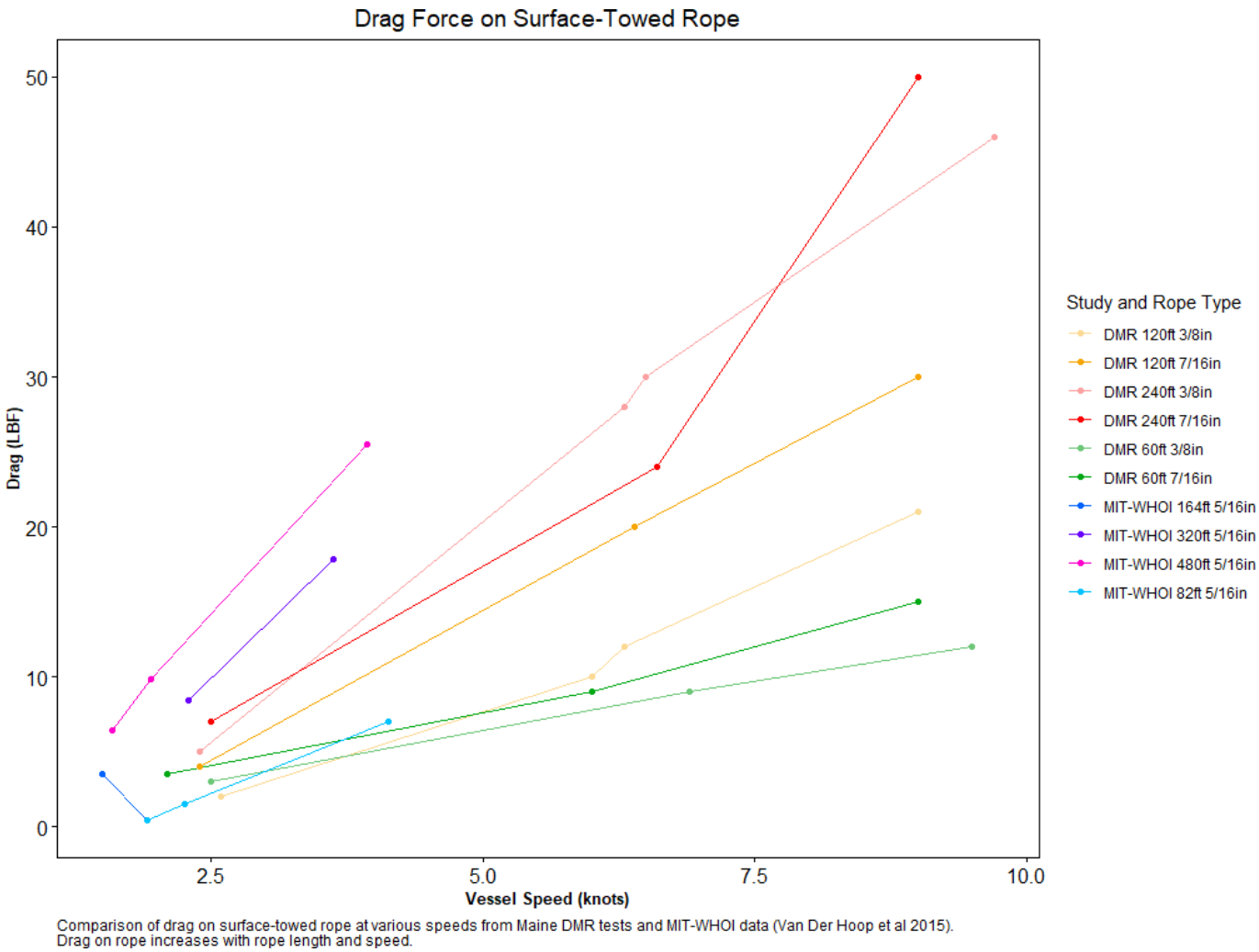

Figure 12. Data from ME DMR field trials assessing the drag force exerted by different diameters and lengths of line are plotting here next to the results from Van Der Hoop *et al.* 2015. At the speed of 2.5 knots, all lengths of line exert less than 10 lbs of drag force, with the 60 and 120 ft lengths exerting less than 5 lbs.

III. Gear Marking

a. Exempt Waters (shoreward of the exemption line)

Proposal: A purple Maine-only gear mark is required at the top, middle, and bottom of the vertical line. The top mark is 36" in length and must be in the top two fathoms of the line. The middle and bottom marks are 12" in length. Gear mark requirements within exempt waters have been finalized by the adoption of state regulations.

Note: ME DMR finalized gear marking requirements for exempt waters at its October 2019 DMR Advisory Council meeting. The regulations set an implementation date of September 2020, ahead of the federal regulatory process, and will allow for individuals to switch to purple gear-marking ahead of the implementation deadline. A copy of the regulations can be found here: https://www.maine.gov/dmr/laws-regulations/regulations/documents/dmrchapter75_11132019.pdf

It is recommended NOAA Fisheries cite ME DMR's regulation when the federal rule is published and include a clause that, if the State removes this requirement, NOAA Fisheries would take emergency action to implement the same regulatory requirement in the ALWTRP.

Rationale: (see rationale included for non-exempted waters below)

b. Non-Exempt Waters

Proposal: A purple Maine-only gear mark replaces the existing 12-inch red marks at the top, middle, and bottom of the vertical line. In addition, a 6" green mark and a 36" purple mark, in the top two fathoms of the line will be required.

Note: ME DMR finalized gear marking requirements for non-exempt waters at its October 2019 DMR Advisory Council meeting. The regulations set an implementation date of September 2020, ahead of the federal regulatory process, and will allow for individuals to switch to purple gear-marking ahead of the implementation deadline. A copy of the regulations can be found here: https://www.maine.gov/dmr/laws-regulations/regulations/documents/dmrchapter75_11132019.pdf

Rationale: It has been clear throughout the ALWTRT discussions that a primary impediment to the development of regulations is the lack of conclusive data on what gear is involved in entanglements. This includes cases in which no gear is present and cases in which gear is retrieved but does not have markings which can be traced to a specific fishery. Maine's gear markings address both of these challenges by increasing the amount of gear that is marked and increasing the frequency of markings on those lines. Maine has adopted these additional gear markings ahead of the federal regulatory process given the importance of spatially-specific data.

The core of Maine's gear marking proposal is the implementation of a state-specific purple mark for Maine's lobster fishery. At present, all Northeast trap/pot gear is identified by a red mark. This lack of spatial specificity means that, if red-marked gear is retrieved during an entanglement, the gear cannot be attributed to a specific state. As a result, it is nearly impossible to develop protections for right whales which are specific to fisheries or regions with confirmed entanglements, and broad-brush management measures must be used as a default. Maine's adoption of a state-specific mark will help provide the basis for spatially specific data and support better management advice in the future. Furthermore, a lack of purple marks in future entanglement records will help Maine justify the success of its right whale protection measures in place at that time.

Another major component of Maine's gear marking plan is the requirement that all commercial lobster gear within Maine's exempted waters be marked. Currently, gear fished shoreward of the exemption line is not subject to the gear marking requirements in the ALWTRP. While scientific evidence does not show that right whales frequent exempted waters or that gear within the exemption area has contributed to a right whale entanglement, the State does recognize that this lack of marking creates holes in the data. Requiring this gear to be marked will address these data gaps and greatly increase the number of marked vertical lines. Further, it will reduce uncertainty surrounding the retrieval of gear that is unmarked since all Maine commercial lobster gear will be subject to marking requirements and, therefore, identifiable.

Gear in both the exempt and non-exempt waters will be required to have a 36" purple mark in the top two fathoms of the line. This requirement stemmed from a Coast Guard and New England Fishery Management Council recommendation intended to increase the visibility and frequency of markings. Specifically, the Coast Guard suggested a 36" mark at the top of the line could enable the identification of fishery-specific gear from various platforms such as boats and planes. This would mean data in the entanglement record could be significantly improved without gear being retrieved. Further, the additional mark increases the number of marks per line by 25%, making it more likely that a piece of retrieved gear from an entangled whale will have a mark.

Finally, Maine is proposing a green mark, in combination with the Maine-only purple mark, be required on vertical lines outside of exempted waters. A cornerstone of Maine's right whale regulations is the exemption line, which identifies inshore waters and bays where right whales are rarely, if ever, present. This exemption line creates a balance between establishing protections for right whales and ensuring a viable lobster fishery in Maine. As all Maine lobster gear becomes marked, it is critical to differentiate between gear in exempted versus unexempted waters given the two regions are subject to different regulations. Requiring an additional green mark, in combination with the purple mark, allows Maine to achieve this objective.

IV. Harvester Reporting

a. All Maine Commercial Lobster License Holders

Proposal: Move the Maine lobster fishery to 100% harvester reporting.

Rationale: Currently 10% of Maine lobster license holders are randomly selected each year to complete harvester reporting. While analysis by the ASMFC's Lobster Technical Committee[26] suggests this level of reporting is enough to get precise estimates of catch, it does not provide the level of information on fishing effort or location needed for current right whale discussions. Increased harvester reporting will close this data gap and provide a complete picture of activity in the Maine lobster fishery. Addendum 26 to Amendment 3 to the Atlantic States Marine Fisheries Commission American Lobster Fishery Management Plan, which was approved in February 2018, requires all states to implement 100% active commercial harvester trip-level reporting by January 1, 2024. Given, the importance of improved fishery effort data to ongoing discussions, ME DMR is considering adopting 100% reporting ahead of the ASMFC requirement.

Moving to 100% harvester reporting in the Maine lobster fishery is a large financial endeavor. The Maine lobster fishery comprises roughly 40% of all commercial fishing trips taken each year by all fisheries along the Atlantic coast. As a result, the anticipated volume of reports requires additional ME DMR staff for QA/QC, technical support, and licensing. Further, options for electronic reporting will need to be developed and offered to defray costs associated with paper reporting. Currently, DMR is under contract with a third-party firm to develop a harvester reporting application (expected to go live in Fall 2020) for iOS and Android devices that will make harvester reporting more efficient and user-friendly. ME DMR has also submitted a proposal for funding to the Atlantic Coast Cooperative Statistics Program (ACCSP). While the exact amount of funding is yet to be determined, it is likely there will be a substantial difference between the level of funding needed and the level of funding received. This deficit means other levels of funding will need to be identified and secured. ME DMR highlights the feasibility of 100% reporting, and the date associated with its implementation, are highly dependent on the level of funding received.

V. Electronic Tracking on Federal Vessels

At the April 2019 meeting, ALWTRT members had a cursory discussion regarding electronic tracking on federally permitted vessels. Given this discussion, ME DMR had conversations with law enforcement and industry to gather feedback.

From an enforcement perspective, vessel tracking in federal waters would be a critical tool to ensure new and existing regulations are properly enforced. Offshore fishing areas pose unique challenges to enforcing regulations because the areas are vast. As a result, many hours can be spent searching for gear. Further, Maine Marine Patrol currently has eight patrol vessels with the capability to haul lobster gear in state waters. Of those eight, only

[26] Addendum 26 to Amendment 3 to the American Lobster Fishery Management Plan. http://www.asmfc.org/uploads/file/5a9438ccAmLobsterAddXXVI_JonahCrabAddIII_Feb2018.pdf

four boats have the capability to effectively and safely inspect lobster gear in areas where larger trawls are fished outside of Maine state waters. As a result, Marine Patrol's capability to enforce lobster regulations drops as one moves further offshore.

Industry has expressed many reservations about adopting tracking on federally permitted vessels. These concerns include the cost of the unit, ongoing expenses associated with data plans, whether technical failures of a tracking device would cause boats to be tied to the dock, and whether vessels which already have VMS onboard will be required to have two different tracking units. Given a webinar on vessel tracking, as discussed at the April 2019 ALWTRT meeting, was never held, many questions remain regarding the parameters and potential impacts of this program.

Given industry's concerns and the lack of clarity around a federal tracking program, ME DMR recommends NOAA work with industry to understand the various tracking technologies which are available and to determine the associated costs. As a starting point, ME DMR notes that during the development of Addendum 26 to Amendment 3 to the American Lobster Fishery Management Plan, the ASMFC's Law Enforcement Committee (LEC) spent significant time discussing vessel tracking in the federal lobster fishery. This group produced several recommendations, including the need for a fast ping rate to discern between steaming and hauling. The LEC concluded the ability to distinguish these actions through a tracking device is important because it can indicate where traps are set and for how long. The LEC also noted that real-time data is not necessary in the lobster fishery given traps are set for multiple days; knowing the location of the traps is more important than getting hourly, real-time data. Given these criteria, it may be that a cellular-based tracking device is a better fit for the federal lobster fishery, and it is available at a substantially lower cost. At present, ASMFC is conducting a pilot program with cellular-based tracking devices in the lobster fishery to better understand their performance. This information may be crucial as NOAA begins to engage with the industry on this issue.

VI. Request for Conservation Equivalency

A unique feature of the Maine lobster fishery is that it is based on a system of co-management. The coast of Maine is divided into seven lobster zones in recognition that areas along the coast differ in habitat and traditional fishing practices. Each zone is represented through a Zone Council, which is comprised of fishermen in the region. These Zone Councils are an integral part of the lobster management process within the State. Under ME DMR's regulations, Zone Councils have the authority to set some measures within their Zone, including exit ratios (number of licenses issued vs. the number of licenses that are not renewed), number of traps fished (as long as this is more conservative than the statewide limit), number of traps on a trawl (as long as it is more conservative than state regulations), and time of day when fishing may occur. Several Zones have used this authority to fit regulations to their region. For example, fishermen in Zone E have adopted a 600-trap limit based on local fishing practices. All fishermen who fish in Zone E, regardless of whether it is their primary zone, are held to the 600-trap limit.

At present, ME DMR's proposal is for all state-licensed fishermen and is not differentiated by Maine's lobster management zones. However, this statewide approach does not

acknowledge the acute regional differences in the Maine lobster fishery. Further, it does not consider that Zone Councils may prefer a different combination of measures to achieve the same level of risk reduction. Allowing for future flexibility in the regulations to meet the same level of risk reduction will be crucial to the success of this rule. As a result, ME DMR recommends NOAA Fisheries include an alternative for conservation equivalency within the proposed rule. This will prevent the need for lengthy rule-making process if regional measures need to be adjusted to achieve the same level of risk reduction. Conservation equivalency is a management tool frequently used by the Atlantic States Marine Fisheries Commission and specific guidance has been developed on its implementation and use.[27]

VII. Individual Safety Program

For a small number of fishermen, the measures included in this proposal exceed the physical limitations of their boat and would require the purchase of a new boat to come into compliance. While ME DMR believes these individual cases are few and far between, we do believe they exist. Given the purchase of a new vessel can be cost prohibitive, ME DMR is asking for the flexibility to address these safety concerns on an individual basis. To be clear, ME DMR is not asking that these individuals be exempt from the risk reduction included in this proposal. Instead, ME DMR is asking for the flexibility to address these individual cases in which a fisherman physically cannot comply with the requirements.

For example, it may be that a fisherman does not have the boat capacity to comply with the new trawling-up requirements. ME DMR is requesting the flexibility to develop an individual plan to achieve the same risk reduction at a lower trawling-up scenario. This could include an individual trap reduction and/or the use of full weak rope to compensate for the lower trawl limit.

Maine Marine Patrol would be notified of these individual cases to ensure enforcement and all analysis showing the individual conservation equivalency would be sent to GARFO staff for review.

[27] Atlantic States Marine Fisheries Commission. Conservation Equivalency: Policy and Technical Guidance Document. Approved May 2004; Edited October 2016. http://www.asmfc.org/files/pub/ConservationEquivalencyGuidance_2016.pdf

Appendix I: Maine DMR Risk Assessment Tool

In the absence of a way to quantitatively assess the risk reduction gained by incorporating weak points into vertical lines in Maine, ME DMR developed its own risk assessment tool utilizing many of the same principals and data inputs as NMFS' Decision Support Tool. However, the ME DMR risk assessment tool does not incorporate the results of the gear severity poll. Instead, the DMR calculation relies on data collected by its own vertical line research initiative and peer reviewed literature stating that gear which breaks under 1700lbs of force should significantly reduce the risk of serious injury and mortality in right whales (Knowlton 2015). The primary definition of risk that was presented and discussed at the October 2018 and April 2019 ALWTRT meetings remain the same:

Risk = Whales X Vertical Lines X Threat

ME DMR is proposing measures for vertical line reductions, as well as the insertion of weak points in vertical lines in a manner that differentiates measures by distance from shore. Therefore, the areas calculated in this risk assessment are broken up and presented as follows:

- Exemption line – 3 miles (Ex-3) or non-exempt state waters
- 3 miles – 12 miles (3-12); this combines measures from 3-6 and 6-12 miles
- 12 miles to the Area 1/3 line (12+)

Whales

To populate the whale portion of the above risk equation, ME DMR used the annual summed number of right whales per area above from the expanded Duke whale model in the NMFS Decision Support Tool. This is the latest version of the Duke right whale habitat model available. The expanded version of the model pushes right whales inshore past the original extent of the model, which may be inflating numbers in the nearshore areas. This component can easily be updated as changes are made to that input. Up-to-date numbers were received from the Northeast Fishery Science Center at the time of submission of this Plan. Using this method, less than 1% of annual right whale presence in Maine non- exempt waters occurs in state waters between the exemption line and the 3-mile line. Maine federal waters from the 3-mile line out to 12 miles constitutes 11% of Maine's annual right whale occurrence and 88% of Maine's right whale presence is contained beyond 12 miles. This is consistent with ME DMR's strategy to tailor the measures to more offshore areas where there the risk is higher.

It is important to note that ME DMR is evaluating the risk reduction gained by proposed measures for the portion of risk that Maine represents. The annual total of whale days presented above only includes those whales showing up in Maine's portion of the LMA1 in the expanded Duke model. For context, the total number of annual whale days in the domain within the Decision Support Tool is 222,129. As such, Maine represents less than 10% of this total.

Vertical Lines

The number of vertical lines in this risk assessment is taken from the Industrial Economics gear model, which is also used for Maine's portion of LMA1 in the NMFS Decision Support Tool. The total used in the calculation is the annual sum of vertical lines present by distance from shore and, therefore, does not represent the number of vertical lines in the water at any one time (the Industrial Economics model is often presented as a monthly average). Using this dataset, 63% of the vertical lines in the non-exempt

portion of the Maine lobster fishery are within state waters where most of the fleet is permitted. 29% of non-exempt gear occurs between 3 and 12 miles, while just 8% are fished outside 12 miles.

Threat

The calculation of the threat score is where this methodology departs from the NMFS Decision Support Tool. In this analysis the threat of a vertical line to a right whale is assessed as a binary value. The vertical line either poses a risk (breaks higher than 1700lbs) and is assigned a value of 1, or it does not pose a risk (breaks lower than 1700lbs) and is assigned a zero. Vertical lines that break at 1700lbs or less are considered to be zero risk of serious injury or mortality to right whales to maintain consistency with Knowlton (2015). ME DMR's science staff worked collaboratively with the fishing industry in Maine to collect and break more than 200 samples of vertical lines in 2018 and 2019 to determine the functional breaking strength of the gear as it is tied or spliced together in the fishery. The results of that study show that rope of a diameter of 5/16" or less can be considered weak, or reliably breaking below 1700lbs in a variety of vertical line configurations and rope material types (Figure 1).

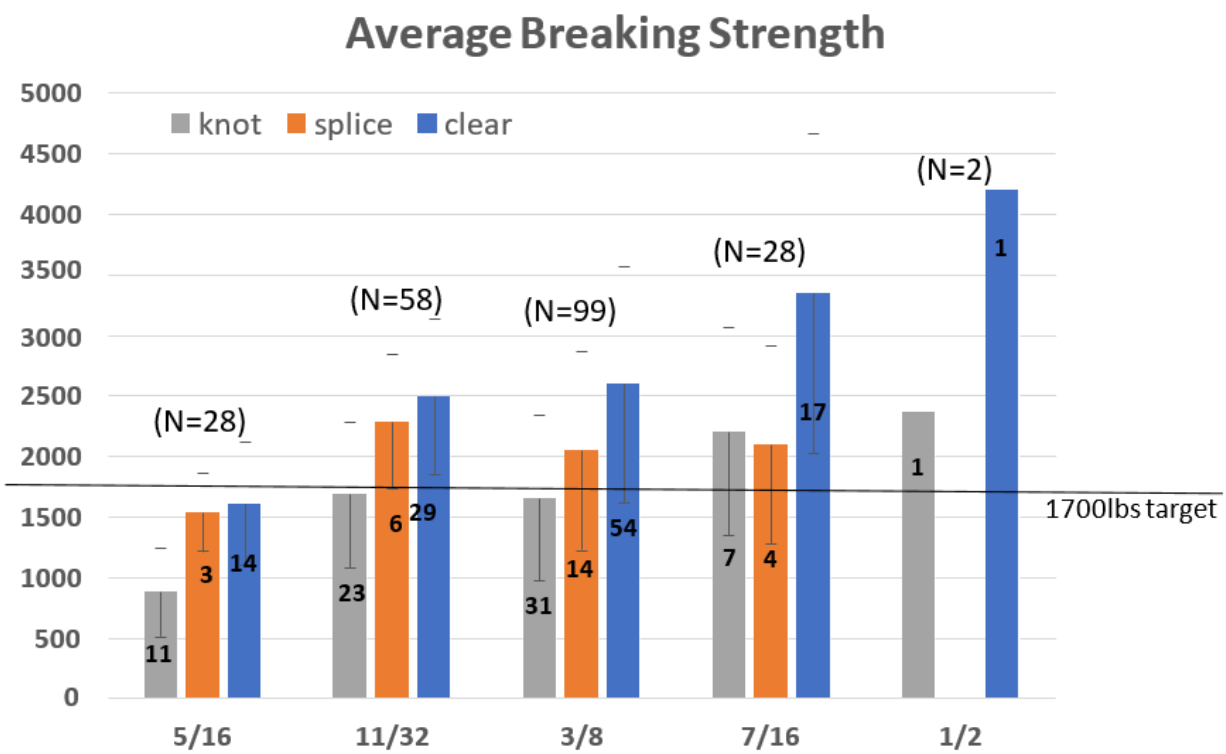

Figure 1. *Breaking strength results of over 200 sample breaks from vertical lines donated by fishermen throughout the Gulf of Maine region. Results are presented in the pounds of force needed to break the line. Results are organized by rope diameter ranging from 5/16" to ½". The varying sample sizes for each diameter and sample type are denoted in the figure. Sample breaks included the knots (grey) or splices (orange) used to attach pieces of rope together to make up the vertical line. Unaltered (no knots or splices) lengths of lines were also broken to show how much a knot or splice reduces the breaking strength. Those breaks are labeled as "clear" in blue.*

Therefore, ropes already known to the be used the fishery that are 5/16” diameter or smaller were considered to already be weak and were removed from the baseline threat score. The use of 5/16” or smaller diameter line was documented by DMR science staff in a survey done collaboratively with the lobster fishery in 2018 on how vertical lines are rigged and fished by area. With more than 800 responses received, DMR was able to document that 14%, 9%, and 6% of respondents reported using 5/16” or smaller diameter line in non-exempt state waters, 3-12 miles, and 12+ miles respectively (Figure 2).

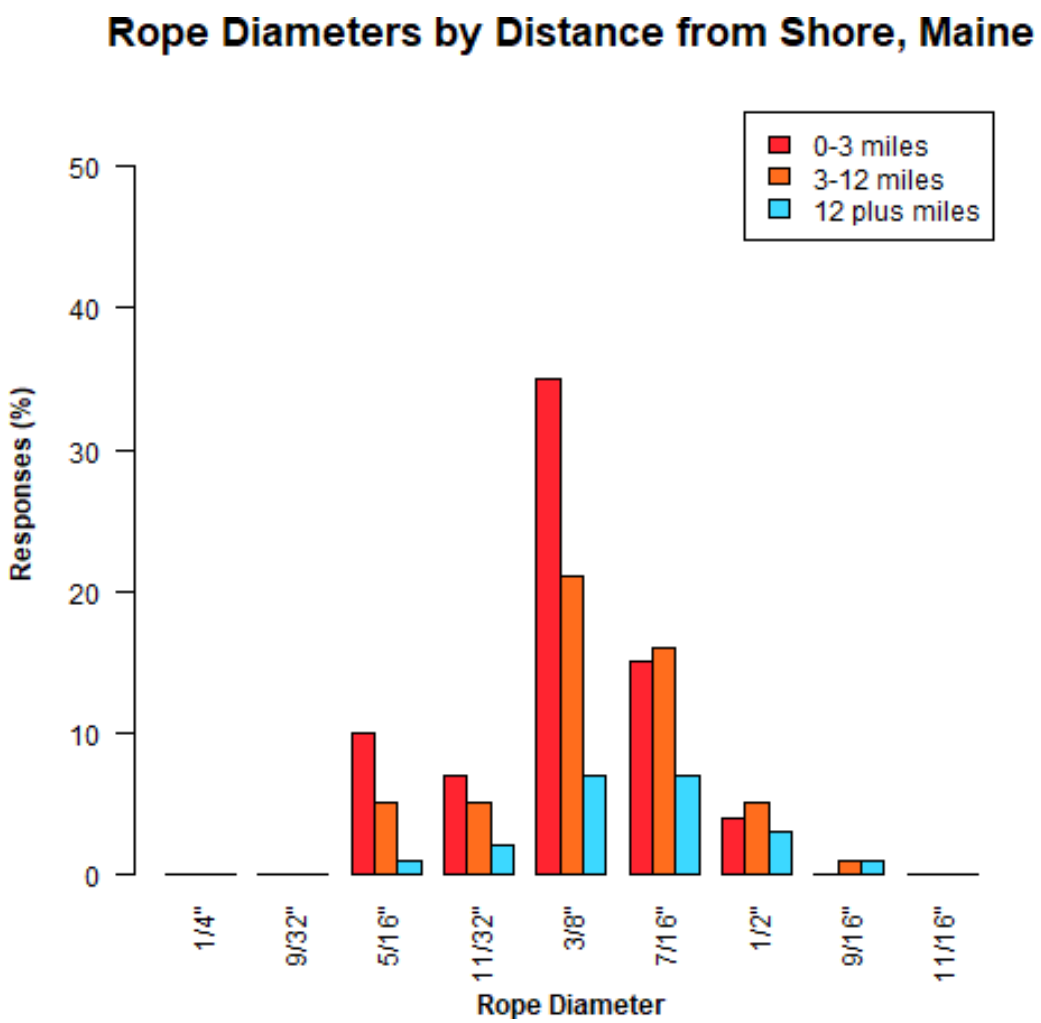

Figure 2. *The percentage of responses to the ME DMR vertical line gear survey in 2018 that reported fishing with specific diameters of rope arranged by distance from shore.*

The baseline use of weak (5/16” or smaller diameter rope) vertical lines was taken into account in the risk analysis, which acts to lower the amount of risk reduction that is received for adding weak points to lines in different areas. For example, 14% of vertical lines are already assumed to break below 1700lbs in non-exempt state waters. Therefore, no risk reduction credit is given to 14% of the vertical lines in that

area when calculating the risk benefit gained from adding weak points to vertical lines. The remaining 86% of lines in that area that are currently fished using ropes that break over 1700lbs can be used to calculate a risk reduction by adding weak points. All vertical lines using rope diameters larger than 5/16" were given a risk score of 1.

The Baseline

The baseline amount of risk associated with non-exempt waters in Maine's portion of LMA1 is calculated by area using the above definition of risk and multiplying the annual sum of whales, the annual sum of vertical lines, and the % of vertical lines breaking above 1700lbs and therefore posing a threat.

This was done by distance from shore so that different measures in those areas could be assessed against the amount of relative risk posed by that area. As seen in Table 1, non-exempt state waters accounts for 4% of Maine's relative risk of entanglement, while federal waters from 3-12 and 12+ account for 30% and 66% respectively.

Table 1. *The baseline annual sum of whales, vertical lines, and lines breaking above or below the 1700lb threshold by distance from shore in Maine non-exempt waters. Trends show that while the majority of the vertical lines are closer to shore, 88% of the annual total of whales occurs outside of 12 miles in Maine. Additionally, more of the vertical lines closer to shore utilize rope diameters 5/16" or smaller and, therefore, pose no risk to right whales. These two factors contribute to 66% of Maine's relative risk of entanglement to right whales being concentrated offshore beyond 12 miles.*

	Baseline							
	Whales		**Vertical lines**		**Threat of Vertical lines**		**`Risk**	
	AnnualSum	Percent	AnnualSum	Percent	Percent<= 1700	Percent> 1700	W*VL*T = R	Percent
Ex-3	166	0.8%	934,924	63%	14%	86%	133,376,203	**4%**
3 to 12	2,369	11%	430,414	29%	9%	91%	932,309,353	**30%**
12+	18,474	88%	118,370	8%	6%	94%	2,048,096,772	**66%**
Totals	**21,009**		**1,483,708**				**3,113,782,327**	

Risk Analysis

To calculate the change in risk associated with measures in the ME DMR proposal, the same calculation can be done with a few changes to represent the impact of the proposed measures. The whale annual sum by area remains the same between the two calculations. In this scenario, the vertical line totals are reduced in each area by the percentage reduction gained by the relative trawl minimums being proposed. In the proposal this results in vertical line reductions of 25%, 21%, and 28% in non-exempt state waters, 3-12miles and outside 12miles, respectively. Lastly, the threat score is altered to account for the vertical lines that will have weak points built in to break the line at 1700lbs or less. The ME DMR proposal would implement a weak point into all vertical lines in state waters 50% of the way down the line. In federal waters from 3-12 miles, fishermen would be required to add two weak points into each

vertical line, with none being required more than 50% of the way down the line. Outside of 12 miles from shore, one weak point would be required 1/3 of the way down the vertical line. To include this measure in the calculation, all vertical lines were considered weak by the proportion of the way down the vertical line that the lowest weak point is required. The analysis assumes that any right whale entanglement in the top half of the vertical line will break the line at a designated weak point and free the whale, avoiding serious injury and mortality.

Table 2 summarizes how the risk calculation changes when proposed measures are implemented.

Table 2. *The resulting risk calculation with changes made for proposed risk reduction measures. Changes include a drop in vertical lines by area resulting from trawling-up regulations, and a gear threat in each area proportional to the location of the lowest weak point required.*

	Whales Annual Sum	Vertical Lines Annual Sum – % reduction	Threat % not Weak	Risk W*VL*T
Ex-3	166	701,193	50%	58,199,007
3 to 12	2,369	340,027	50%	402,761,703
12+	18,474	85,227	66%	1,039,153,100
	21,009	**1,126,446**		**1,500,113,809**

Relative risk reduction achieved by the proposed plan:

Risk reduction = 1 – (Proposal Risk/Baseline Risk)

Risk Reduction = 1 – (1,500,113,809/3,113,782,327) = 52%

Appendix II: Letter to NOAA re Technical Memo

STATE OF MAINE
D EPARTMENT OF M ARINE R ESOURCES 21
STATE HOUSE STATION
AUGUSTA, MAINE
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PAUL R. LEPAGE
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

October 3, 2018

Dear Dr. Hare,

I am writing in response to the recently released NOAA Technical Memorandum NMFS-NE-247, *North Atlantic Right Whales—Evaluating Their Recovery Challenges in 2018* ("Technical Memo" or "Memo"). Regrettably, I have significant concerns about the scientific merit of this document, which I have documented below in detail.

As I am sure you'll agree, any measures developed to protect right whales must be based on sound science in order to be effective. For this reason, it is imperative that the Technical Memo provide a comprehensive picture of the best available science to inform the critical decisions that the TRT is being asked to make. The title of the Memo implies a comprehensive look at all stressors across the right whale's range. While many category I and category II fisheries from Maine to Florida are regulated under the Atlantic Large Whale Take Reduction Plan, the content of the Memo is almost exclusively limited to the lobster fishery in the Gulf of Maine. There is little context offered for how right whales are utilizing expanded habitats in Canadian and Mid-Atlantic waters, and how that changing range and interactions with other fisheries affects risk of entanglement. Absent this information, any discussion on new regulations will be based on an incomplete picture, and provide uncertain benefit to whales. It is my sincere hope that you will endeavor to update and correct this document expeditiously, as we anticipate its use to inform the work of the Atlantic Large Whale Take Reduction Team (ALWTRT) at its upcoming meeting in Providence.

Overall, the Memo is inconsistent in its application and interpretation of various data sets and publications. In some cases, conclusions directly contradict statements and information previously presented by NOAA. In several instances, the paper lacks citations or cites inappropriate sources (i.e. industry documents instead of raw data; unpublished articles) and appears to be stating conclusions or opinions without any supporting data (i.e. that the 2015 vertical line regulations are making entanglements worse). Our most substantive concerns are addressed below but please note that this list does not represent an exhaustive list of the issues we identified, which range from minor technical points to omissions of core data sources.

First and most significantly, the Memo suggests that the 2015 vertical line regulations increased the strength of rope and therefore the severity of entanglements by altering fishing practices and encouraging the use of larger diameter ropes as vertical lines. There are no current data sets or analyses used to support this theory. The paper instead cites Knowlton et al. 2016. While the Knowlton paper accurately characterizes the change in rope strength through manufacturing processes over time, the data

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used encompass the years 1994-2010. This time period was largely before any of the substantial changes in gear due to regulations, such as the sinking groundline regulation in 2009 and the vertical line rule in 2015, and overlapped with a time period in which right whales actually saw population increases. There has been no recent assessment that states that fishermen have been using larger diameter rope in response to the vertical line regulations in 2015.

Additionally, to our knowledge, there is no published analysis of ropes taken from right whales that includes the time period since the vertical line regulations went into effect in 2015, nor any assessment of the efficacy of those regulations. The most recent publication that details current instances of entanglements that resulted in serious injuries or mortalities, NOAA's "Serious Injury and Mortality Determinations for Baleen Whale Stocks Along the Gulf of Mexico, United States East Coast, and Atlantic Canadian provinces, 2011—2015" (Ref Doc. 17-19) was published in 2017 and relies on data from 2011-2015 (prior to the implementation of the vertical line rule). Instead of using this most recent agency source, the Memo repeatedly cites Knowlton et al. 2012 to point out the increasing rate of entanglements and that 83% of the population has been entangled at least once. Knowlton et al. 2012 is a comprehensive 30-year retrospective of the right whale catalogue but does not provide an assessment of entanglements in the right whale population beyond 2009. While it is indisputable that entanglements are increasing, a more recent assessment would provide a more accurate picture of the current threats facing right whales, which are changing rapidly. In fact, due to the lack of data on this critical question, NOAA recently funded DMR's current research project to improve understanding of gear usage, hauling load and vertical line breaking strength. In sum, the Memo fails to take a comprehensive look at how entanglement rates and severity have changed since the implementation of the sinking groundline and vertical line regulations went into effect in 2009 and 2015, respectively, nor does it assess changes or trends in entangling gear during that time period. It is therefore an unreliable assessment of current regulations.

Second, the Memo cites increased Maine landings to indicate increased effort. Most importantly, landings are not a proxy for effort, and have never been used as an accepted metrc for increased risk of entanglement. The Memo cites Maine state landings data to demonstrate increased effort offshore without describing where the data apply in terms of fishing areas. It uses these landings to assert that there is an increased overlap and therefore level of risk "offshore." The data provided by DMR staff represents landings generated from logbooks from 10% of randomly selected harvesters licensed by the state. Contrary to the assertion made in Figure 2c, Maine logbook reported landings have increased both inshore (which we define from 0-12 miles) and offshore (from 12 miles to the Area 1 boundary), but, when comparing the two areas, the inshore portion has increased at five times the rate of the offshore area. It appeared, from the webinar held at the time of publication, that NOAA interpreted "offshore" as being out to the Hague Line (based on the webinar presenter's interpretation of heat map slides, which are not included in the Memo). These heat maps interpolate VTR data for lobster. While Area 3 has 50-100% of Federal licenses reporting through VTRs (ASMFC TC Memo July 2015), most Area 1 Federal lobster permit holders are exempt from VTR requirements and those with permits required to report represent less than 10% of Maine Federal permit holders and 3% of the total license holders in Maine (ASMFC TC Memo January 2017). Maine has only a handful of Area 3 license holders (permitted by NOAA), and the majority of effort that we categorize as being beyond 12 miles would end at the Area 1/3 boundary, approximately 40 miles from the coastline. Area 3 VTR data could characterize "offshore" effort but was not used in the Memo. It is unclear why NOAA would choose to use state landings records for only one state that is dominated by inshore effort if seeking to accurately characterize offshore effort, as the majority of the truly "offshore" effort (in Area 3) is from permitholders in other states.

While the State of Maine recognizes that the size of our fishery is the reason for the focus on our impact to right whales, effective management measures will require a clear picture of changing population distribution and abundance in recent years. The Memo repeatedly points to an expanding range and increasing overlap with fisheries as sources of increased risk. It notes decreased observations of right whales in the Gulf of Maine and Bay of Fundy during the summer months and southeast coast in the winter, and increased presence in the Gulf of St. Lawrence in the summer and off the mid-Atlantic in the winter. Despite the changes in distribution, the only fishery considered for "increased" overlap is the Gulf of Maine lobster fishery, despite the parallel assertion that the Gulf of Maine is an area of decreased presence and the fact that NOAA's own observation resources have been diverted to Canada because of this shift. There is also little assessment of the unregulated fisheries they encounter in the Bay of Fundy, on the Scotian Shelf and into the Gulf of St. Lawrence, or the devastating interactions that resulted when right whales overlapped with changes in the snow crab fishery in 2017.

Additionally, there is no discussion of the role of other US regions or fisheries despite the fact that the Memo states that right whales are increasingly using other areas, such as the mid-Atlantic. Furthermore, the Memo includes little discussion of the impact of other U.S. or Canadian fisheries on right whales. All vertical lines do not present the same level of risk; the location, the season, the type of gear, and whether it incorporates conservation regulations (e.g. the use of weak links and sinking line in surface systems) all factor into the level of risk posed by a given line. Additionally, lines that overlap with right whale feeding aggregations inherently pose more risk of entanglement. A shift in habitat use out of the Gulf of Maine and into Canadian waters does not double risk, but rather it shifts the spatial intensity of the risk that exists. The Memo does not cite evidence for the assertion that closures are regionally effective, nor does it cite any basis for Figure 4's assertion that vertical lines have increased in the Northeast since 2011. In fact, this claim directly contradicts a presentation made by Mark Murray-Brown to the New England Fishery Management Council in December 2017, pointing to the reduction of 2740 miles of vertical line achieved through implementation of the 2015 regulations.

There are additional instances where a more comprehensive data set is available but inexplicably not used. For example, Figure 5 seems to be trying to show the relevance of the lobster fishery in entanglements, but most of the entanglements shown are from years prior to when the sinking groundline and vertical line rules were implemented. This Figure shows only those entanglements where the set locations are known, and it is unclear whether it shows all entanglements or only those resulting in serious injury or mortality. Notably absent from the Memo is any reference to the much more robust dataset curated by NMFS that documents entanglements to confirmed fisheries, which would provide a much more comprehensive look at the causes of entanglements across the right whale's range. Use of this dataset would also allow a look at how entanglements have changed, either by the confirmed fishery to which the entanglements are attributed, or by characteristics of the rope (i.e. diameter) over time. Two of the entanglements in Maine shown on this map also fail to note that Maine lobster gear was the secondary cause of entanglement. The use of range-wide, recent fishery confirmed instances of entanglement would inform consideration of what measures would most effectively curtail the current entanglement problem. Focusing on only entanglements where the set location is known drastically limits an already small dataset and could result in the misalignment of new regulations with the current entanglement risk.

I strongly believe the Maine lobster industry takes the threats to right whales seriously and will work to identify a meaningful solution appropriate to the risk posed by their fishery under current biological and environmental conditions and considering past regulatory actions. However, conclusions

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based on conjecture, without sound scientific basis, will alienate their critical participation in this process. The net result of the oversimplified picture painted by this Memo is likely to be regulations imposed on a fishery or in an area that will result in very little conservation benefit for the right whale but will come at a great cost to the fishermen in terms of money, time, and safety.

I look forward to working with you and your staff to improve the accuracy of the information which will inform the ALWTRT's work going forward. If you have any questions or would like to discuss this further, please contact Erin Summers, email: erin.l.summers@maine.gov; telephone: (207) 633-9556.

Sincerely,

Patrick C. Keliher
Commissioner

Cc: Mike Pentony, Regional Administrator, Greater Atlantic Regional Office
Mike Asaro, Protected Resource Division, Greater Atlantic Regional Office

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Appendix III: Letter to NOAA re Decision Support Tool

MAINE DEPARTMENT OF MARINE RESOURCES
NEW HAMPSHIRE DEPARTMENT OF FISH AND GAME

April 19, 2019

Michael Pentony
Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930

Dear Mr. Pentony,

Next week, the Atlantic Large Whale Take Reduction Team (ALWTRT) will be meeting with the goal of recommending a suite of measures to reduce the rate of serious injury and mortality (SI&M) of North Atlantic right whales to below Potential Biological Removal (PBR). The measures developed at this meeting have the potential to substantially impact several important fisheries, including the American lobster fishery which is an economic cornerstone of many New England communities. As a result, the states of Maine and New Hampshire have been actively engaged on the ALWTRT, its sub-groups, and in conversation with NOAA Fisheries. Our primary objective has been to provide the most relevant data possible so resulting measures can target areas of high risk and yield the greatest conservation benefit possible for right whales. Unfortunately, the weeks leading up to this meeting have raised serious concerns about the ability to thoughtfully make these recommendations. Specifically, NOAA Fisheries has been inconsistent in its message on the analysis that will be provided to the ALWTRT, executed poor time management in holding sub-group meetings and developing tools, provided insufficient time for stakeholders to review newly developed models, and compromised the thoughtfulness and thoroughness of the analysis needed to support important decisions. This has hindered the states' ability to prepare for the ALWTRT meeting, and solicit the participation and engagement of the fishing industry.

A key component of the upcoming ALWTRT meeting appears to be a new decision support tool, or Risk Reduction Model. While the two states agree the development of this type of tool is needed and applaud NOAA Fisheries for engaging a modeler familiar with the lobster fishery, the states have concerns about the components of this model, its documentation, and its lack of external review. As of the writing of this letter, no documentation on the model has been provided to the ALWTRT. Consequently, states are being asked to attend the ALWTRT meeting without an in-depth understanding of how the model works or how it translates management measures into a reduction of risk. In addition, conversations with NOAA Fisheries staff indicate this model has not been peer-reviewed. Given the model appears to have been developed a few weeks prior to the ALWTRT meeting, stakeholders are being asked to develop consensus management

measures based on a model which was developed under unreasonably tight deadlines, has no documentation, and has not been peer reviewed.

Known components of the Risk Reduction Model further raise concerns about the outputs of this product. On April 7th, just two weeks before the upcoming meeting, ALWTRT members were asked to complete a survey ranking the relative risk of different gear configurations and modifications. Communications with NOAA Fisheries indicate results of this survey are an important component of the model in determining "Severity" when evaluating the risk to whales (Risk = Whales * Gear Density * Severity). While the New England states are not opposed to the use of polling as a tool to capture the ALWTRT's expertise, the states are opposed to the use of a survey which has not been developed or reviewed by a social scientist. As a result, the states believe the risk value for various gear configurations should also be informed by gear taken off entangled whales. We acknowledge only a subset of entanglements have gear that can be analyzed; however, there are relevant trends which can inform the risk that different gears pose, such as the decline in the prevalence of 3/8" rope in SI&M cases. In contrast, cases with rope diameter greater th.an 3/8" account for 88% of the total Sl&M since 2010[1].

In addition, the states review of Jason Robert's habitat model (Duke Habitat Model), another component of the new Risk Reduction Model, raises concerns about the utility of this data source in New England. While documentation provided on the Duke Habitat Model notes the model was updated with data through 2016, an in-depth look at the data elements shows much of the recent infonnation is from the mid-Atlantic region. Specifically, data on the distribution of whales in New England (minus Cape Cod Bay, which is being updated for the ALWTRT) has only been updated through aerial surveys completed through 2013. In addition, standardized shipboard surveys are largely absent from the Gulf of Maine. This leaves much of the Gulf of Maine relying on the modeled distribution of right whales, which uses climatological data when there is little effort and low sightings. There are plans to update the Duke Habitat Model with more recent surveys, possibly find ways to incorporate opportunistic sightings, and split the time period to pre- and post-2010. However, none of these enhancements will be completed on a timeframe that is relevant for the upcoming ALWTRT meeting. Thus, due to the changing distribution of right whales since 2010 (Davis *et al.* 2017[2]), the current data elements in the Duke Habitat Model are no longer relevant in New England as they do not reflect current right whale habitat use.

The compilation of these concerns has resulted in the states questioning the Risk Reduction Model's outputs. Our understanding of the model is that areas of high risk are determined by the presence of both right whales and fishing gear. NOAA Fisheries staff noted that the region south ofNantucket, which has recently been under much scrutiny due to the high number of whales in the region, is characterized as low risk in the model because of minimal fishing gear. Interestingly, the reverse does not seem to hold true;

[1] NMFS Large Whale Entanglement Reports; NMFS Mortality and Serious Injury Reports.
[2] Davis, G.E., Baumgartner, M.F. and S.M. Van Parljs. 2017. Long-tenn passive acoustic recordings track the changing distribution of North Atlantic right whales *(Eubalaena glacialis)* from 2004 to 2014. *Scientific Repots, 1,* Article number: 13460.

areas of high gear density but low whale presence, such as mid-coast Maine, are characterized as having a high level of risk in the model. Unfortunately, with less than a week to the ALWTRT meeting, there is no space in the current timeline to raise these anomalies and brainstorm ways to fix them prior to having to use the model for decision making purposes. As a result, team members are being asked to develop proposed measures based on a model that was not complete prior to the ALWTRT meeting and whose outputs prompt substantial questions. As a result, the states request the Risk Reduction Model be fully documented for members of the ALWTRT and an external peer review be conducted before final decisions based on the model are made.

In addition to questions about the development of the Risk Reduction Model, the states are also troubled by the risk reduction target outlined by NOAA Fisheries in an April 5th email to the ALWTRT. A description of the calculations for the risk reduction target indicate 50% of the unattributed cases of SI&M are assumed to be a result of US fisheries; however, recent entanglement data suggests Canadian fisheries are responsible for an increasing portion of SI&M. For example, 2013-2017 data suggests US fisheries were responsible for 0.2 of the SI&M to right whales while Canada was responsible for 1.4[3]. This trend continues in 2014-2018, where data suggests US fisheries were again responsible for 0.2 of the SI&M while Canada was responsible for 1.64. Given this information, the states assert the current risk reduction target is inappropriate and should be reconsidered. An email sent to the ALWTRT on April 18th indicates other approaches to calculate the target risk reduction were considered; however, minimal rational is provided in the email for the method ultimately chosen. If, as data suggests, Canada is now the primary source of SI&M for right whales, draconian measures in US fisheries will not ensure a successful reduction of SI&M below PBR for the range of North Atlantic right whales.

Inconsistency in NOAA Fisheries' communication regarding the upcoming ALWTRT meeting has also severely hampered the states' ability to interact with the fishing industry. On March 18th, the Regional Administrator announced NOAA Fisheries would be developing a strawman proposal ahead of the ALWTRT meeting to provide stakeholders with the scope of potential management changes. On April 4th, this course of action abruptly changed as, on an Atlantic States Marine Fisheries Commission Lobster Plan Development Team call, NOAA Fisheries stated they would not be providing a strawman proposal and would instead be relying solely on the new Risk Reduction Model. This unexpected change of direction was not only confusing to the state agencies but also disrupted planned preparations for the ALWTRT meeting. Due to inconsistent messaging from NOAA Fisheries, the state of Maine cancelled three industry meetings that had been planned to provide clear direction to, and solicit input from, the lobster fishing industry. Given the Risk Reduction Model is not available for review, these meetings will not be re-scheduled prior to the ALWTRT meeting because states do not have the tools needed to assess various management measures and hold productive industry conversations.

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[3] NMFS Large Whale Entanglement Reports; NMFS Mortality and Serious Injury Reports.
[4] NMFS Large Whale Entanglement Reports; NMFS Mortality and Serious Injury Reports.

Finally, the two New England states raise serious concerns about NOAA Fisheries timeliness regarding preparations for the April ALWTRT meeting. The ALWTRT previously met in October 2018 and, at that meeting, developed a work plan for NOAA Fisheries to complete prior to the next meeting. The states recognize an extended federal government shut-down delayed progress on necessary analysis; however, the spring ALWTRT meeting was also postponed by over a month due to this shut-down. The states

note the first sub-group meeting of the ALWTRT was not held until March 25th a

reduction target was not announced until April 5th, a presentation of the Risk Reduction Model was not given until April 16 th, and a :final working model was not available to the ALWTRT prior to the meeting. As a result, the states are concerned about the thoroughness and thoughtfulness of the analysis being conducted given the time constraints. In addition, NOAA Fisheries has commented that they intend to move straight into rulemaking following the ALWTRT meeting. This timeline perpetuates the states' concerns given if further truncates the time for appropriate review and ensures rushed and unreviewed analysis will be immediately used to promulgate regulations.

The states of Maine and New Hampshire recognize difficult decisions need to be made to ensure the conservation of North Atlantic right whales; however, the states have concerns about the analysis directing the conversations and consensus recommendations, and the timeliness of rulemaking. While the states have sought to be thoughtful contributors to this important discussion, the actions of NOAA Fisheries have undermined the state's ability to engage on this issue and severely dampened the voice of the fishing industry.

The two states request the Risk Reduction Model be completely documented for review by the state' s fisheries managers, and the full ALWTRT, and an external peer review be conducted before :final decisions based on results of the Risk Reduction Model are made.

Sincerely,

Pat Keliher

Commissioner, Maine Department of Marine Resources

Doug Grout

Chief of Marine Fisheries, New Hampshire Department of Fish

and Game

Appendix IV: Letter to NOAA re Scoping

STATE OF MAINE
D EPARTMENT OF M ARINE R ESOURCES 21
STATE HOUSE STATION
AUGUSTA, MAINE
04333 - 0 0 2 1

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

September 16, 2019

Michael Pentony
Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930

Dear Mr. Pentony,

The Maine Department of Marine Resources (ME DMR) appreciates the opportunity to comment on the upcoming rule-making to amend the Atlantic Large Whale Take Reduction Plan (ALWTRP). Proposed changes to the ALWTRP are likely to have large impacts on Maine's lobster fishery, the social and economic backbone of Maine's coastal and island communities. In 2018, landings from the Maine lobster fishery were valued at over $486 million and a recent economic study determined the fishery has an economic impact of an addition $1 billion annually[1]. This fishery not only encompasses the roughly 4,800 lobster license holders and 1,100 student license holders but also sternmen, dealers and distributors, bait dealers, and trap builders who contribute to this fishery and their communities. Understanding the full impact of these pending regulations on the Maine lobster fishery, and to the North Atlantic right whale population, will be critical to ensure the appropriate suite of measures is implemented.

A. Characteristics of the Maine Lobster Fishery

The Maine lobster fishery is comprised of a diverse set of vessels, fishermen, and fishing practices. According to data collected in 2018, roughly 20% of vessels registered to Maine lobster license holders are less than 18 feet in length while 10% of vessels are greater than 39 feet in length. Thus, most fishermen who participate in the lobster fishery use smaller boats and typically fish close to shore. In addition to length, vessels in the Maine lobster fleet vary in their construction and layout. Smaller vessels, less than 25 feet in length, tend to be outboards and have extremely limited deck space for the temporary storage of gear. Some boats have open sterns which allow individual traps, or trawls, to be easily set off the back of the vessel. However, other boats have closed sterns, requiring traps to be set over the side of the boat. As a result, safe and fishable trawl lengths are not only dictated by the size of the vessel but also its construction.

Fishing practices within the Maine lobster fishery vary between the eastern and western ends of the State, and between inshore and offshore fishermen. In most state waters, the average trawl length can be characterized by singles, doubles, and triples; however, this masks important regional differences.

[1] Lobsters to Dollars: The Economic Impact of the Lobster Distribution Supply Chain in Maine by Michael Donihue, Colby College. June 2018.

For example, as a long-standing convention, fishermen in Casco Bay often fish trawls with two endlines. In this area, recreational and commercial boat traffic is very high and, as a result, fishermen can experience significant buoy loss. Longer trawls allow these fishermen to reduce their number of buoy lines and minimize their potential loss. In contrast, fishermen in mid-coast Maine tend to fish smaller trawl lengths which allow for a higher degree of precision to set traps on specific ledges and cracks, the preferable habitat of lobsters. This increases a fisherman's trap efficiency. An added benefit of fishing singles, pairs, and triples is that it reduces potential gear conflicts between other fishermen if, and when, traps are set over one another. In federal waters, trawl lengths increase, in part due to existing regulations in the ALWTRP. In some of Maine's furthest fishing grounds (outside of 12 miles from shore), trawl lengths average around 15 traps per trawl.

Fishing operations also differ by the number of crew onboard. 29% of license holders have a Class I license, which allows only the individual named on the license to participate in lobster fishing. Therefore, at a minimum, a quarter of the fleet operates without an unlicensed crew. 39% of Maine lobster fishermen have a license which allows for one unlicensed crew member onboard while the remaining 32% have a license which allows 2 unlicensed crew onboard.

Landings in the Maine lobster fishery have spatial and regional patterns. While the pounds of lobster landed vary across the State, most landings occur within state waters. In 2008, 81% of pounds landed were harvested within three miles of shore. Federal waters, broken up by 3 to 12 miles and outside 12 miles from shore, landed 15% and 4% of the pounds in that year, respectively. Recently, the pattern of catch based on distance from shore has slightly shifted, with an uptick in federal waters landings. In 2016, state waters accounted for 68% of the pounds landed, while 3 to 12 and beyond 12 miles accounted for 23% and 9%, respectively. This pattern of landings does not, however, equate to an identical shift in effort offshore. Between 2008 and 2016, the number of trips recorded within state waters dropped by only 7%, while the number of trips outside 12 miles increased by just 3%.

B. Management Tools Considered

At the April Atlantic Large Whale Take Reduction Team (ALWTRT) meeting, several management tools were discussed which could reduce the risk of serious injury and mortality from entanglements. Some of the tools considered included: area closures, dynamic management areas, trap reductions, vertical line reductions, and 1700 pound rope. Following the ALWTRT meeting, ME DMR reviewed the measures to understand the potential conservation benefits to right whales versus the burden to fishermen. The intent was to consider a range of measures, and then take the most viable options out to industry for feedback.

ME DMR held seven industry meeting to get input from fishermen on the feasibility and implications of these management tools. Based on our internal analysis and the feedback obtained through industry meetings, the following comments are offered regarding the various management tools.

Area closures were proposed and discussed at the ALWTRT meeting but were ultimately not included in any of the final recommendations. Following the ALWTRT meeting, ME DMR continued to discuss the potential efficacy of area closures. Ultimately, ME DMR did not include an area closure in the June 2019 presentation (see Appendix I) to industry due to several pertinent concerns. First, the efficacy of area closures relies on the assumption that gear within the closure is brought to shore. While this assumption holds true in the existing Cape Cod Bay closure due to its

timing and location, the same assumption would not hold in Maine waters. Offshore fishermen deploy gear year-round, moving traps to various fishing grounds as lobsters respond to environmental changes. As a result, a federal waters closure, akin to some of the proposals discussed at the ALWTRT, would not result in traps taken out of the water but may instead result in fishermen moving gear to the boundaries of the closure, concentrating gear around an area intended to protect right whales. This 'curtain effect' may have the unintended consequence of increasing vertical line densities in areas of known right whale distribution.

Industry members also asked about the potential conservation benefits of a seasonal closure during the spring months in state waters. After conducting analysis, ME DMR found negligible reductions in risk through this type of measure given right whales are infrequently sighted in state waters and there is minimal lobster gear set during the spring months. As a result, a spring state waters closure resulted in more of a paper exercise than a meaningful conservation benefit for right whales. ME DMR found specific areas and times for closures which resulted in a meaningful risk reduction were hard to define due to a lack of right whale sightings, and their more diffuse and changing use of the habitats in the Gulf of Maine.

Also discussed at the ALWTRT meeting were dynamic management closures. A potential benefit of this approach is that protections are enacted only when right whales are present, lessening the burden on industry. ME DMR considered this approach but quickly came up with several concerns regarding their effectiveness in protecting right whales. The primary concern is that dynamic management is reactive; it relies on right whales being spotted to enact a management response. Given right whales are notoriously hard to observe and weather conditions along the Maine coast can impede sighting efforts, ME DMR questioned the ability to effectively patrol northern Gulf of Maine waters and spot whales. Furthermore, the resources needed to support successful dynamic management are intensive and expensive, raising concerns of whether dynamic management is a long-term solution for right whale protection. Ultimately, ME DMR concluded measures which can provide year-round protections to right whales are stronger given all whales are positively impacted, not just those sighted.

The ALWTRT briefly discussed trap reductions at its April meeting, particularly those that are ongoing in Lobster Management Areas 2 and 3. ME DMR evaluated the potential benefit of trap reductions as a right whale protection measure and presented these findings to the lobster industry to get feedback. The most frequent concern raised by industry regarding trap reductions was that the ratio between vertical lines and traps is not one-to-one. This means that, particularly offshore, a substantial trap reduction is needed to see a modest reduction in the number of vertical lines. Industry expressed concern that, as a primary management tool to save right whales, trap reductions could result in large economic consequences due to reduced catch and revenue. Others noted that focusing on trap reductions is ancillary to the conversation since it is vertical lines, not traps, which pose a risk to whales. In addition, the diversity of Maine's lobster fleet, as well as varying levels of participation, make it challenging to implement a trap reduction which does not result in some individuals increasing their effort. This was the result of a substantial trap reduction in 1997; some individuals removed gear from the water while others increased their effort up to the new limit.

One of the primary management tools ME DMR discussed with industry was vertical line reductions via trawling-up. After analyzing many of the potential management tools, trawling-up appears to provide some of the strongest benefits; namely, it addresses serious injury and mortality considered under the Marine Mammal Protection Act as well as risk under the Endangered Species Act. Further,

it directly addresses the cause of entanglements: vertical lines in the water column. At the June industry meetings, a series of trawling-up scenarios were presented to industry. These ranged from doubles to quads in state waters and from twenty to forty trap trawls offshore. In response, industry provided critical input on the extent of trawling-up which is feasible and safe in the Maine lobster fishery. Specifically, while offshore fishermen expressed some ability to add traps to an existing trawl, they expressed grave concerns about moving to thirty or forty trap trawls. Several noted that only a few boats are safely equipped to handle forty traps, in addition to the mile of rope needed to fish at these trawl lengths. As a result, requiring fishermen to operate beyond their boat capacities would result in dangerous fishing practices and the loss of human life. Inshore fishermen also highlighted that trawling-up scenarios need to consider the feasibility of smaller boats, particularly skiffs, which have limited deck space and are often operated by a single individual. Moreover, fishermen noted that, at longer trawl lengths, those who operate alone may have to hire a crew.

Outside of safety concerns, fishermen also provided insight on the potential consequences of trawling-up on fishing operations. First, longer trawls may increase gear conflicts and gear loss as there is a higher chance of trawls being set over one another. Second, longer trawls may decrease a fisherman's ability to maneuver traps on to specific ledges and cracks which produce high catch rates. This would reduce a trap's efficiency. Third, industry highlighted that fishermen frequently move traps across regulatory boundaries (i.e. the three mile line, the six mile line, etc.). This movement needs to be considered to ensure ongoing fishing practices and new regulations are congruent. To this end, fishermen suggested that any trawling-up scenario differentiated by distance from shore be comprised of multiples of one another so trawl lengths can easily be extended or shortened. In addition, law enforcement personnel were asked to provide input on the feasibility of enforcing long trawl lengths; they noted that, with the current platforms available, it would be nearly impossible for enforcement to safely haul long trawls to check compliance with the ALWTRP and lobster resource management measures.

Finally, the implementation of 1700 pound rope was also considered by both the ALWTRT and ME DMR. One advantage of 1700 pound rope is it offers a level of protection for all lines left in the water and can substantially reduce the occurrence of a serious injury or mortality which results from an entanglement. However, it does not address the risk of an entanglement occurring. In its June industry meetings, ME DMR presented 1700 pound rope as a potential management tool for consideration. At the time, ME DMR presented this as 75% topper in federal waters. It became clear from several comments that, to accommodate a 75% topper, fishermen intended to increase the length of their vertical line to ensure there was enough rope strength at the bottom where the strain of hauling traps is highest. This result would be counter to the efforts of the ALWTRT and a clear example of the unintended consequences which can result from management action. Instead, several industry members felt that, with existing vertical line lengths, modifications to the top 50% of the rope would be more feasible. Industry also commented that 1700 pound rope should be achieved through modifications to existing rope, as opposed to requiring fishermen to buy new rope. This could be achieved through specific splices or the threading of existing swivels into the rope to achieve a 1700 pound breaking strength. Law enforcement personnel also provided guidance on the enforceability of 1700 pound rope. They noted a specific number of weak points in a rope is more enforceable than 1700 pound rope regulations based on depth fished or the length of the vertical line. They also highlighted that enforcement of a rope diameter, as a proxy for 1700 pound rope, would be challenging since rope can expand in the water and differs by manufacturer.

C. Gear Marking

It is widely recognized that one of the biggest challenges faced by the ALWTRT when discussing the entanglement of right whales is the lack of data on the source of entanglements. This creates large amounts of uncertainty about which fisheries and regions are contributing to serious injury and mortality. At its industry meetings in June, ME DMR proposed a Maine-only purple gear mark to the lobster industry. This purple mark would replace the current red mark used to distinguish the Northeast trap/pot fishery and would allow Maine to better understand its role in the right whale conversation. The use of a Maine-only gear mark was unanimously supported by fishermen at all seven industry meetings as fishermen expressed strong support for identifying their gear from other trap/pot fisheries.

As stated in a letter to NOAA dated July 10th, ME DMR fully supports the improvement of gear marking to better inform conversations on right whale entanglements. As a result, the State intends to implement a Maine-only gear mark ahead of the federal regulatory process. ME DMR has already begun the State's regulatory process and, under the current timeline, the Maine-only gear mark could be required for Maine licensed lobster fishermen by spring 2020. Critical to this effort is guidance and confirmation from NOAA regarding the placement and color of the Maine-only mark. ME DMR highlights that it has not received a response to its July 10th letter to NOAA requesting written confirmation regarding the location and color of the Maine-only gear mark. This level of communication is needed to support Maine's efforts to enact regulations ahead of the federal process. For example, it is unclear if additional gear marking areas, such as Jeffery's Ledge and Jordan Basin, will be maintained as states move to their own marks. ME DMR recommends that, as a part of the proposed rule, NOAA re-evaluates these markings against recent sightings data to determine the usefulness of area-specific marks in addition to state-specific marks.

D. Recommendations for the Proposed Rule-Making

As NOAA engages in the writing of a proposed rule, ME DMR requests the agency consider two topics which were not fully discussed or voted on at the ALWTRT meeting. A question repeatedly raised at the ME DMR industry meetings was the continued use of Maine's exemption line. As outlined in the 2007 Final Rule to the ALWTRP, the exemption line is based on the low number of right whale sightings in this area. NOAA has consistently defended the exemption line in previous rule-makings, commenting "NMFS does not believe that regulating the waters that will be exempted from the ALWTRP would have a significant benefit to large whales."[2]. Additionally, studies have shown there are low concentrations of calanus copepods shoreward of the 100 meter isobath, which do not support the aggregation of right whales.[3] As a result, NOAA did not include exempted waters as a part of the critical habitat designation for right whales. Instead, NOAA used the exemption line from the ALWTRP as the nearshore boundary, stating "late stage copepods in quantities sufficient to trigger right whale foraging are not present inshore of the Maine exemption line"[4]. Given no vote at the April ALWTRT meeting was taken in regards to the exemption line, ME DMR requests NOAA consider the impacts to industry versus the conservation benefits of establishing regulations within

[2] Taking of Marine Mammals Incidental to Commercial Fishing Operations; Atlantic Large Whale Take Reduction Plan Regulations, 72 Fed. Reg. 57103 (October 5, 2007).

[3] Runge 2012 Report "Summer distribution of the planktonic copepod, *Calanus finmarchicus*, along the coast of the Gulf of Maine"

[4] Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale, 81 Fed. Reg. 4837 (January 27, 2016).

the exemption line. Taking extensive action in areas where right whales rarely, if ever, visit will not have a measurable impact on the right whale population.

In addition, ME DMR requests NOAA include a method for conservation equivalency within the proposed rule. As previously described, a key feature of the Maine lobster fishery is its diversity. This breadth of vessel size, fishing location, and crew precipitates the need for different management approaches within the State. Allowing for conservation equivalency in the rule-making provides an opportunity for fishermen to develop equivalent, or more conservative, regulations in their region to meet the requirements of the ALWTRP. This flexibility is needed to ensure not only the long-term success of the lobster fishery but also the protections provided to right whales.

E. Conclusions

ME DMR appreciates the opportunity to comment on the upcoming proposed rule regarding right whales and the Northeast trap/pot fishery. The Maine lobster fishery has been an active participant in the conservation of right whales for over twenty years. While ME DMR recognizes the scope of this comment period pertains to US entanglements in the trap/pot fishery, the Department highlights that this scope does not encompass the full set of impacts on the right whale population. Specifically, entanglement records indicate the full risk reduction outlined by NOAA should not be solely on the Northeast lobster fishery and the apportionment of risk to Canada should reflect the stark increase in right whale mortalities resulting from the snow crab fishery and Canadian vessel strikes. ME DMR underscores that placing further regulations on the Maine lobster fishery will not improve the status of the right whale population if mortalities are happening elsewhere.

We appreciate NOAA's consideration of these comments.

Sincerely,

Pat Keliher, Commissioner

Appendix V: ME DMR Vertical Line Research Initiative

Beginning in the summer of 2018, ME DMR received a grant from the Section 6 Species Recovery Grants to States program to assess the use of vertical lines throughout the Gulf of Maine region. Portions of the resulting data have been instrumental in the development of the ME DMR Plan to reduce the risk of entanglement for right whales in Maine fixed gear. Over the next year, as new draft and final rules for the Atlantic Large Whale Take Reduction Plan are proposed and finalized, ME DMR will use the following data as a basis for the development of weak point options in the fishery. This work will be done in collaboration with the fishermen and other relevant industry stakeholders. The primary objectives of this work will be to:

1) Collaboratively develop and test gear modifications that break at or below 1700lbs and can be integrated into existing gear to minimize the impact on the fishery
2) Work with NMFS to include these options on a list of approved modifications that will meet a weak point regulation
3) Field test a variety of modifications with the fishing industry, including manufactured weak points that could go through the hauler

<u>Volunteer Gear Survey</u>

In the summer of 2018, ME DMR sent out a gear survey to fishermen throughout the Northeast region to assess their use of vertical lines and received over 800 responses through online, paper, and phone-based options. One of the pieces of information from that survey that has been used in the development of this proposal is the variety of rope diameters used in different segments of the fishery, including by distance from shore. While there is a spread of diameters used in Maine, survey responses show the most prevalent diameter of rope used in the lobster fishery is 3/8”, followed by 7/16” (Figure 1). The data also show the relative use of diameters of line greater than 3/8” increase with distance from shore (Figure 2).

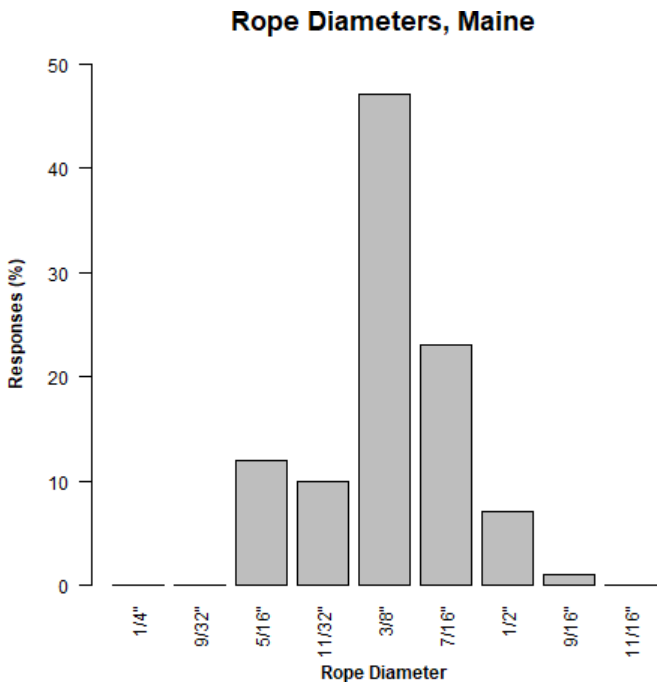

Figure 1. *Percentages of Maine based responses from the volunteer gear survey that use different diameters of line. Respondents could choose more than one diameter if their line contains multiple diameters or if their rope use differed by area. The most prevalent gear in the Maine lobster fishery is 3/8" rope being reported by 47% of respondents.*

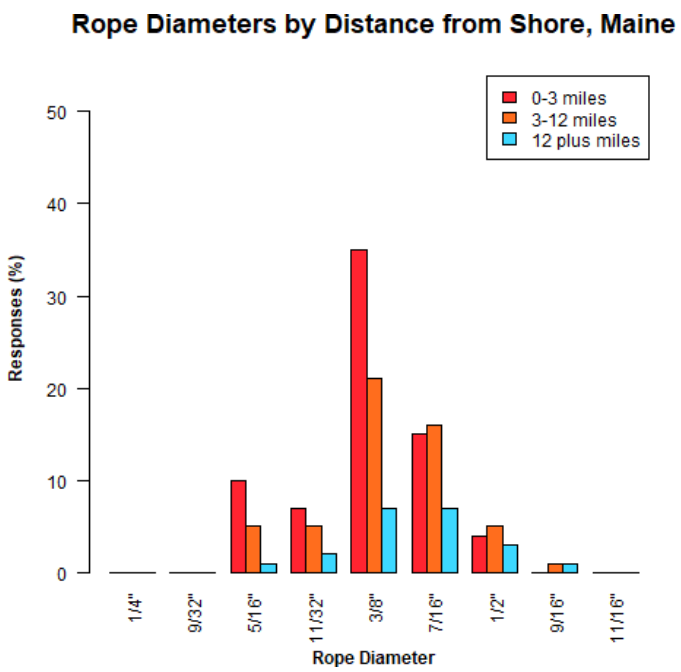

Figure 2. *Rope diameter use by distance from shore from the Maine responses to the volunteer gear survey. The proportion of ropes greater than 3/8" increases as gear moves offshore.*

Functional Breaking Strength

The second effort of this project included collecting donated vertical lines from fishermen throughout the region. The goal was to break a variety of ropes and capture the spectrum of functional breaking strengths for vertical line configurations used in the fishery. These data could be used to determine what configurations of vertical lines in the fishery are already weak, or break at or below 1700lbs, as well as provide a way to determine the benefit gained by requiring weak points in the vertical lines.

Whole vertical lines were collected from fishermen in addition to information about where the line was fished, rope types, rope diameters, age of rope, gear configuration, etc. A total of 215 samples were broken on the Tinius Olsen tensile testing machine housed at the DMR lab in Boothbay Harbor. These samples included the knots and splices that were used to tie ropes together to make up the vertical lines, as well as clear or unmodified pieces of rope. The ages of the rope generally ranged from two to six seasons fished, but went up to as many as twelve seasons (Figure 3). Figure 4 shows the results of the breaking strength tests. The sample sizes generally represent the relative occurrence of a certain diameter in the fishery. Knots and splices reduce the breaking strength of rope, which is of importance since less than 5% of lines fished in the fishery are used without a modifying link of some kind (Figure 5). When a line of two different diameters knotted or spliced together was tested, the smaller diameter broke 100% of the time and the knot or splice always stayed with the larger end if it did not unravel.
These results show that, of all of the diameters tested, 5/16" can be considered to meet the threshold of breaking at 1700lbs, especially with the addition of a knot. While many of the larger diameter ropes did break below 1700lbs with some regularity, the type of knot or splice used would have to be identified to be able to add these diameters to a list of weak points which break at or below 1700lbs. Results of a two-way ANOVA suggest that rope diameter, modifications to the rope (splices and knots), and age or seasons fished all have a significant effect on the breaking strength of the vertical line (Table 1). It should be noted that the relationship between the diameter of rope and the breaking strength is regardless of material used since all types of ropes that are used in the lobster fishery are represented in the dataset (Figure 6).

Table 1. *Results of two-way ANOVA showing the significant relationship between breaking strength of line and rope diameter, modifications, and age.*

Rope Breaking Strength ~ Rope Diameter + Rope Modifications + Seasons Fished

	f-value	p-value
Rope Diameter	13.8	<0.0001
Rope Modifications	29.3	<0.0001
Seasons Fished	11.9	<0.0001

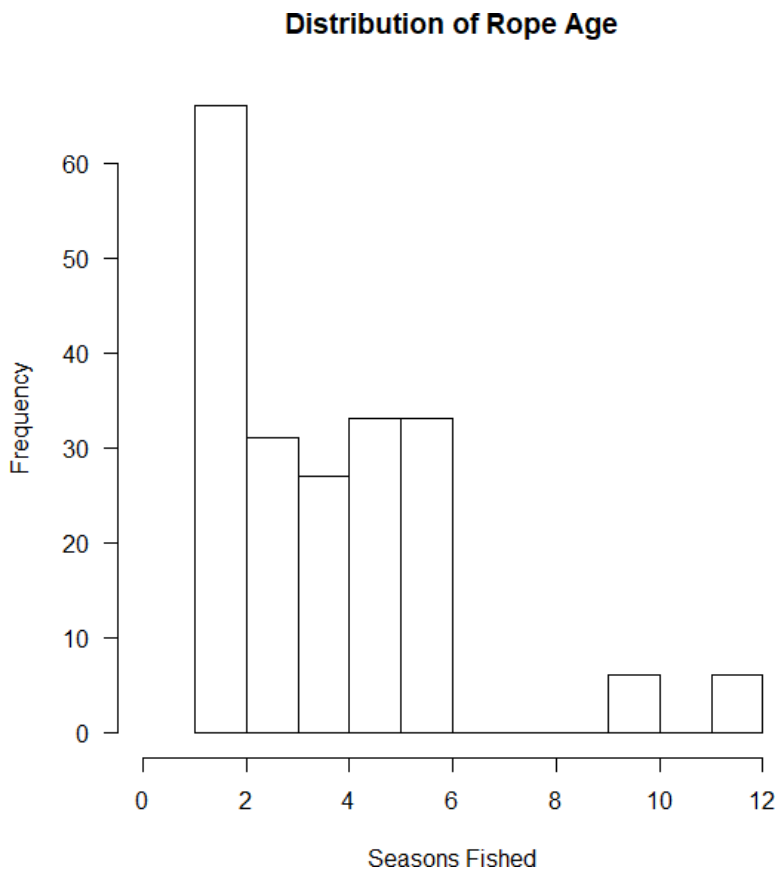

Figure 3. *The distribution of the ages of vertical lines that were donated for breaking strength testing. While some went up to as many as 12 seasons fished, the majority of donated lines had been fished between two and six seasons.*

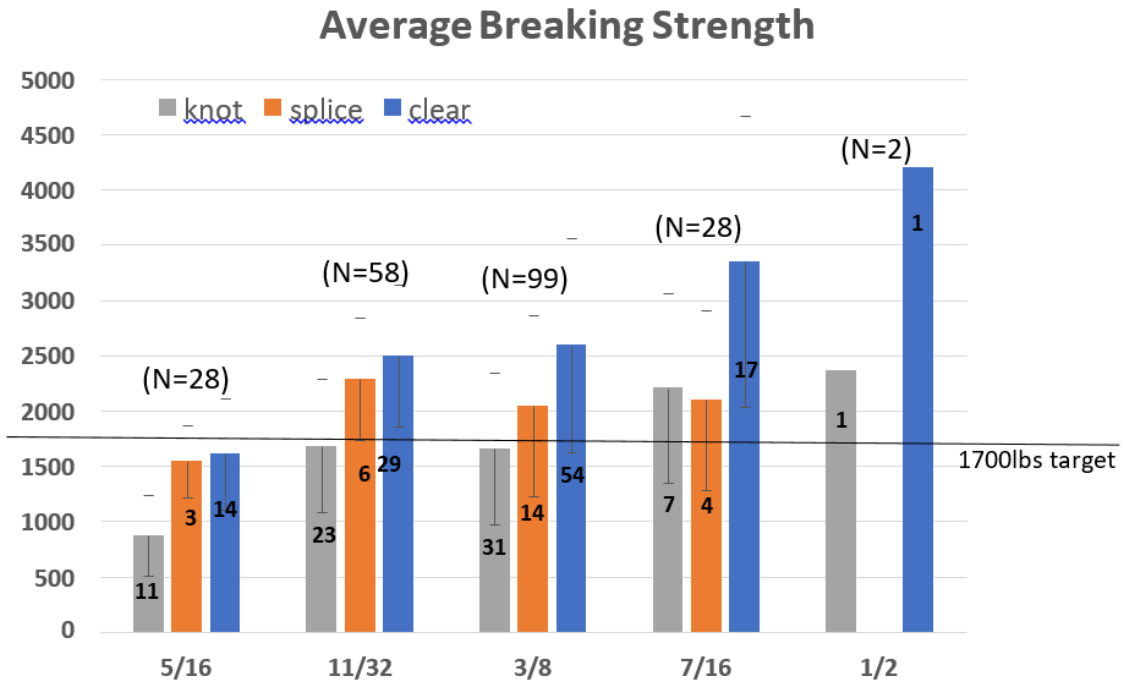

Figure 4. *The breaking strength in pounds for over 200 samples of vertical lines donated by lobstermen in the Northeast region for ropes 5/16" to ½". The varying sample sizes for each diameter and sample type are denoted in the figure. Sample breaks included the knots (grey) or splices (orange). Unaltered (no knots or splices) lengths of lines were also broken to show how much a knot or splice reduces the breaking strength. Those breaks are labeled as "clear" in blue.*

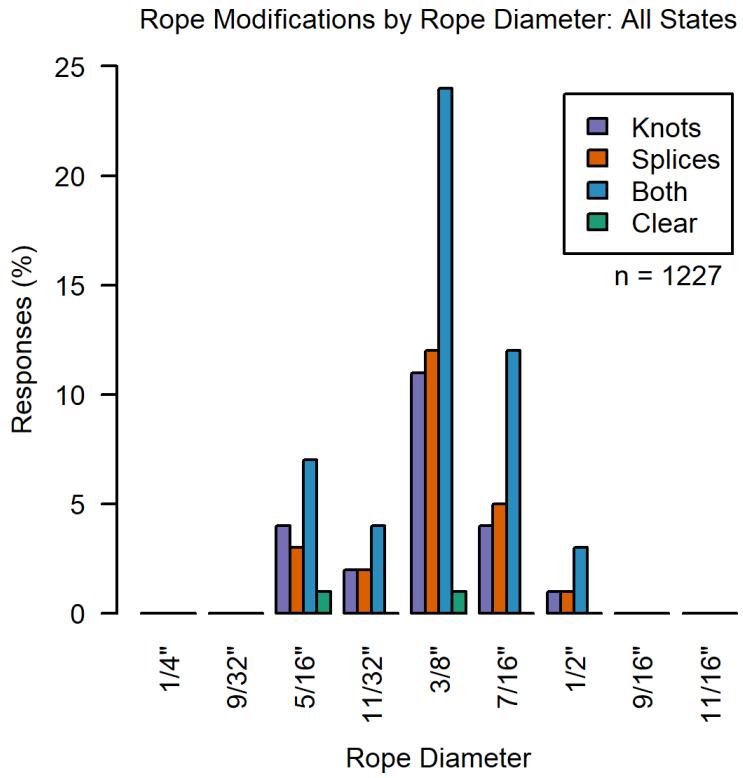

Figure 5. *The percentage of respondents to the gear survey that utilize knots, splices, or both knots and splices by rope diameters. Less than 5% of respondents do not modify vertical lines ("clear").*

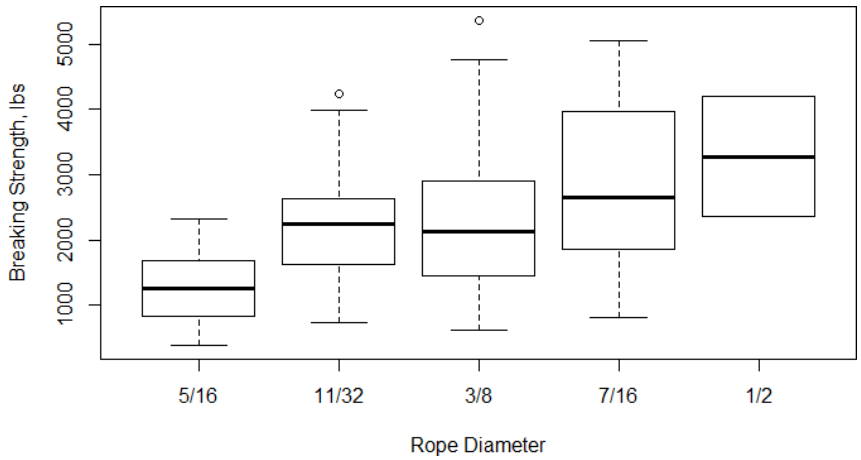

Figure 6. One-way ANOVA suggests a significant linear relationship between the rope diameter and the breaking strength of the line (F=11.512; Pr(>F) = 1.811e-08 ***)

Initial Weak Point Workshop

ME DMR held an initial industry workshop to test various configurations of vertical line attachment points that might meet the requirements of an approved weak point. Several fishermen were in attendance and came with ideas they wanted to test for weak points. Table 2 summarizes the more than twenty options that were initially tested. Of those options, a subset that showed promise of breaking below 1700lbs were chosen for further testing. Ten samples of each of those options were rigged up by fishermen and sent back to ME DMR for breaking strength testing. The results of those samples are summarized in Table 3 and are the basis for what has been discussed with the industry to-date. Potential options that will move on to the field-testing phase include lengths of 5/16" line knotted or spliced into the vertical line, 3/8" rope connected with a loop and double tuck ("lazy splice"), and manufactured products like dog bones (Figure 7).

Some of the options tested during the workshop included a couple of different brands of dog bones, as well as some modified dog bones (Figure 7). Dog bones were included because some fishermen in attendance were interested in investigating a manufactured weak point option that integrated easily into the line and was already being used in the fishery. The benefit of a manufactured point, as opposed to utilizing certain knots or splices in the line, is that the point will not degrade in strength over time. A rope made to break 1700lbs over its entire length or of a small diameter, like 5/16", will decrease in strength with the use of knots or splices and will lose strength over time. While strength over the age of the rope varies based on diameter, rope material, storage, and UV exposure, there is a significant decline in strength versus the number of seasons fished for a vertical line (Figure 8).

Table 2. *Ideas brought forward by fishermen and initially tested for breaking strength. Highlighted ideas were carried through to have additional samples tested or will be field tested with fishermen in the future. This list is not meant to be exhaustive but it what has been tested so far.*

Break	Diameter	Rope Modification	Breaking Strength (lbs)
1	3/8 danline	lazy man splice one pleat	no break, stretched until 1950
2	3/8 manline	sqaure "splice"	2435
3	3/8 manline	sqaure "splice"	2300
4	**3/8 manline**	**lazy man splice two tuck**	**1650**
5	**11/32 sink to 3/8 float**	**lazy man splice two tuck**	**1396**
6	3/8 float 11/32 sink	short splice	2326
7	11/32 sink 7/16 float	lazy man splice two tuck	2050 slipped off wheel
8	**5/16 sink 3/8 float**	**lazy man splice two tuck**	**1257**
9	11/32 sink 7/16 float	lazy man splice one tuck each side taped	slide out of tape at 700
10	5/16 sink 3/8 float	white dog bone and knot	2300
11	5/16 sink 7/16 float	lazy man splice 2 tuck	1378 no break pulled through
12	**3/8 loat 7/16 float**	**black dog bone**	**1550**
13	**5/16 sink 3/8 float**	**short splice**	**1800**
14	5/16 sink	clear	
15	**3/8**	**notched dog bone**	**1468**
16	11/32 sink 3/8 float	short splice	2454
17	**3/8**	**modified white dog bone, drilled on the top**	**1656**
18	11/32 sink 7/16 float	short splice	2202
19	**3/8**	**lazy man splice two tucks**	**1209**
20		steel swivel	2500+

Table 3. *Trials of options from the initial weak point workshop. *denotes trials where the tuck slipped out instead of breaking the line. Some dog bones were testing higher than 1700lbs and, therefore, were modified with drilled holes to reduce the strength prior to completion of the tests.*

Description	trial 1	trial 2	trial 3	trial 4	trial 5	trial 6	trial 7	trial 8	trial 9	trial 10	average
7/16 white dog bone to 3/8	1470	1748	1892	1674	1835	1722	1870	1854			1758.13
3/8 white dof bone to 3/8	1121	1922	1442	1415	1742	1776	2016	1869	1798	1826	1692.70
7/16 lazy splice to 3/8	2123	2215	2101	2199	2204	2119	1715	2168	2103	2067	2101.40
3/8 lazy splice to 3/8	483*	1845	728*	1301	1365	1761	1159	1246	1654		1475.86
3/8 blackdog bone to 3/8 no hole	2423	2313	2476								2404.00
3/8 black dog bone to 3/8 3.5mm hole	1866	1876	2328								2023.33
7/16 black dog bone to 3/8 3.5mm hole	2153	1814	2105	2312	2414	1919	2497	2023	1938	2014	2118.90

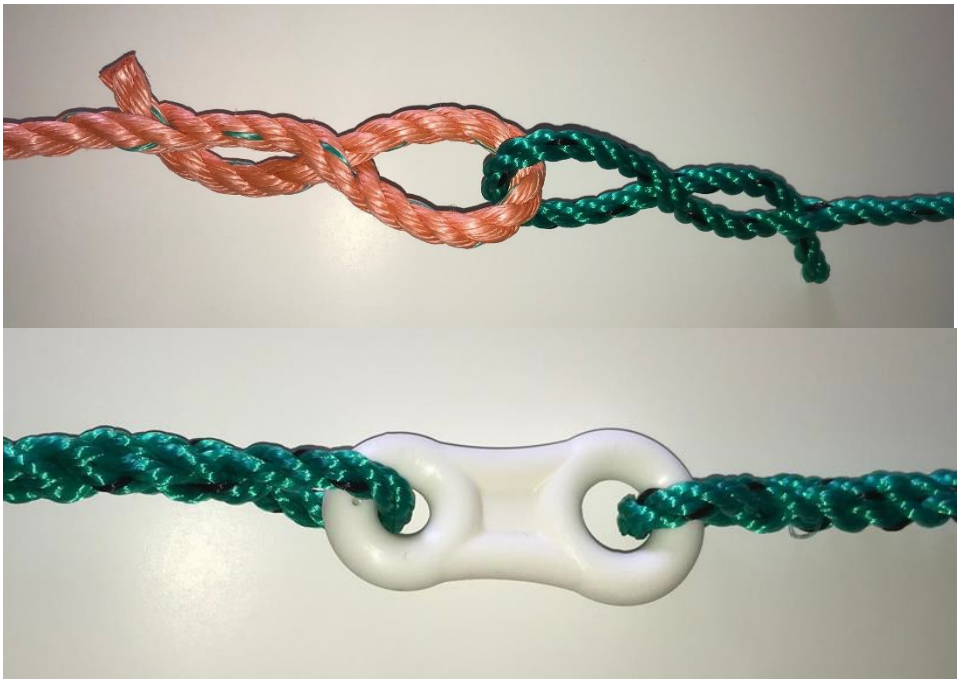

Figure 7. *Examples of options testing for weak points. The top option is a photo of the loop and double tuck (7/16" into 3/8") or "lazy splice". The bottom is an example of a dog bone. Several different types of dog bones were broken and/or modified and broken during the tests.*

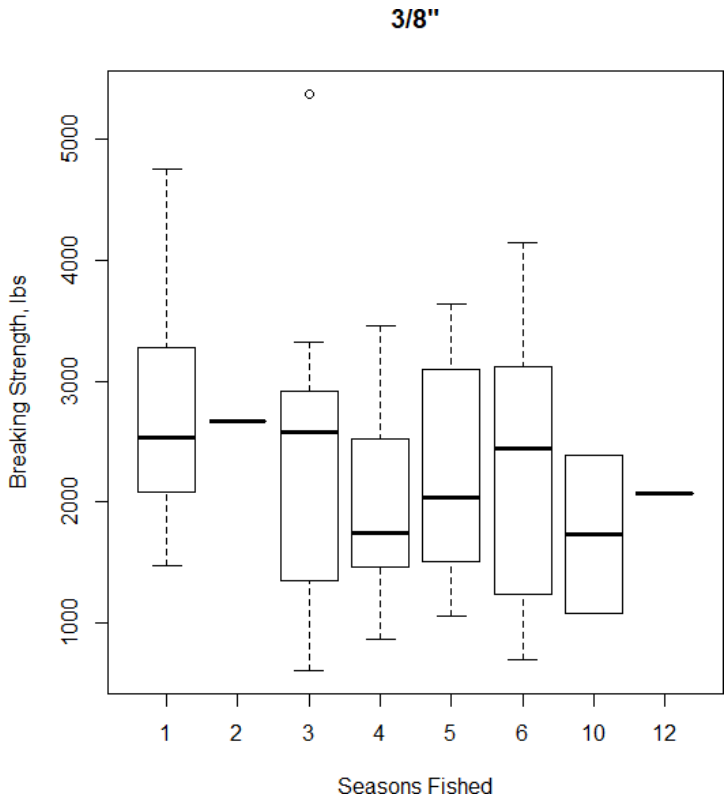

Figure 8. *Using 3/8" rope only (the most common rope diameter), this plot shows the relationship between rope breaking strength and seasons fished or age. All different types of rope and manufacturers are included in this analysis and accounts for some of the variability in the results.*

Future Work

ME DMR is continuing to work with the fishing industry and other stakeholders in the ALWTRT process to find options for weak points in vertical lines. The next steps in this work will include field testing some of these ideas with fishermen and conducting load cell testing integrated into their vertical lines. ME DMR has already begun soliciting ideas from fishermen for ways to rig weak points into their existing gear and will work with them to test those ideas on the Tinius Olsen Tensil testing machine in Boothbay Harbor. ME DMR is also pursuing funding to work with the manufacturers of products liked dog bones and engineers to create new manufactured weak points (similar to existing weak links) that will run through the hauler when integrated into the vertical line. ME DMR is committed to working with NMFS throughout this process to develop options that will work for all stakeholders.

MA DMF Proposal

Daniel J. McKiernan
Acting Director

Commonwealth of Massachusetts

Division of Marine Fisheries

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Charles D. Baker
Governor
Karyn E. Polito
Lieutenant Governor
Kathleen Theoharides
Secretary
Ronald Amidon
Commissioner

Mary-Lee King
Deputy Commissioner

March 6, 2020

Michael Pentony, Regional Administrator
NOAA Fisheries, GARFO
55 Great Republic Drive
Gloucester, MA 01930

RE: Massachusetts Right Whale Conservation Plan 2020

Dear Mr. Pentony,

The Massachusetts Division of Marine Fisheries offers the following proposal to amend the Atlantic Large Whale Take Reduction Plan and provide protection for right whales in Massachusetts coastal waters (see attachment titled Massachusetts Right Whale Conservation Plan 2020). The Division has been a committed member of the TRT since its inception. We are committed to developing a comprehensive strategy to reduce the risk of entanglement and serious injury and mortality to North Atlantic right whales that maintains a safe, efficient, and profitable lobster fishery in Massachusetts.

Sincerely,

Daniel J. McKiernan

ATTACHMENT A

2020 Massachusetts Right Whale Conservation Plan

Background

Over the last several months, the Massachusetts Division of Marine Fisheries (DMF) has worked closely with the National Marine Fisheries Service and the Massachusetts lobster industry to develop conservation measures to augment protections for right whales under the Atlantic Large Whale Take Reduction Plan. We understand the challenge in identifying conservation measures that meet the 60% risk reduction target but are still workable for the fishing industry. Given the current trajectory of the right whale population and the high abundance of whales observed in Massachusetts waters each year, we are committed to achieving an overall goal of 60% risk reduction in our waters.

However, meeting that goal is especially complicated in Massachusetts because we are the only state with multiple lobster management areas (LMA) in our waters. Each area has their own unique lobster management strategy, level of fishing effort, and trends in effort. In addition, each area has varying patterns of whale distribution and abundance.

In our deliberations about conservation measures, we considered three categories; measures that address acute entanglement risk, measures that address dispersed entanglement risk, and measures that mitigate for serious injury and mortality (SIM) and sub-lethal effects. Acute entanglement risk is that posed to a dense, consistent, and largely predictable aggregation of whales. Whereas dispersed entanglement risk is that posed to single whales or small groups of whales whose movements are unpredictable and observed distribution occurs infrequently. Mitigating the risk of SIM and sub-lethal effects is focused on reducing harmful impacts to whales in the event that an entanglement occurs.

Acute Entanglement Risk

We feel that the appropriate management tool to address acute entanglement risk at this time is the elimination of risk through a seasonal closure to fixed fishing gear. Approximately 65% of the known right whale population visits Cape Cod Bay each year. This is the largest known aggregation of North Atlantic Right whales in the world. In a single day in April 2017, a total of 179 right whales were observed in Cape Cod Bay. This represents a peak observed density of 10 right whales/cubic mile of water. To put this in perspective, the Gulf of St. Lawrence, an area which hosts large aggregations of right whales in recent years and has been the epicenter of an Unusual Mortality Event since 2017, has only ever reached a known peak density of 0.012 whales per cubic mile of water, in June 2018. This underscores the importance of the

Massachusetts Bay Restricted Area (MBRA) as an effective means of eliminating entanglement

risk and subsequent serious injury and mortality to right whales. The MBRA closure likely represents the single most important conservation measure to right whales in the United States.

The Division of Marine Fisheries (DMF) has been proactive in ensuring the effectiveness of the state waters portion of the MBRA closure. We have done this by implementing a dynamic extension of the fixed gear closure in the state waters portions of the Mass Bay Restricted Area if the presence of right whales extends past the closure end date. The size, location and duration of the closure extensions are created by DMF through the director's authority using data on whale distribution and abundance from the Provincetown Center for Coastal Studies (PCCS) aerial surveillance team. Furthermore, with help from the Massachusetts Environmental Police we regularly patrol Cape Cod Bay to identify and remove any derelict or abandoned fishing gear to further reduce the risk of entanglement.

Ropeless fishing represents another possible means to mitigate acute entanglement risk. It is our belief that the technology and concomitant fisheries management framework necessary to execute ropeless fishing is not sufficiently developed at this time to allow it in a manner that is safe, cost effective, compatible with high gear densities, and compatible with important competing mobile gear fisheries for groundfish, sea scallops, and surf clams. DMF is committed to permitting and promoting experimental ropeless fishing in areas and times that do not have a high risk of conflict with other fisheries and do not pose substantial risk of interactions with right whales.

Dispersed Entanglement Risk

Dispersed entanglement risk is a more general risk posed by gear in times and places where whales are not aggregated. The primary way of mitigating this risk is reducing the amount of buoy lines deployed in all fixed gear fisheries. It is our opinion that to effectively reduce buoy lines it is first necessary to establish an accurate baseline of how many buoy lines are being fished. DMF has required all fixed gear fishermen who land in MA ports to report the number of buoy lines they deploy since 2011. This includes federally permitted fishermen as well. We are one of only two jurisdictions in the U.S. that currently requires this. With these data we can look at trends over time and can judge the effectiveness of management measures we have put into place to control fishing effort with empirical data. We do not have to rely solely on models, assumptions, and expert opinion to quantify buoy line numbers. Since 2011 we have observed declining trends in the number of buoy lines deployed in the lobster fishery by Massachusetts based fishermen (Table 1, Figures 1 – 4). This trend is apparent both statewide and in each individual lobster management area (LMA) within Massachusetts coastal waters. Buoy line trends from Massachusetts based LMA3 fishermen have increased in recent years, but the entirety of LMA3 falls outside or our jurisdiction.

Table 1: MA Lobster-pot Fishery, Total maximum buoy lines by LMA and Year, 2011-2018

LMA	2011	2012	2013	2014	2015	2016	2017	2018
LMA1	71,811	67,801	65,220	66,050	61,014	64,191	67,846	60,821
LMA2	10,952	10,828	8,560	7,803	7,333	7,167	7,002	6,188
LMA3	1,299	1,256	1,335	1,549	1,040	1,126	1,228	1,656
OCLMA	18,430	15,027	16,773	15,009	15,037	13,669	13,518	13,474
Total	102,492	94,912	91,888	90,411	84,424	86,153	89,594	82,139

Data Source: MA Supplemental Reports and LMA permit declaration

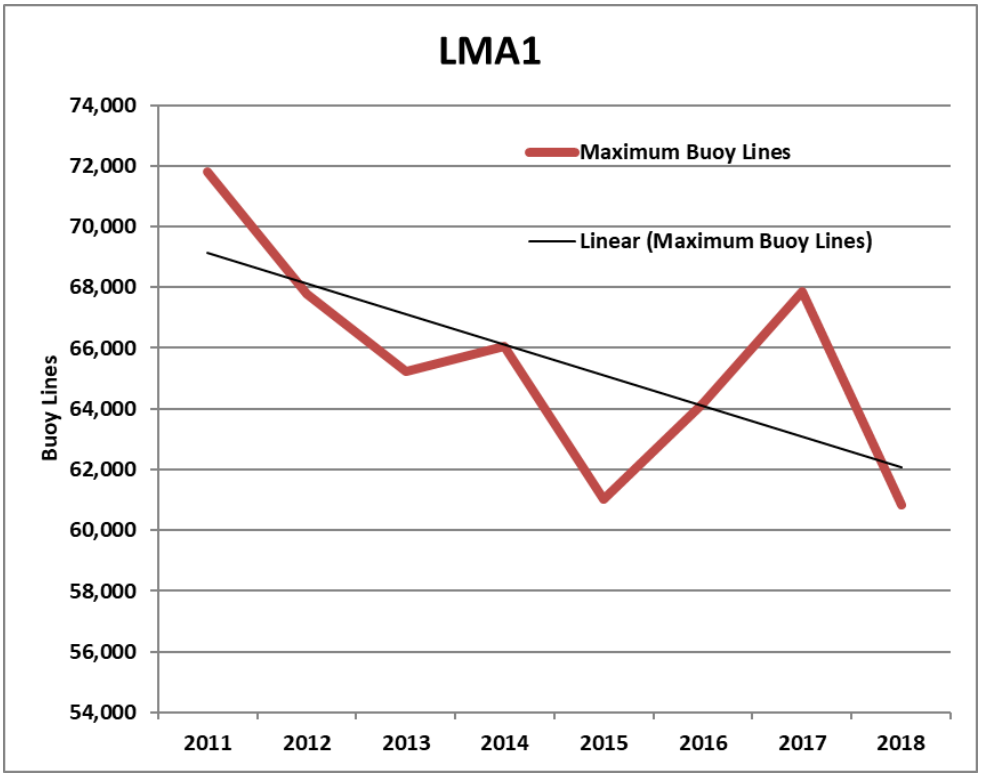

Figure 1. Total maximum buoy lines deployed in LMA 1 – 2011 - 2018

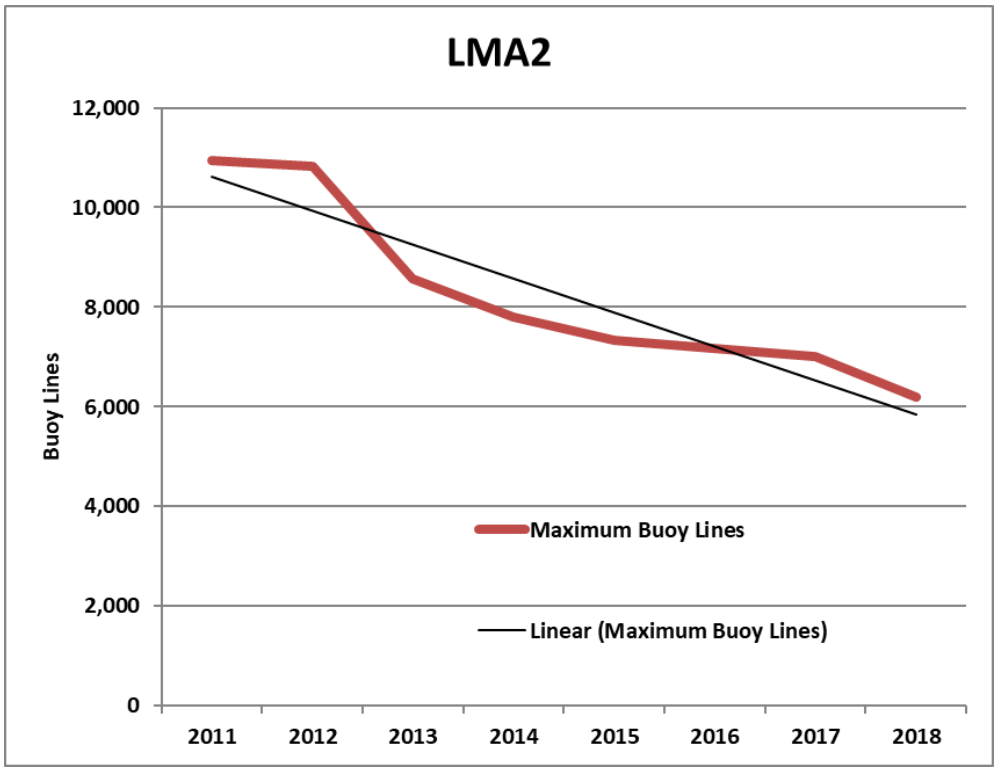

Figure 2. Total maximum buoy lines deployed in LMA 2 – 2011 - 2018

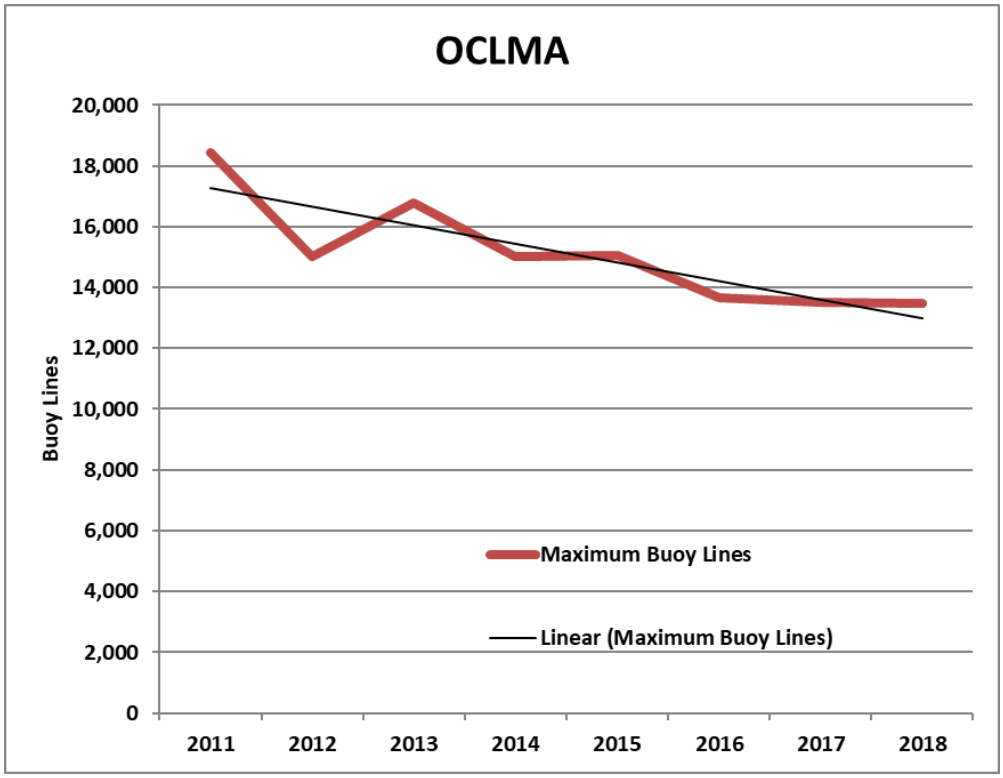

Figure 3. Total maximum buoy lines deployed in LMA OCC – 2011 - 2018

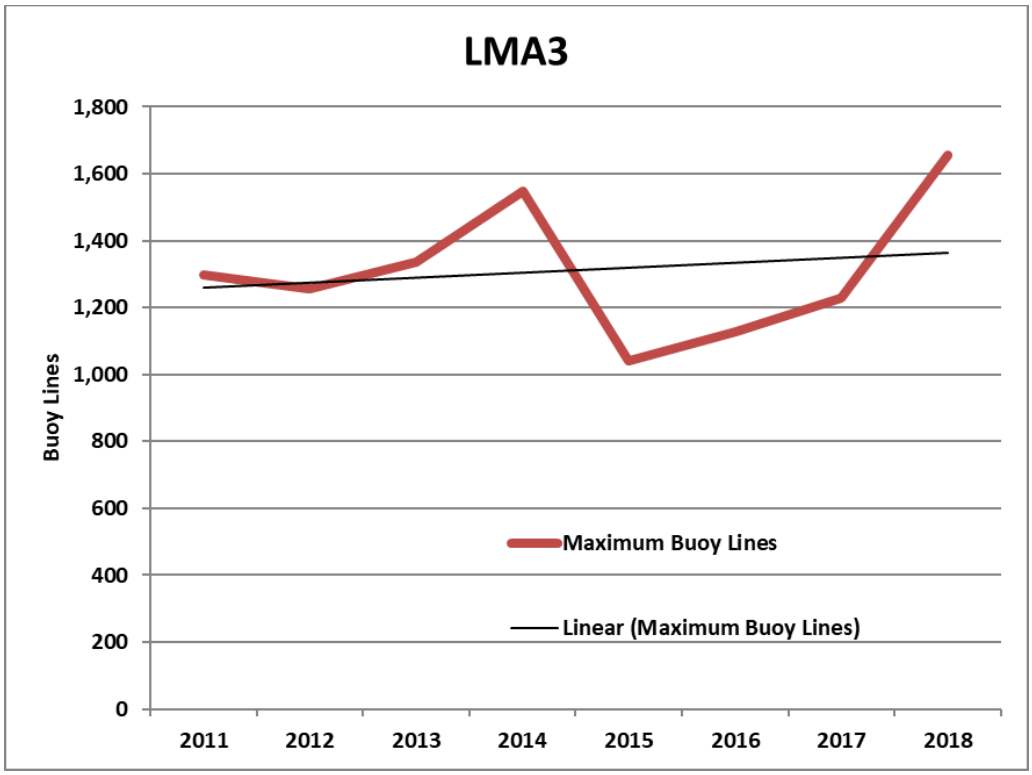

Figure 4. Total maximum buoy lines deployed in LMA 3 – 2011 – 2018

Over the long term we have proactively managed lobster fishing effort in the Massachusetts lobster fishery. We have had a moratorium on the issuance of new coastal lobster fishing permits since 1988 and a moratorium on the issuance of LMA 1 lobster landing permits since 2003. We allow the transfer of active coastal lobster permits (at least 1,000 lbs or 20 sales per year for 4 out of last 5 years) to qualified individuals (1-year full time or equivalent part-time experience in the lobster trap fishery or 2-years full-time or equivalent part-time experience in other commercial fisheries). This has resulted in a long-term reduction in the number of participants and the amount of fishing effort in the MA lobster fishery (Table 2 and 3).

Table 2: MA Lobster-pot Fishery, Active Permit Count by LMA and Year, 2011-2018

LMA	2011	2012	2013	2014	2015	2016	2017	2018*
LMA1	669	650	628	624	627	627	634	651
LMA2	77	78	73	64	71	78	73	71
LMA3	21	26	25	28	25	26	26	27
OCLMA	69	67	71	67	65	61	60	63
Total	836	821	797	783	788	792	793	812

Data Source: MA Trip-level reports and NOAA Fisheries VTRs
*Preliminary, subject to change

Table 3: MA Lobster-pot Fishery, Issued Permit Count by Permit type and Year, 2011-2018

Issued Permits	2011	2012	2013	2014	2015	2016	2017	2018
Coastal Lobster	1,245	1,214	1,188	1,170	1,139	1,116	1,088	1,081
Offshore Lobster	189	175	161	163	159	154	171	156
Seasonal Lobster	98	78	79	76	86	88	96	100
Total	1,532	1,467	1,428	1,409	1,384	1,358	1,355	1,337

Data Source: MA Permitting database

All Massachusetts fishermen who fish in LMA1, LMA2, and LMAOCC have been subject to a maximum trap limit of 800 since 1992. In addition to this LMAOCC and LMA2 have been subjected to a historically based trap allocation plan in 2004 and 2007 respectively. These plans allocated individual transferable trap allocations based on historical participation and also include a 10% trap tax on any partial trap allocation transfer. NMFS has adopted complimentary measures to these plans and your agency is integral to the administration of these plans. The implementation of the effort capping and effort reduction measures in Massachusetts have greatly contributed to the reduction in traps and the reduction of buoy lines we have observed.

We anticipate that the declining trends in participation, traps, and buoy lines will continue to decline. The median age of fishermen in Massachusetts has steadily increased over time and is rapidly approaching the age at which many fishermen retire or downscale their effort (Figure 5).

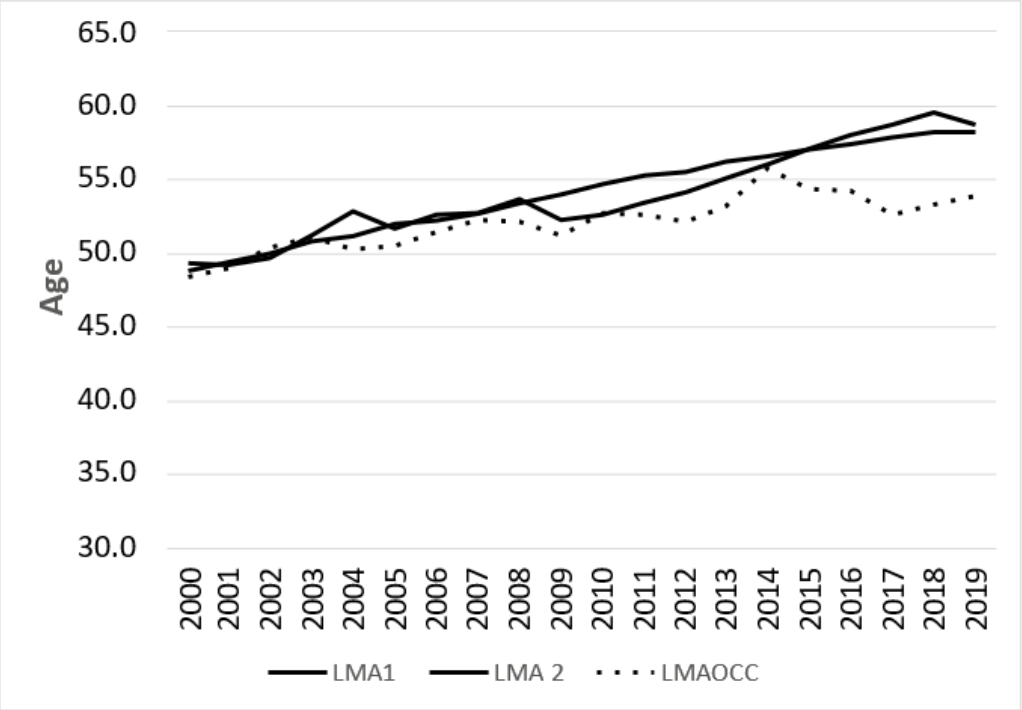

Figure 5. Median age of lobster permit holder in LMA1, LMA2, and LMAOCC – 2000 to 2019.

As these fishermen reach retirement and leave the fishery, we expect that only a portion of their permits will be transferred. In LMA2 and LMAOCC this has and will continue to promote partial trap allocation transfers which are subject to a 10% trap tax. DMF will continue to monitor participation and efforts trends over time and is committed to making necessary adjustments to our management framework to ensure long term stability in participation in our lobster fishery with continued reductions in buoy lines. We believe our track record in this area speaks for itself.

Mitigating for Serious Injury and Mortality and Sub-Lethal Effects

The vast majority of buoy lines fished in Massachusetts state waters are comprised of either 5/16" or 3/8" line. Prior to 2010, these smaller diameter lines were also the most common size removed from entangled right whales. However, in recent years, the majority of rope removed from and seen on right whales has been heavy, large diameter rope not used in the inshore US lobster fishery. This gear is typical of the offshore lobster fishery and the Canadian snow crab fishery. This heavy line also has a higher breaking strength and is most likely to cause severe entanglement injuries and mortality. An analysis of entanglement cases found only severe injuries resulting from higher breaking strength line (Knowlton et al. 2016). That same analysis concluded that the broadscale use of reduced breaking strength ropes (1,700 pounds or less) would reduce the number of life-threatening whale injuries by 72%. Some scientists also believe that sub-lethal effects of minor entanglements are putting additional stress on the already declining right whale population and further suppressing their ability to recover. To address disperse entanglement risk during times when whales are not aggregating, Massachusetts managers and fishermen have been pursuing potential weak rope options for vertical lines. DMF and the Massachusetts Lobstermen's Association are partnering on a state-wide effort to test weak rope options beginning in summer 2020. In addition, the South Shore Lobstermen's Association has successfully developed a weak sleeve that can be used on traditional buoy lines to create 1,700-pound weak links. Massachusetts is committed finding effective weak rope solutions to make vertical lines less harmful to right whales while sufficiently safe for the commercial fishermen.

The Division of Marine Fisheries proposes the following management strategies:

Acute Entanglement Risk

*Continue the ongoing MBRA seasonal fixed gear closure from February 1st through April 30th.

*Dynamic closure extension of the state waters portion of the MBRA using state authority to extend the closure in portions of state waters, as necessary based on up to date whale surveillance.

*Establishment of a new South of Nantucket Restricted Area (SNRA) fixed gear closure from February 1st through April 30th (Figure 6a and 6b). We propose using utilizing 2017 to 2019 right whale sightings data to evaluate this closure. We also suggest that the size, shape, and timing of this closure be re-evaluated ever three years and modified as necessary.

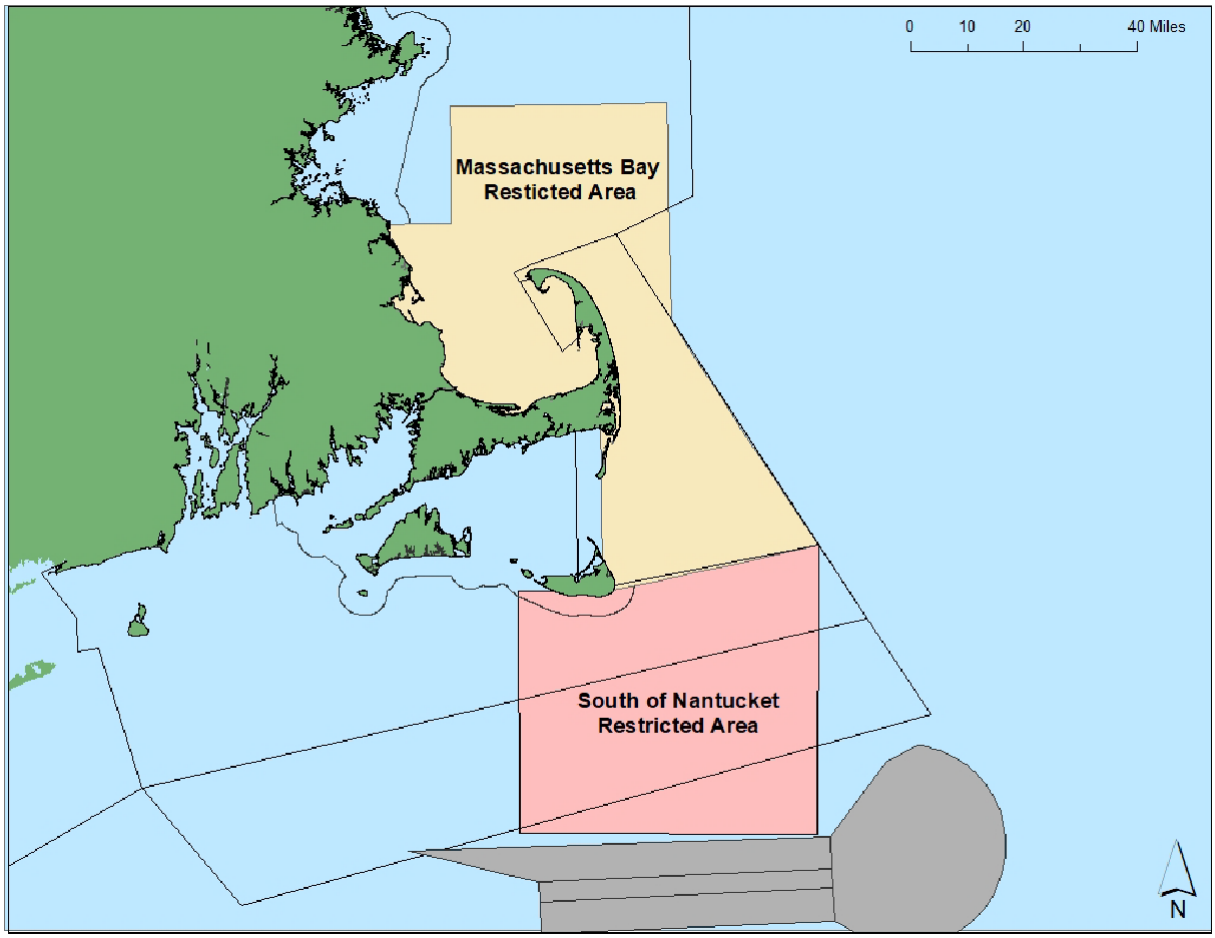

Figure 6a. Map of the Massachusetts Bay Restricted Area and newly proposed South of Nantucket Restricted Area.

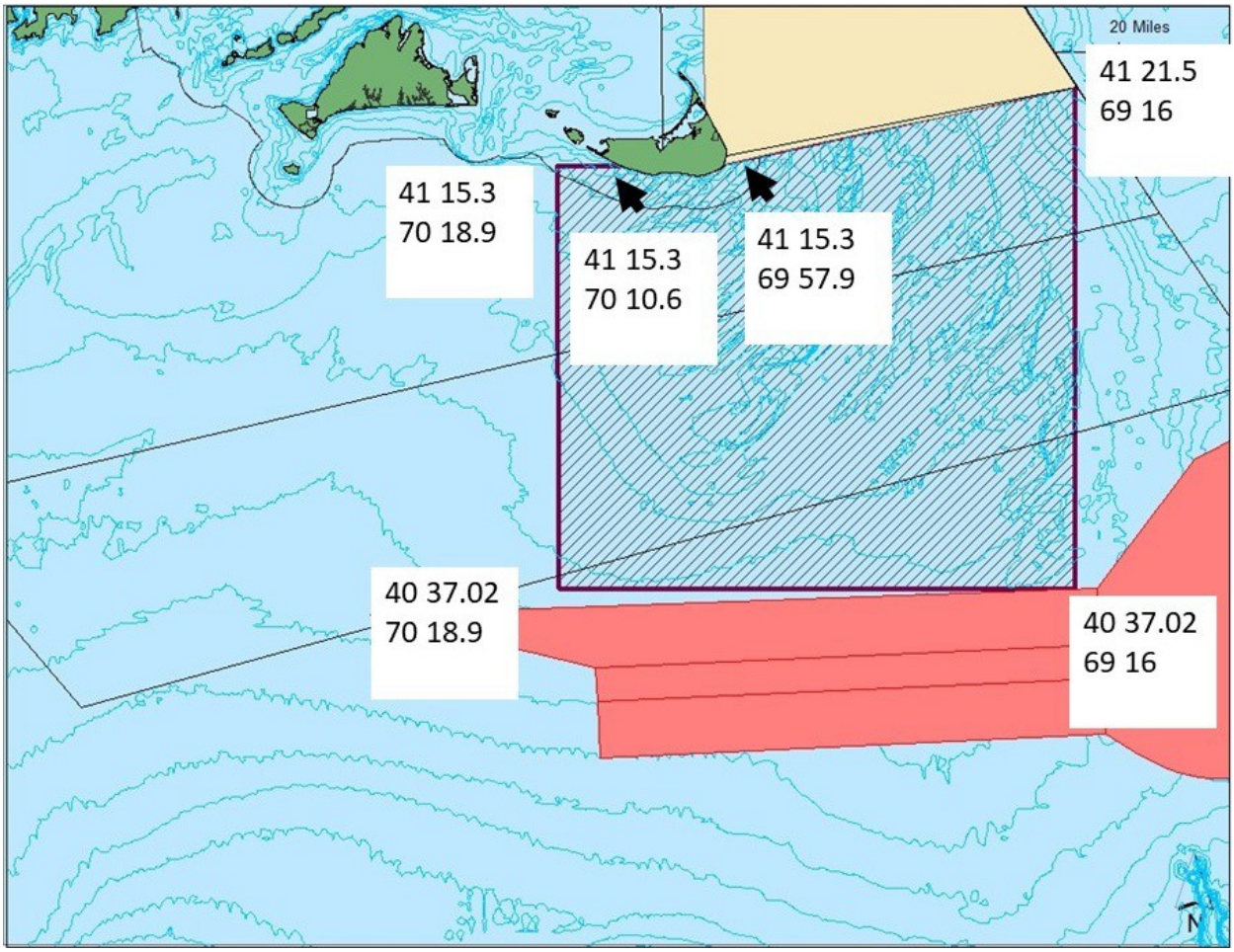

Figure 6b. Close up map of the proposed South of Nantucket Restricted Area with coordinates of each corner.

<u>Dispersed Entanglement Risk</u>

1.) Trawling up requirements – We expect these to be applied to all fishermen in the EEZ regardless of state of origin.

i. LMA 1
   1. 3 to 6 miles - 10 trap per trawl minimum
   2. 6 to 12 miles - 15 trap per trawl minimum
   3. 12 + miles – 25 traps per trawl

ii. LMA 2
   1. 3 to 12 miles – 15 trap per trawl minimum
   2. 12 + miles – 25 traps per trawl

iii. LMA OCC
   1. 3 miles to LMA 3 boundary – 15 trap per trawl minimum

2.) Ban on fishing singles on vessels greater than 29' in all MA LMA's on permits transferred after 1/1/2020

3.) Continue the ongoing 50% trap allocation reduction in LMA2 through 2021

i. 2016 – 25% reduction
ii. 2017 – 5% reduction
iii. 2018 - 5% reduction
iv. 2019 – 5% reduction
v. 2020 - 5% reduction
vi. 2021 - 5% reduction

Mitigation of SIM and Sub-lethal Effects

1.) Requirement for all fishermen in all LMA's to utilize 1,700 lb. breaking strength rope or an approved 1,700 lb. contrivance as follows;

i. Coast to 3 miles – One weak contrivance at 50% down buoy line.
ii. 3 miles to 12 miles – Two weak contrivances in topper at 25% at 50% down.
iii. 12 miles to the LMA 3 border – One weak contrivance in topper at 35% down.
iv. Ban on all rope greater than 3/8" diameter in Massachusetts coastal waters.

Summary

Based on preliminary evaluations and discussions with NMFS staff we are confident that the measures we have proposed will achieve the required 60% risk reduction for the Massachusetts lobster fishery. We encourage NMFS to utilize a combination of the risk evaluation tool, empirical data, expert opinion, and common sense when evaluating our proposal. We also urge NMFS to utilize more recent right whale sightings data instead of relying solely on a long time series. To date the risk evaluation tool has relied on right whale sightings data from 2010 through 2017. Time series of sightings data make sense for demonstrating historic usage of habitat, however in a rapidly changing environment with documented broadscale changes in right whale distribution, they likely do not accurately reflect current density and distribution of whales. This has the potential to overestimate the effectiveness of risk reduction measures in some areas and underestimate it in others.

In closing, we are committed to developing a comprehensive strategy to reduce the risk of entanglement and serious injury and mortality to North Atlantic right whales that maintains a safe, efficient, and profitable lobster fishery in Massachusetts.

Attachment 2 emailed on March 12, 2020

MA Vessel size state data all states:

2018										
COUNT OF PERMITS		AVERAGE TRAPS/TRAWL BIN								
LMA	VESSEL LENGTH	1	2	4-Mar	9-May	14-Oct	15-19	20+	NO SUPP REPORT	GRAND TOTAL
LMA1	0-20'	40	5	8	3					56
	20-25'	36	1	12	26	15				90
	25-30'	8	1	2	23	20	6			60
	30-35'	5	1		36	82	21	12		157
	35-40'	3	1		8	54	29	49		144
	40-45'	2		1	1	11	26	62		103
	45-50'						3	11		14
	50'+							1		1
	NO SUPP REPORT								23	23
LMA1 TOTAL		94	9	23	97	182	85	135	23	648
LMA2	0-20'	4			1					5
	20-25'	6			1					7
	25-30'	3		1	1	1				6
	30-35'	4		1	5	7	2			19
	35-40'	1			1	6	5	3		16
	40-45'		1				3	1		5
	45-50'				1		2	5	5	13
	NO SUPP REPORT									0
LMA2 TOTAL		18	1	2	10	14	12	9	5	71
LMA3	45-50'							1		1
	50'+						1	21		22
	NO SUPP REPORT								4	4
LMA3 TOTAL		0	0	0	0	0	1	22	4	27
OCLMA	0-20'	3								3
	20-25'	3				1	1			5
	25-30'	6				1				7
	30-35'	13	1		4	2	1	1		22
	35-40'	7		1		1	4	3		16
	40-45'	1				1	1	5		8
	45-50'						1			1
	NO SUPP REPORT								1	1
OCLMA TOTAL		33	1	1	4	6	8	9	1	63

*Calculated as Renewed Permits who were federal or reported state landings in 2018, but did not submit a supplemental report
Data source: Fixed Gear Supplemental Reports, Permitting Data, Trip-level reports; refreshed 8/16/19, AW

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

DIVISION OF MARINE FISHERIES
Three Fort Wetherill Road
Jamestown, Rhode Island 02835

March 17, 2020

Michael Pentony, Regional Administrator
NOAA Fisheries, GARFO
55 Great Republic Drive
Gloucester, MA 01930

Dear Mr. Pentony,

The Rhode Island Department of Environmental Management, Division of Marine Fisheries, would like to submit the following proposal for consideration into the LMA 2 portion of the Atlantic Large Whale Take Reduction Plan. This proposal will continue the commitment Rhode Island has to ensure the continued survival of the North Atlantic Right Whale (NARW) through existing trap reduction plans and gear configurations. These measures will continue to reduce the likelihood of serious injury and mortality to NARW while allowing the Rhode Island lobster and Jonah crab fisheries to persist and be profitable during a challenging time for those fisheries.

Sincerely,
Jason McNamee, Deputy Director RIDEM

Telephone 401.423.1923 | www.dem.ri.gov | Rhode Island Relay 711

State of Rhode Island 2020 Plan to reduce Norther Right Whale serious injury and mortality

The State of Rhode Island participates on the NOAA Atlantic Large Whale Take Reduction Team (ALWTRT) as state fisheries managers and industry stakeholders. These seats have extensive background in fixed gear fisheries and offer expert perspectives on operations in both the inshore and offshore lobster and gillnet fisheries. At the last meeting of the ALWTRT in April 2019, the team, through near consensus developed proposals, by state, for lobster conservation management areas which met the 60% risk reduction target for US fisheries. Since that meeting, developing and analyzing measures has been achieved through numerous in-person and conference meetings between the states of Rhode Island, Massachusetts and NOAA Fisheries.
The following proposal summarizes those deliberations and is also reflective of feedback from the Rhode Island Lobster industry in achieving the intended risk reduction target.

Executive Summary

The North Atlantic right whale (NARW) population has experienced anomalously high mortality in recent years, leading fisheries stakeholders to seek strategies for mitigating the risk of entangling whales in fixed fishing gear such as lobster fishing gear. Lobster fishery managers have been tasked with proposing solutions that will meet target goals for the reduction of serious injury or mortality (SIM) to the NARW; proposed measures include reducing vertical lines via the Southern New England (SNE) effort control plan, modifying fishing gear configurations, and implementing seasonal fishery closures.

The SNE lobster stock has been in long-term recruitment failure since the 1990s. To reduce fishing effort, managers in lobster conservation management area 2 (LCMA 2) implemented a six-year lobster trap allocation reduction program in 2016, which will have reduced the number of allocated traps in the LCMA 2 fishery by more than 50% over the 2016-2022 reduction schedule. Rhode Island managers believe that effort reductions attributed to the ASMFC Effort Control Plan (Addendum XVIII) should be credited toward risk reduction targets in this region, as the reduction in fishing effort will have simultaneously reduced entanglement risk by removing gear (vertical lines) from the water.

Staff at the Rhode Island Division of Marine Fisheries (RIDMF) have worked to estimate the number of end lines that have been removed from LCMA 2 waters since 2017, and to forecast the number of end lines that will be removed through the end of the effort reduction program. The calculated risk reduction varies by month as fishing effort changes seasonally however the RI analysis indicates a reduction in vertical lines of greater than 24 % with even greater reductions predicted during the area aggregation period of February through April. Current weak line configurations being employed by the industry have not yet been analyzed by NOAA Fisheries, but we feel the combination of trap reductions, gear and vertical line modifications will result in a risk reduction that reaches the intended target of 60%.

Background

The SNE American lobster stock experienced a decline in abundance in the 1990s, resulting in the introduction of multiple management measures intended to reduce fishing pressure on this resource in LCMA 2. In 1999, Addendum I to Amendment 3 to the American Lobster Interstate Fishery Management Plan established a trap allocation cap for LCMA 2 permit holders at 800 traps per federal permit/state license.

The decline of the SNE lobster stock was determined to be largely environmentally driven, but further reductions in fishing pressure were deemed necessary to allow for recovery of the stock. To address the need for fishing effort relief for the SNE stock, Addendum XVIII to Amendment 3 to the American Lobster FMP (approved August 2012) introduced a six-year trap allocation reduction program in LCMA **2.** This program was implemented with the purpose of reducing fishing effort in LCMA 2 by 50%, corresponding to an estimated 50% decline in SNE's lobster abundance (Table 1).

Table 1. Lobster management area 2 trap reduction schedule

Fishing year (May 1-Apr 30)	Reduction (Implemented May 1)	Example allocation
2015-2016	N/A	800
2016-2017	25%	600
2017-2018	5%	570
2018-2019	5%	542
2019-2020	5%	515
2020-2021	5%	490
2021-2022	5%	466

In addition to the above effort reduction schedule, Addendum IX created a trap transfer conservation tax in LCMA 2, whereby 10% of the traps that are transferred between permit holders are permanently retired from the fishery, continuing to reduce vertical lines beyond the trap reduction plans termination.

The number of traps reported fished by fishers (using state harvester reports and federal vessel trip report data) has exhibited a clear decline during the first three years of the trap allocation reduction schedule. It is expected that fishing effort levels will continue to decrease through the end of the trap allocation reduction schedule.

Although these effort reductions were initiated for the purpose of conserving the lobster resource, they concurrently achieve the goals of reducing risk to NARW. Any fishing effort reduction resulting from the trap allocation reduction program will inherently provide a reduction in risk to NARWs via removal of vertical lines from the water. Managers of the Rhode Island LCMA 2 lobster fishery thus propose that risk reduction credit be granted for this recent and ongoing effort reduction.

To quantify the extent to which fishing effort has decreased in LCMA 2 due to the trap allocation reduction program, and to forecast the extent to which fishing effort will decrease by the end of the program, staff at Rhode Island Division of Marine Fisheries (RI DMF) have fit a model to the relationship between total lobster trap allocations (LTA) and total number of traps fished in LCMA 2 by Rhode Island fishers, both federally permitted and state licensed.

Whale conservation efforts are concerned with the risk to whales associated with vertical lines rather than traps, so trap estimates were converted to end line estimates. Rhode Island fishers have not historically reported the number of end lines they fish, so the relationship between traps and end lines was estimated based on assumptions about gear configuration reported in Industrial Economics End Line Model (IEc draft vertical line model documentation, 2014). In the absence of empirical data on individual future allocations, we assumed that the overall relationship between traps and end lines for the fishery would

remain relatively static. For all LCMA 2 Rhode Island-based fishers, gear configuration assumptions were based on Rhode Island state waters model assumptions as summarized in Table 2.

Table 2. IEC end line model gear configuration assumptions for Rhode Island state waters

Allocation	Number of traps per trawl	Number of end lines per trawl
Up to 50 traps	1	1
51-100 traps	5	2
101-200 traps	10	2
201+ traps	15	2

NOAA Fisheries indicated that 2017 would be the baseline year for assessing risk reduction for the NARW population, so percent reductions in LCMA 2 end lines were calculated assuming 2017 as the baseline. Based on model output, and the trap to endline conversion, there is a projected reduction of 24-44% (month-dependent) in the number of end lines in LCMA 2 waters set by Rhode Island fishers by the end of the reduction schedule (April 2022), with an average of 38% reduction in vertical lines during the period Feb-April when aggregations of NARW are known to occur in LCMA 2 (Table 3).

Table 3. % reduction in vertical lines 2017-2022 by month

	Estimated max. end lines in water				Forecasted max. end lines in water				Projected Reductions (to end of reduction schedule)	
Month	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**% reduction since 2017**	**2017 confint (95%)**
1	NA	1489	1330	998	1050	962	886	813	39%	(22%, 52%)
2	NA	1110	945	534	679	623	573	526	44%	(29%, 56%)
3	NA	1285	900	687	747	685	630	579	36%	(18%, 50%)
4	NA	2126	1739	1429	1466	1344	1236	1135	35%	(17%, 49%)
5	2863	3291	2793	2705	2515	2306	2122	NA	24%	(9%, 36%)
6	4735	4266	3898	3529	3346	3079	2827	NA	27%	(9%, 42%)
7	5048	4816	4295	4636	3809	3505	3217	NA	25%	(6%, 40%)
8	4810	4211	4106	4527	3553	3270	3001	NA	27%	(9%, 41%)
9	4132	3571	3436	3180	2875	2645	2428	NA	29%	(12%, 43%)
10	3260	2735	2846	2390	2252	2072	1902	NA	33%	(17%, 46%)
11	2533	2302	2154	1793	1727	1589	1459	NA	32%	(15%, 46%)
12	2006	1835	1829	1420	1394	1283	1178	NA	36%	(20%, 48%)

Vertical Line breaking strength

In addition to the credit in risk reduction from ongoing trap reductions, Rhode Island would like to propose a risk reduction in serious injury and mortality through gear modifications and configurations. The two options proposed would be a requirement for all fishermen in LCMA 2 to utilize a 1700 lbs. breaking strength vertical line at the top 75% or an approved 1700 lbs. contrivance in the form of a weak sleeve inserted at various places in vertical lines based on distance fished from shore and water depth per vertical line length. There are significant reductions in risk with both options, 41% estimated from 1700 lbs. vertical lines on either end at the top 75% of the vertical line and 26 % estimated when a 1700 lbs. insert is used on both ends (Table 4). Inserts are likely less cost prohibitive to the industry and may be more readily available at the time of rulemaking.

Table 4. Weak vertical line measures by area and risk reduction

Line reduction area	measure	% risk reduction
Coast – 3nm	1 insertion at 50%	12.3%
3nm – 12nm	2 insertions at 25% and 50%	12.25%
12nm – Area 3	1 insertion at 35%	2.45%
Area 2 wide	2 vertical lines top 75%	41% RI preferred option

Current vertical line configuration

The Rhode Island lobster industry has been configuring vertical lines with a break away line at the top 1/3 of the vertical line. A sample of this vertical line was sent to Erin Summers at Maine DMR to put through a load test. The line diameters tested were 1/4" and 5/16" knotted together and then each line without knots. The results are in Table 5 below and it was noted that when the knotted line broke it was the first example of a configuration that broke and left no knot.

Table 5. Load test results of RI vertical lines

Line Diameter (in.)	Load with knot (lbs.)	Load without knot (lbs.)
1/4 X 5/16	631	N/A
1/4 X 5/16	650	N/A
1/4 X 5/16	680	N/A
1/4 X 5/16	662	N/A
1/4	N/A	1115
5/16	N/A	1589

Color marking requirements

ALWTRT members have had concern over the broad gear making requirements of the northeast fixed gear fisheries. Rhode Island supports a more spatially specific gear marking requirement for state specific

lobster management area fisheries including expanded marking requirements at multiple locations including visually identifiable top marking requirements.

Minimum number of traps per trawl

Rhode Island does not support substantial changes to the current LCMA 2 minimum number of traps per trawl mainly over safety concerns and vessel size. Much of the small vessel fishery that occurs in the 3-12 nm from shore range are too small to safely accommodate large numbers of traps per trawl. Rhode Island does support a small change in the current ALWTRT plan where vessels fishing 3-12 nm could safely change from 10 traps/trawl to 12/trap per trawl and requests that this change be analyzed for additional risk reduction.

Seasonal Area Closures

Due to the high degree of uncertainty of model outputs, the lack of empirical data on fishing effort and limited whale sightings information, we do not support a closed area at this time. Without the understanding of whether a closed area in an open ocean environment such as LCMA 2 would create a potentially higher risk situation due to things like gear fencing where fixed fishing gear is relocated outside of a closed area creating a denser array of vertical lines. Similarly, recently closed areas of SNE to gillnet fisheries will cause effort to be re-directed with little understanding of what co-occurrence may result. We feel we cannot support such an action without understanding the true impacts to whale interactions. Measures could in fact be more detrimental to the species of concern when the result of the intended action causes the fishing industry and associated gear to re-locate into areas of higher risk.

Summary

Based on discussions with state managers, fishery stakeholders, and the analysis done by NOAA Fisheries of the above proposed measures, we believe this combination of gear changes and trap reductions will achieve the 60% risk reduction target (Table 6). Rhode Island feels confident that recent and future reductions in the amount of fixed gear as well as anecdotal information on the realistic reductions in effort are the best way to mitigate serious injury and mortality of NARW. Less lines in the water means reduced risk.

Rhode Island is confident that our proposed risk reduction strategy through vertical line removal along with additional measures of gear configuration to reduce the likelihood of severe injury or mortality should an entanglement occur will meet the risk reduction target approved by the ALWTRT. Therefore, we ask that the NOAA Fisheries and Regional Administrator accept the Rhode Island proposal to reduce risk to NARW by 60% through the combination of measures listed below.

Table 6. Possible risk reduction measures for consideration

Line reduction by area	Line reduction by measures	% risk reduction
All LMA 2	18% via effort reduction plan	18% RI preferred
SI Closure	Feb-April	8.60%
Weak Line	Insert Configuration	
Coast-3	1 insertion at 50%	12.30%
3-12 nm	2 insertions at 25% and 50%	12.25%
12 nm to MNA 1/3 border	1 insertion at 35%	2.45%
Two End Lines 1700 lbs	75% of vertical line	41% RI preferred

Estimation of reduction in LMA 2 vertical lines during lobster trap allocation reduction program

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Executive Summary

The North Atlantic right whale stock has experienced anomalously high mortality in recent years, leading fisheries stakeholders to seek strategies for mitigating the risk of entangling these whales in lobster fishing gear. Lobster fishery managers have been tasked with proposing solutions that will meet target goals for the reduction of lethal entanglement risk; proposed measures include reducing fishing effort, modifying fishing gear, and implementing seasonal fishery closures.

The southern New England lobster stock has been in long-term recruitment failure since the 1990s. To reduce fishing effort, managers in lobster management area 2 implemented a six-year lobster trap allocation reduction program in 2016, which will have reduced the number of allocated traps in the LMA 2 fishery by more than 50% over the 2016-2022 reduction schedule. Rhode Island managers believe that effort reductions due to the trap allocation reduction program should be credited toward risk reduction targets in this region, as the reduction in fishing effort will have simultaneously reduced entanglement risk by removing gear (end lines) from the water.

Staff at the Rhode Island Division of Marine Fisheries have worked to estimate the number of end lines that have been removed from LMA 2 waters since 2017, and to forecast the number of end lines that will be removed through the end of the effort reduction program. Here, a model is presented which shows a **reduction in LMA 2 end lines of 24-44% (month-dependent) between 2017 and 2022, the end of the effort reduction program.** Rhode Island DMF proposes that this estimated reduction in end lines be credited to the Rhode Island LMA 2 lobster fishery when assessing the need for further risk reduction strategies in the region.

Background

The southern New England (SNE) American lobster stock experienced a decline in abundance in the 1990s, resulting in the introduction of multiple management measures intended to reduce fishing pressure on this resource in lobster management area 2 (LMA 2). In 1999, Addendum I to Amendment 3 to the American Lobster Fishery Management Plan established a trap allocation cap for LMA 2 permit holders at 800 traps per permit. In 2006, Addendum IX to Amendment 3 created a trap transfer conservation tax in LMA 2, whereby 10% of the traps that are transferred between permit holders are permanently retired from the fishery.

The SNE lobster stock was determined to be experiencing long-term recruitment failure in a 2010 Atlantic States Marine Fisheries Commission (ASMFC) Technical Committee memo (https://www.asmfc.org/uploads/file/april2010_SNE_Recruitment_Failure_TCmemoB.pdf). The decline of the SNE lobster stock was determined to be largely environmentally-driven, but further reduction in fishing pressure was deemed necessary to allow for recovery of the stock. To address the need for fishing effort relief for the SNE stock, Addendum XVIII to Amendment 3 to the American Lobster Fishery Management Plan (approved August 2012) introduced a six- year trap allocation reduction program in LMA 2. This program was implemented with the purpose of reducing fishing effort in lobster management area 2 (LMA 2) by 50%, corresponding to an estimated 50% decline in southern New England's lobster abundance (Table 1).

Table 1. Lobster management area 2 trap reduction schedule

Fishing year (May 1-Apr 30)	Reduction (Implemented May 1)	Example allocation
2015-2016	N/A	800
2016-2017	25%	600
2017-2018	5%	570
2018-2019	5%	542
2019-2020	5%	515
2020-2021	5%	490
2021-2022	5%	466

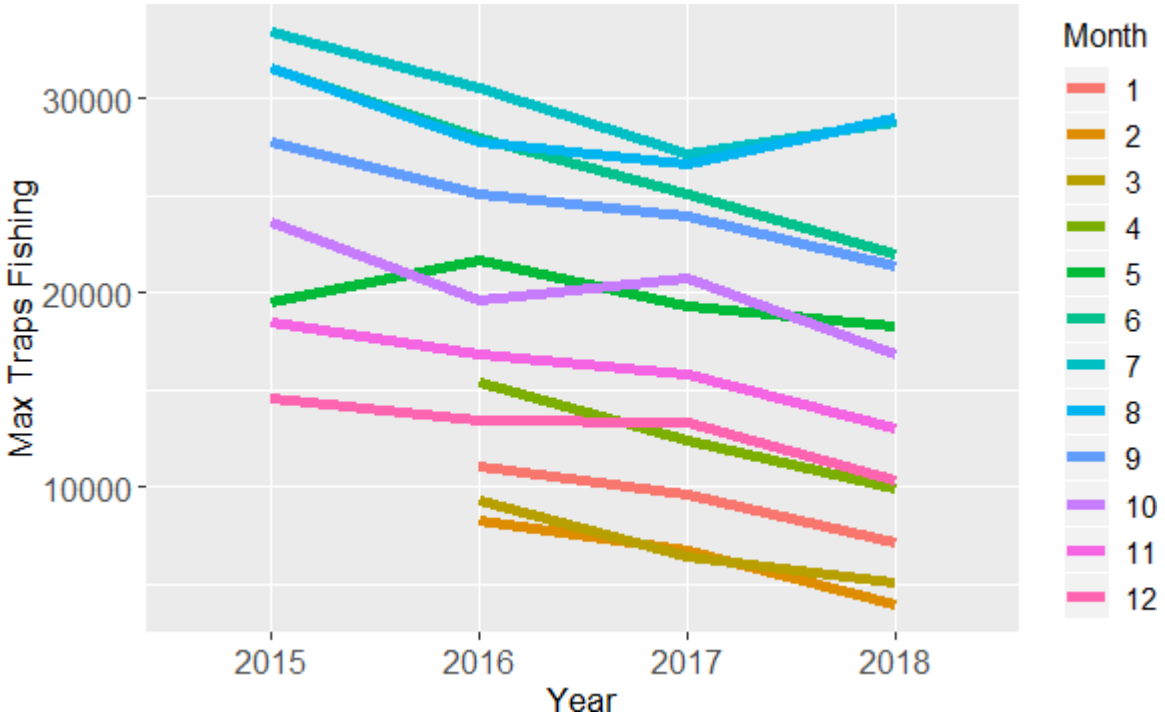

Figure 1. Monthly maximum number of traps reported fished by Rhode Island fishers in LMA 2, May 2015 through December 2018

Due to recent concern for the decline of the North Atlantic right population, the North Atlantic Large Whale Take Reduction Team has worked toward finding solutions to reduce risk of entangling this species in the end lines of trap fishing gear. These solutions are geared toward achieving a threshold for risk reduction in the North Atlantic American lobster fishery. A quantitative risk reduction model is being used to assess the reductions in risk associated with seasonal lobster fishing closures, modified fishing gear, and reductions in fishing effort across lobster management areas 1, 2, and 3.

As mentioned, the Rhode Island LMA 2 lobster fishery is in the middle of the trap reduction schedule which began in May 2015. Since the initiation of this program, substantial reductions in LMA 2 fishing effort are evident. The number of traps reported fished by fishers (using state harvester reports and federal vessel trip report data) has exhibited a clear decline during the first three years of the trap allocation reduction schedule (Figure 1). It is expected that fishing effort levels will continue to decrease through the end of the trap allocation reduction schedule.

Although these effort reductions were initiated for the purpose of conserving the lobster resource, they concurrently achieve the goals of reducing risk to North Atlantic right whales. Any fishing effort reduction resulting from the trap allocation reduction program will inherently provide a reduction in risk to North Atlantic right whales via removal of end lines from the

water. Managers of the Rhode Island LMA 2 lobster fishery thus propose that risk reduction credit be granted for recent and ongoing effort reduction.

To quantify the extent to which fishing effort has decreased in LMA 2 due to the trap allocation reduction program, and to forecast the extent to which fishing effort will decrease by the end of the program, staff at Rhode Island Division of Marine Fisheries (RI DMF) have fit a model to the relationship between total allocation and total number of traps fished in LMA 2 by Rhode Island fishers. Methods for fitting this model and its estimates are provided below.

Data

Rhode Island lobster fishers were defined as harvesters who either had Rhode Island state waters lobster fishing permits or had federal fishing permits and landed their catch in Rhode Island ports with a Rhode Island state landing permit. There were a few reported trips over the analyzed time period during which catch was landed in Rhode Island, but the permit holder was predominantly based in another state. These fishers were assumed to be accounted for by their home port states and were excluded from these analyses.

Trip level effort data were collected for years 2015 through 2018 from federal Vessel Trip Reports (VTRs), where applicable, or from Rhode Island state harvester reports. State harvester reports are required to be completed by any Rhode Island permitted vessel that is not required to fill out a VTR. In both VTRs and state harvester reports, fishers enter the number of traps they currently have set in the water. To obtain a conservatively high estimate of the number of traps set by all Rhode Island fishers in LMA 2 on a monthly basis, analyzed month-level effort data consisted of the maximum number of traps reported fished by each harvester within a given month. Thus, the aggregate maximum number of traps reported fished in each month was the upper bound on how many traps were in the water during that time period.

The total number of allocated traps in the Rhode Island LMA 2 fishery was calculated by summing the lobster trap allocations for all active and inactive lobster permit holders (state, federal, and dual permitholders). For predicting effort in years 2019-2021, allocation was calculated by reducing the total allocation from 2018 by 5% in each subsequent year. This provided conservative estimate of total allocation in future years because any reductions due to the trap transfer conservation tax were not accounted for.

Methods

To predict and forecast reductions in LMA 2 lobster fishing effort over the trap allocation reduction schedule, a negative binomial generalized linear model (GLM) was fitted to the relationship between total allocation in the LMA 2 fishery and the number of traps actively fished. The negative binomial distribution is suitable for overdispersed count data (the variance exceeds the mean of the distribution), because it incorporates a parameter to estimate and account for overdispersion. A Quasi-Poisson distribution was also fit to the data, but model

diagnostics indicated a better fit from using the negative binomial distribution (for more information about these distributions, see Ver Hoef and Boveng, 2007; White and Bennetts, 1996).

Month was incorporated as a categorical variable because the lobster fishery follows a highly predictable seasonal cycle; fishing is heaviest in the summer months and lightest in in the winter (Figure 1). Results are thus provided on a monthly scale to account for these intra-annual variations in effort.

Whale conservation efforts are concerned with the risk to whales associated with end lines rather than traps, so trap estimates produced by the presented model were converted to end line estimates. Rhode Island fishers have not historically reported the number of end lines they fish, so the relationship between traps and end lines was estimated based on assumptions about gear configuration reported in Industrial Economics, Incorporated's draft end line model (IEc draft vertical line model documentation, 2014). For all LMA 2 Rhode Island-based fishers, gear configuration assumptions were based on Rhode Island state waters model assumptions. These assumptions are summarized in Table 2.

Table 2. iEC end line model gear configuration assumptions for Rhode Island state waters

Allocation	Number of traps per trawl	Number of end lines per trawl
Up to 50 traps	1	1
51-100 traps	5	2
101-200 traps	10	2
201+ traps	15	2

Gear configuration assumptions were applied to maximum traps fished per month by each fisher (based on their total allocation) to arrive at an estimate of the maximum number of end lines in the water in each month. This conversion method was applied to monthly data from 2015 to 2018. For forecasts of fishing effort, a monthly aggregate conversion factor of traps to end lines for 2018 was calculated and applied to monthly traps fished estimates. To obtain trap- to-end line conversion factors, the total maximum number of traps fished in each month was divided by the estimated number of end lines. In absence of empirical data on individual future allocations, we assumed that the overall relationship between traps and end lines for the fishery would remain relatively static. Thus, monthly traps fished estimates for 2019-2021 were divided by the 2018 end line conversion factors to produce forecasts of end lines in the water. Conversion factors for 2015 through 2018 can be found in Table 3.

Table 3. Traps fished to end line conversion factors, 2015 through 2018. Conversion factors for 2018 were used to convert traps to end lines for effort forecasts in years 2019-2021. Estimates in 2015 are not available in months before the beginning of the fishing year, in May.

	Trap-to-End line conversion factor			
Month	**2015**	**2016**	**2017**	**2018**
Jan	N/A	7.43	7.26	7.18
Feb	N/A	7.43	7.16	7.50
Mar	N/A	7.24	7.13	7.48
Apr	N/A	7.25	7.16	6.97
May	6.81	6.58	6.90	6.77
Jun	6.66	6.56	6.44	6.24
Jul	6.62	6.34	6.33	6.21
Aug	6.57	6.60	6.48	6.41
Sept	6.72	7.02	6.98	6.72
Oct	7.25	7.17	7.28	7.04
Nov	7.31	7.31	7.33	7.29
Dec	7.28	7.35	7.28	7.28

Results

A summary of the selected negative binomial model specifications and coefficient estimates is provided in Table 4. The selected model incorporates coefficients for individual months and fits allocation as a quadratic predictor of traps fished. The relation between allocation and traps fished is exhibited in Figure 2. The curvilinear relationship indicates that the response of fishing effort to allocation reductions is not constant. Over the course of the allocation reduction schedule thus far—which has reduced total allocation from 118,686 traps to 74,380 traps between 2015 to 2018—the model suggests that the response of traps fished to reductions in allocation was less drastic (slope of the traps fished vs. allocation line is lower) than will be expected as the allocation is further reduced. This could be an effect of initial allocation reductions having primarily removed latent traps from the fishery rather than actively fished traps. Model output in number of traps fished per month is provided in the appendix (Table a1).

Table 4. Coefficients and diagnostics for selected negative binomial GLM.

```
Call:
glm.nb(formula = MaxTrapsFishing ~ poly(Alloc, 2) + Month, data = tlma2_a,
    init.theta = 111.0725188, link = log)

Deviance Residuals:
    Min      1Q  Median      3Q     Max
-3.3440  -0.5281  -0.0010  0.6097  1.9231

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      9.09025    0.05548 163.857  <2e-16 ***
poly(Alloc, 2)1  0.74057    0.09601   7.713 1.23e-14 ***
poly(Alloc, 2)2 -0.23652    0.09786  -2.417 0.015648 *
Month2          -0.39184    0.07805  -5.020 5.16e-07 ***
Month3          -0.29872    0.07802  -3.829 0.000129 ***
Month4           0.30346    0.07788   3.897 9.76e-05 ***
Month5           0.81490    0.07333  11.113  <2e-16 ***
Month6           1.10578    0.07331  15.085  <2e-16 ***
Month7           1.23112    0.07330  16.796  <2e-16 ***
Month8           1.19251    0.07330  16.269  <2e-16 ***
Month9           1.02792    0.07331  14.021  <2e-16 ***
Month10          0.83077    0.07333  11.330  <2e-16 ***
Month11          0.59947    0.07335   8.173 3.01e-16 ***
Month12          0.38507    0.07337   5.248 1.54e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Negative Binomial(111.0725) family taken to be 1)

    Null deviance: 1176.205  on 43  degrees of freedom
Residual deviance:  44.297  on 30  degrees of freedom
AIC: 803.04

Number of Fisher Scoring iterations: 1


              Theta:  111.1
          Std. Err.:  24.0

 2 x log-likelihood:  -773.039
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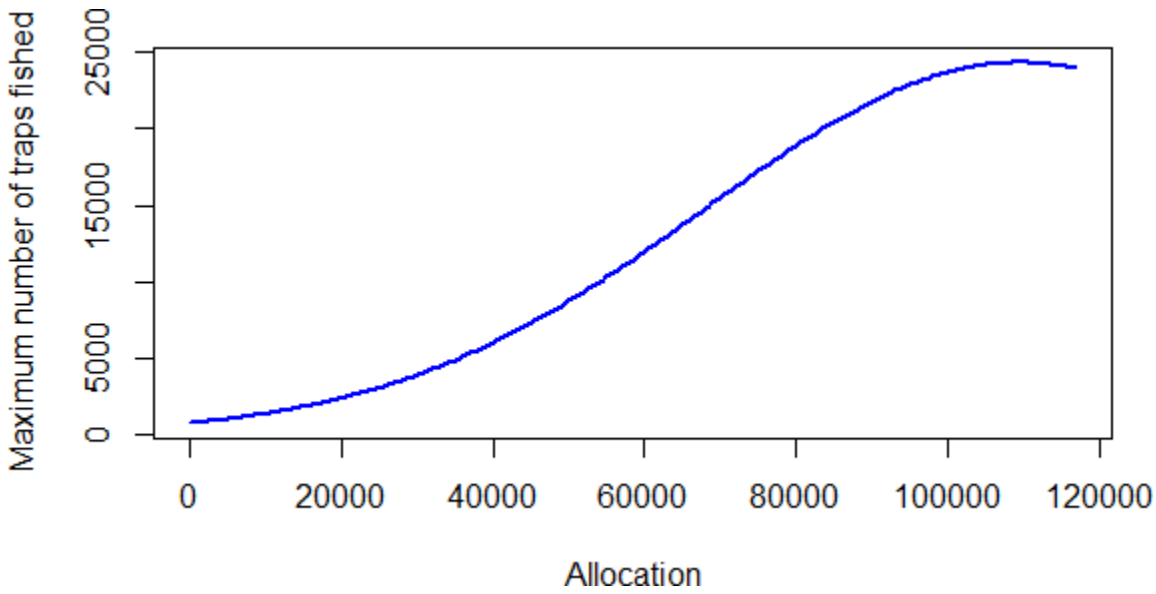


Figure 2. Plot exhibiting the relationship between allocation and maximum number of traps fished as specified by the selected negative binomial GLM.

The North Atlantic Large Whale Take Reduction Team indicated that 2017 would be the baseline year for assessing risk reduction for the North Atlantic right whale population, so percent reductions in LMA 2 end lines were calculated assuming 2017 as the baseline. Based on the output of the select model, which was converted to end lines using the Table 3 conversion factors, there is projected to be a reduction of 24-44% (month-dependent) in the number of end lines in LMA 2 waters set by Rhode Island fishers by the end of the reduction schedule, in April 2022 (Table 5, Figure 3). This percent reduction is estimated to be highest in the winter months (December to March), and lowest in the summer months (June to August).

Table 5. Model estimates of of Rhode Island LMA 2 end lines in the water through the end of the trap allocation reduction schedule. Estimated percent reduction from 2017 to the end of the reduction schedule, with 95% confidence intervals, are provided in green-highlighted columns.

	Estimated max. end lines in water				Forecasted max. end lines in water				Projected Reductions (to end of reduction schedule)	
Month	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**% reduction since 2017**	**2017 confint (95%)**
1	NA	1489	1330	998	1050	962	886	813	39%	(22%, 52%)
2	NA	1110	945	534	679	623	573	526	44%	(29%, 56%)
3	NA	1285	900	687	747	685	630	579	36%	(18%, 50%)
4	NA	2126	1739	1429	1466	1344	1236	1135	35%	(17%, 49%)
5	2863	3291	2793	2705	2515	2306	2122	NA	24%	(9%, 36%)
6	4735	4266	3898	3529	3346	3079	2827	NA	27%	(9%, 42%)
7	5048	4816	4295	4636	3809	3505	3217	NA	25%	(6%, 40%)
8	4810	4211	4106	4527	3553	3270	3001	NA	27%	(9%, 41%)
9	4132	3571	3436	3180	2875	2645	2428	NA	29%	(12%, 43%)
10	3260	2735	2846	2390	2252	2072	1902	NA	33%	(17%, 46%)
11	2533	2302	2154	1793	1727	1589	1459	NA	32%	(15%, 46%)
12	2006	1835	1829	1420	1394	1283	1178	NA	36%	(20%, 48%)

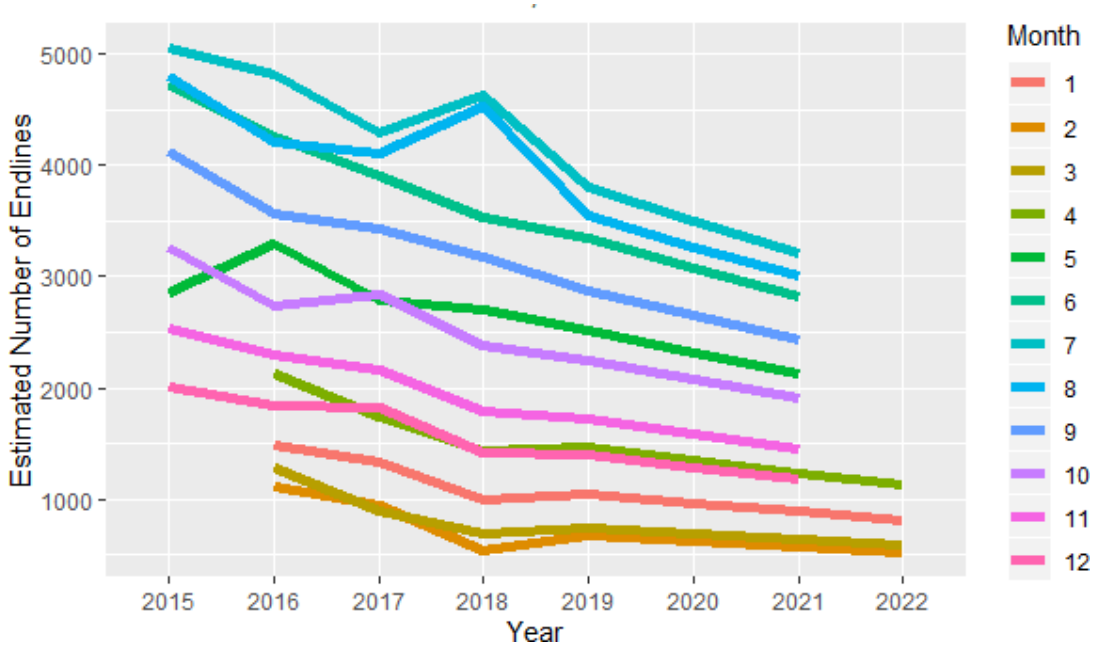


Figure 3. Estimated number of end lines in the water, 2015-2018, and predicted number of end lines in the water, 2019-2021. Estimates for years 2019-2022 are based on forecasts of traps fished produced by the fitted negative binomial GLM converted to end lines using conversion factors in Table 3.

The fitted model indicates a reduction of 24-44% in LMA 2 end lines fished from 2017 to the end of the ongoing trap allocation reduction program. This reduction, although designed intended to benefit the lobster resource, has simultaneously reduced the risk of entangling right whales in fishing gear. Rhode Island DMF therefore proposes that the reductions calculated in the presented model be credited toward Rhode Island's LMA 2 fishers when considering further risk reduction measures for the LMA 2 lobster fishery.

References

Ver Hoef, J.M., and P.L. Boveng. 2007. Quasi-Poisson vs. negative binomal regression: how should we model overdispersed count data? Ecology 88(11):2766-2772.

White, G.C. and R.E. Bennetts. 1996. Analysis of frequency count data using the negative binomial distribution. Ecology 77(8):2549-2557.

Table a1. Model predictions of maximum traps fished per month, 2019-2021, and forecasted percent reductions in number of traps fished at the end of the trap reduction schedule (2021-2022 fishing year) compared with baseline year 2017.

	Reported max. traps fished (used in model fitting)				Forecasted max. traps fished				Projected Reductions (to end of reduction schedule)	
Month	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**% reduction since 2017**	**2017 confint (95%)**
1	NA	11067	9653	7164	7539	6910	6359	5838	34%	(20%, 46%)
2	NA	8251	6765	4002	5095	4670	4298	3945	36%	(23%, 48%)
3	NA	9309	6413	5138	5592	5126	4717	4330	26%	(10%, 40%)
4	NA	15415	12448	9954	10212	9361	8614	7908	31%	(16%, 43%)
5	19481	21659	19281	18314	17030	15610	14365	NA	25%	(11%, 38%)
6	31550	27969	25101	22022	20880	19215	17639	NA	30%	(12%, 44%)
7	33437	30511	27172	28807	23669	21781	19995	NA	26%	(8%, 41%)
8	31608	27788	26623	29013	22772	20956	19238	NA	28%	(10%, 42%)
9	27781	25058	23996	21371	19316	17776	16318	NA	32%	(15%, 46%)
10	23650	19600	20735	16831	15860	14595	13398	NA	35%	(19%, 48%)
11	18524	16818	15781	13068	12585	11581	10632	NA	33%	(16%, 46%)
12	14609	13479	13319	10341	10156	9346	8580	NA	36%	(20%, 48%)

Appendix 3.3: A Summary of Comments Received During the Scoping Process

NMFS held a 45-day scoping/public comment period following the August 2, 2019, publication in the *Federal Register* (84 FR 37822) of the agency's Notice of Intent to prepare an Environmental Impact Statement (EIS) for the Atlantic Large Whale Take Reduction Plan (ALWTRP). Oral comments were provided during eight public meetings attended by over 800 people. Over 89,200 written comments were received. Posted letters were received from each New England state's fishery management organization, from the Marine Mammal Commission, Atlantic States Marine Fisheries Commission, the Maine Congressional delegation, and a Maine State representative. Four fishing industry representatives sent comments by mail or email, and over 50 unique letters from fishermen providing details about their fishing practices were received by postal mail, as well as 125 form letters. By email, we received over 120 unique comments, including 30 emails from fishermen or fishing families. Eleven representatives from environmental organizations sent letters and emails, and over 89,000 emails associated with 12 non-governmental organizations' campaigns were received.

Due to the large number of comments, they are organized according to the following specific topics:

- Exemptions
- Safety
- Monitoring
- Gear Marking
- Vertical Line Model
- Gear Modifications
- General Comments

This appendix summarizes the written and oral comments, presenting them in two separate tables. Each comment is assigned to one of five categories:

- **Analyzed**: Comment is addressed in the DEIS.
- **Discussed**: Subject was included in the decision making process in development of alternatives.
- **Proposed Alternatives**: Comment is an element in one or more of the proposed alternatives.
- **Rejected Alternatives**: Comment relates to regulatory alternatives considered but rejected by NMFS.
- **Outside of Scope**: Comment falls outside the scope of the current regulatory action.
- **Will not achieve Purpose**: Comment or proposed action would not fulfill our legal requirement to reduce North Atlantic right whale entanglement severity and frequency.
- **Considered:** NMFS acknowledges the comment and considered it when developing alternatives
- **Duly Noted**: or responding is difficult because the commenter did not articulate specific concerns; did not suggest concrete alternatives; or did not substantiate the position advocated.

The Response to Comments received during the public comment period for the Notice of Intent to prepare an EIS should be considered as a whole, for it collectively reflects NMFS' consideration of public comments. In some cases, NMFS has combined or paraphrased comments. All comments received during the public comment period and the public hearings have been fully considered. NMFS has addressed all written and oral comments.

Topics of Interest by Stakeholder

GENERAL	Citizens	Environmentalists	Scientist	Fisherperson	Fed/State Manager
Topic Area	**Sub category**	**Sub category**	**Topic Area**	**Topic Area**	**Topic Area**
Exemptions	-	-	-	-	-
Safety	Trawling up	Trawling up	Trawling up	Trawling up	Trawling up
	General	General	General	General	General
Line/Effort Reduction	Trap reduction	Trap reduction	Trap reduction	Trap reduction	Trap reduction
	Line reduction	Line reduction	Line reduction	Line reduction	Line reduction
Monitoring	Fishery	Fishery	Fishery	Fishery	Fishery
	Regs	Regs	Regs	Regs	Regs
Enforcement	-	-	-	-	-
Gear Marking	-	-	-	-	-
Closures and other time/area proposals	S. of Nantucket and Martha's Vineyard	S. of Nantucket and Martha's Vineyard	S. of Nantucket and Martha's Vineyard	S. of Nantucket and Martha's Vineyard	S. of Nantucket and Martha's Vineyard

GENERAL	Citizens	Environmentalists	Scientist	Fisherperson	Fed/State Manager
Topic Area	**Sub category**	**Sub category**	**Topic Area**	**Topic Area**	**Topic Area**
	Additional areas to consider	Additional areas to consider	Additional areas to consider	Additional areas to consider	Additional areas to consider
	General	General	General	General	General
Stressors	Ship strikes	Ship strikes	Ship strikes	Ship strikes	Ship strikes
	Aquaculture	Aquaculture	Aquaculture	Aquaculture	Aquaculture
	Noise	Noise	Noise	Noise	Noise
	Climate change and food	Climate change and food	Climate change and food	Climate change and food	Climate change and food
	Other	Other	Other	Other	Other
Ecosystem Considerations	-	-	-	-	Ecosystem Considerations
Funding/Subsidies	Fishermen assistance	Fishermen assistance	Fishermen assistance	Fishermen assistance	Fishermen assistance
	Gear innovation funding	Gear innovation funding	Gear innovation funding	Gear innovation funding	Gear innovation funding
	Other	Other	Other	Other	Other
Weak Rope	1700 lbs	1700 lbs	1700 lbs	1700 lbs	1700 lbs
	General	General	General	General	General
Economic Concerns	-	-	-	-	-

GENERAL	Citizens	Environmentalists	Scientist	Fisherperson	Fed/State Manager
Topic Area	**Sub category**	**Sub category**	**Topic Area**	**Topic Area**	**Topic Area**
Coordination with Canada	-	-	-	-	-
Disentanglement efforts	-	-	Disentanglement efforts	-	Disentanglement efforts
Research	Whale distribution	Whale distribution	Whale and Prey distribution	Whale distribution	Whale distribution
	Prey distribution	Prey distribution		Prey distribution	Prey distribution
Ropeless	-	-	-	-	-
Decision Support Tool	-	-	-	-	-
Risk Reduction	Allocation	Allocation	Allocation	Allocation	Allocation
	Target	Target	Target	Target	Target
	Credit	Credit	Credit	Credit	Credit
Other	Support	Support	Support	Support	Other
	General	General	General	General	General

Fisherperson comments

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Exemptions		Opposed to imposing rules within the ME exempt area, keep exemption line	Considered	Chapter 3, 5, 6
		Anyone with an Area 1 permit should be exempt	Will Not Achieve Purpose	
		1/4 mile buffer is insufficient for inshore fishermen and not enforceable	Considered	
Safety	**Trawling up**	Trawling up within 3 miles is unsafe and not feasible.	Considered	Chapter 3, 5, 6
		NH has maxed out on the number of traps you can trawl safely	Considered	
		Doubles+ are a safety issue and economically unfeasible for single fishers	Duly Noted	
		Lose lives offshore doing 40/50 pot trawls offshore. It is unsafe. Even 30 can be dangerous	Discussed	Chapter 5, 6
		Quads aren't safe to fish	Considered	
		Trawling up could lead to gear conflicts, such as overlaying.	Discussed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		In Area C, 4 trap trawls would be risky given some fishers sometimes fish alone on small boats making this operation more dangerous for crew	Considered	
		Cannot safely handle longer trawls with my current boat and equipment.	Duly Noted	
		Zone C vessels are not capable of hauling trawls of this size	Duly Noted	
		Multiple traps are dangerous for younger and older fishermen	Duly Noted	
		Many boats aren't equipped for trawling up	Duly Noted	
		Putting a mile of line on a boat is not feasible	Duly Noted	
		Injuries and deaths are concerns from handling larger trawls with more line.	Discussed	Chapter 3,5, and 6
	General	Danger of going alone	Considered	
		1700 lb rope is feasible in LMA2 but with safety concerns	Proposed Alternatives	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Re rigging has financial and safety burden that should not be required until thoroughly tested for safety, durability, and efficacy	Considered	Chapters 3 and 5
		Danger of getting caught when setting gear, threatens vessel stability, increased danger when dealing with increases in snarled gear	Considered	Chapters 3,5 and 6
		Sinking groundline led to lost fingers	Outside of Scope	
		Use MEDMR's preliminary breaking strength and load cell data and OSHA standards to analyze safety	Discussed	Chapter 3, 5
Line/Effort Reduction	**Trap reduction**	Believe gear can be removed in area 3, including buoy lines from the water.	Proposed Alternatives	Chapter 3, 5
		Take into account amount of trap reduction that has resulted in a lot of lines being removed	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Removing traps would bring it down to 700 traps. This is an adjustable trap limit plan. If the poundage per trap is up by 10 % after 5 years if lbs are down we could have a trap increase. But if the lbs decrease the traps decrease.	Outside of Scope	
		Suggest to reduce trap allocation in LMA 3 in order to make buoyless system work	Outside of Scope	
		Prefer trap limits over trawls	Outside of Scope	
		Suggest long term trap/line reduction plan using the zone enter/exit ratio instead of short term reduction to keep fishermen in business	Outside of Scope	
		The effort MA Lobster Fleet in LMA1 has been declining for years now	Discussed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Area 1 lobster is not overfished and trap reductions should only be used for stock concerns. Any reduction in traps just to reduce endlines is vindictive when you have other options available to reduce risk to these whales	Duly Noted	--
	Line Reduction	Trawling up affects fishing efficiency and isn't possible for small boats	Analyzed	Chapter 6
		Reducing the amount of lobster traps to reduce entanglements and maximize profits	Outside of Scope	
		Line reduction through trawling up/doubles will create more gear conflict	Considered	Chapters 3,5 and 6
		Do not support line reduction	Duly Noted	
		The best way to reduce entanglement risk is to remove vertical lines from the water	Proposed Alternatives	Chapter 3, 5
		Fish triples or 5s, can go with end line tags	Analyzed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		4 trap trawls on rocky bottoms near the islands would be impossible and there isn't enough space	Duly Noted	
		Low density of lines in LMA3, need a buoy line on each end of trawl due to deep water and strong current	Discussed	Chapter 5
		Offshore most fish at 5 traps per trawl anyways	Duly Noted	
		Zone C, 800 traps, no trawls but fishes double traps: quads will be difficult in the area because of the number of fishermen	Duly Noted	
		Prefer endline allocation rather than trap reduction, but need better enforcement to prevent fishermen cutting other's line when gear conflicts happen	Proposed Alternatives	Chapter 3, 5
		The MLA rejects the management approach put forward in the Scoping Document to reduce Maine's vertical lines by 50%	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Monitoring	**Fishery**	Let the lobstermen fill out surveys for fishing and gear configuration information to inform what can be fished safely	Considered	Chapter 3,5
		Need information on industry compliance	Discussed	Chapter 3
		Especially for areas with continued open access, need to monitor to ensure true line reduction. Monitor for increase effort offshore where there are more threats to whales	Analyzed	Chapter 3, 5
		Require all federal permit holders to report locations	Discussed	Chapter 3
	Regs	Want monitoring of regs to determine effectiveness	Discussed	Chapter 3
Enforcement		Consider how the proposed alternatives will be enforced/whether they are enforceable.	Discussed	Chapter 3
		Need better enforcement to prevent fishermen cutting other's line when gear conflicts happen	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Boats of a certain size will not be able to comply with the regulations	Considered	Chapter 3, 5
		Need a vessel for offshore enforcement, not just offshore Area 1, Area 3 as well	Duly Noted	
		Ropeless enforcement is an issue	Duly Noted	
		Need better enforcement	Duly Noted	
		Enforcement is a critical component of any ALWTRP rule change, yet fishermen are continually discouraged with the lack of oversight and enforcement in federal waters; need an offshore enforcement vessel	Discussed	Chapter 3
Gear Marking		Support marking gear	Proposed Alternatives	Chapter 3, 5
		Support country of origin line marking system so US has a tracer through whole line, area tracers as well	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Work with gear manufacturers to develop affordable manufactured solutions for discrete segments of US fisheries gear marks or allow multiple marking methods	Duly Noted	
		Suggest gear marking in exempt area to show it isn't a problem	Proposed Alternatives	Chapter 3, 5
		Support gear marking across the fishery and adding any color or size gear markings that will fit through my hauler without fouling it, so long as it shows my gear is not involved in whale entanglements.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Marking requirements should accommodate regular re-rigging of endlines to fish at drift. depths; so do not identify exact distances apart. Eg. lines fished in certain deep water shelf edges in LCMA3 can be up to 2400 feet (400 fathoms); most active Area 3 vessels deploy 50 to 75 endlines.	Proposed Alternatives	Chapter 3
		Some do not support gear marking	Duly Noted	
		3 foot mark good, but feasibility unsure	Analyzed	Chapter 5
		Put pressure on rope manufacturing - put tracer through entire line, unique to each area	Analyzed	Chapter 3, 5
		Want states to have separate gear markings	Proposed Alternatives	Chapter 3
		Suggest the use of twine interweaved in endlines	Will Not Achieve Purpose	
		Gear marking will lose color when soaked in water over a week	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Maine traps and buoys are already marked, a single tracer should be sufficient	Rejected Alternatives	Chapter 3
		Marking is already being done outside the exemption line and should be sufficient	Rejected Alternatives	Chapter 3
		In to shoal water for marking	Duly Noted	
		Gear marking does very little	Duly Noted	
		Support gear marking but would be difficult for fishermen fishing in different areas	Duly Noted	
		Need better gear marking methods and need to see results from marking	Duly Noted	
		Maine lobster gear should be marked so it is uniquely identifiable.	Proposed Alternatives	Chapter 3
		Gear from each state should be uniquely identifiable.	Proposed Alternatives	Chapter 3
Closures and other time/area proposals	**S. of Nantucket and Martha's Vineyard**	Consider closed areas, particularly in Nantucket	Proposed Alternatives	Chapter 3
	Additional areas to consider	Look at cape cod bay for entanglement issues	Analyzed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	General	Don't think closures work (dead whales have been found in Cape Cod Bay)	Duly Noted	
		Some do not support any closures	Duly Noted	
		TRT did not propose because they don't work due to unpredictable ecosystem and habitat use changes	Duly Noted	
		Closures have unintended consequences such as: fencing within and between fishery gear conflicts due to changed fishing locations, habitat impacts, economic impacts and inequitable treatment of fishing operations. Need to be dynamic but hard to analyze because can't predict where gear will be moved to.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Dynamic closures don't work with US rulemaking hurdles, plus impossible for vessels to move gear quickly, especially in bad weather. Area 3 vessels can only move 304 trawls in a trip.	Duly Noted	
		Will avoid areas where entanglements might be likely.	Duly Noted	
		Closures may cause redistribution of effort and exacerbate the issue	Analyzed	Chapter 5
Stressors	**Ship strikes**	Ship strikes are a bigger concern	Discussed	Chapter 8
		Impose speed restrictions as well especially if closures will be implemented	Outside of Scope	
		Ship strikes (including potential navy ship strike, shipping industry, cruise ships, night time boaters)	Outside of Scope, Discussed	Chapter 8
	Aquaculture	Aquaculture, permitting more vertical lines for aquaculture	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Noise	Concerns for Seismic testing for oil and natural gas	Outside of Scope, Discussed	Chapter 8
		US Navy and sonar present concern	Outside of Scope, Discussed	Chapter 8
		Consider wind farm/acoustic impact on whales	Outside of Scope, Discussed	Chapter 8
	Climate change and food	Consider climate change and its impact on whale health/food source	Discussed	Chapter 8
		Some of the direct effects of warming and increased PCO2 on lobster larvae as well as the copepods	Discussed	Chapter 8
		Nutritional concerns and decline of food source	Discussed	Chapter 8
	Other	Derelict fishing gear	Analyzed	Chapter 5
		Risk in increased use of pesticides that threaten the food supply on right whales	Discussed	Chapter 8
		Plastic ingestion	Discussed	Chapter 8
		Whale watch industry	Discussed	Chapter 8
		Analyze potential increase in lost gear	Analyzed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Low reproduction from food restriction and entanglement	Discussed	Chapter 2, 5
Ecosystem Considerations		Protect the top levels of the fisheries food chain	Duly Noted	
		Oceanographic and climate changes being recorded that show vast movement in the right whale population, and changes and movement in the fisheries as well	Discussed	Chapter 5, 8
Funding/Subsidies	**Fishermen assistance**	Provide stipend for time/energy necessary to make modifications to gear or boat	Outside of Scope	
		Fishermen compensations	Outside of Scope	
		Provide subsidies	Outside of Scope	
	Other	Federal permit buy backs	Outside of Scope	
		Hopes the senator finds money to help mitigate the impact of ships on whales	Outside of Scope	
		Conservation groups can help find funding	Outside of Scope	
		Regulations require more funding to stay compliance.	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Weak Rope	**1700 lbs**	Try 1900-2000 lbs, would reduce to 1700 quickly, less times to replace rope, would be more compliance	Rejected Alternatives	Chapter 3
		Thinks a calf in Mass can break out of 1700 lb rope because they use 1500 lb rope. otherwise replaced more often	Duly Noted	
		More frequent replacement of 1700 lb line	Duly Noted	
		Keep 1700 lb rope to top half or top ⅔ - keep short	Rejected Alternatives	Chapter 3
		1700 lb seems like can work. Changing % by depth fished makes sense.	Discussed	Chapter 3, 5
		1700 lb rope is a solution, when fishing less than 100 feet, use entire weak rope; greater than 100 feet, use 100 feet addons.	Rejected Alternatives	Chapter 3
	General	Question over effectiveness	Duly Noted	
		Use predetermined bleach soak time to weaken rope (tested with specific brands/breaking strength)	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Potential issue with practicality of braided line in the middle	Duly Noted	
		Weak rope is an issue in rocky areas, may increase lost gear	Analyzed	Chapter 5
		For years been using 1500 lb braided, twisted line breaks down in strength.	Duly Noted	
		Some do not support weak rope, a particular issue in rocky areas	Duly Noted	
		The Association supports the uses of "contrivances" to lessen the breaking strength of end lines during entanglement events. However, the Association opposes a universal requirement to use ≤1700 lb breaking strength rope	Duly Noted	
		The MLA rejects the management approach put forward in the Scoping Document to require weak rope on the top half of vertical lines in Maine's federal waters.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Can't use weaker rope with longer trap trawls, larger rope already breaks with 15 trap trawls often	Considered	Chapter 3 and 5
		Sleeves do not work because it takes much time and costs to use it. You need two sets of ropes to fish in different depth.	Duly Noted	
		Test cheaper alternatives to weak lines such as soaking them in bleach.	Duly Noted	
		Weakening a line throughout its entire length, as opposed to a single weak point, will do more to reduce the severity of these entanglements than other options	Analyzed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Many applications including the South Shore Sleeve are costly and labor intensive. We understand that a suite of reduced breaking strength (RBS) options/modifications intended to minimize cost and effort will be available to satisfy this rulemaking	Duly Noted	
Economic Concerns		Examine community economic health/impact	Analyzed	Chapter 6
		A mass fisherman fishing singles catches double what others do, helps keep up with cost of living?	Duly Noted	
		50% endline reduction would cost 30-35% of income	Analyzed	Chapter 6
		Re Rigging has costs, don't require until fully tested and proven effective and safe	Duly Noted	
		Lowering the trap limit our poundage goes up and our cost lowers.	Discussed	Chapter 6

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Longer trawls mean buying bigger boats and an excess of unused smaller boats	Duly Noted	
		Boat modifications will cost money to comply with trawling up	Analyzed	Chapter 6
		Costs of compliance vary by business	Analyzed	Chapter 9
		Time and money to maintain. Consider cost of replacing rope. He replaces 10% line annually.	Analyzed	Chapter 6
		Make sure it's effective before requiring so new modifications won't be needed in a couple of years	Duly Noted	
		Gear modifications cost extra	Analyzed	Chapter 6
		Bait is expensive and catch is mediocre. Flexibility is key to maintaining our diverse fleet	Analyzed	Chapter 6 and 9
		Re rigging has financial and safety burden that should not be required until thoroughly tested for safety, durability and efficacy	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		This recent set of proposals lacks a scientific basis and will inflict great harm to our community while having no meaningful impact on the survival of the right whale	Duly Noted	
		Additional help difficult to find and will be needed for trawling up	Duly Noted	
		If Maine were proven to be a concern, we would need a 5-year plan to modify the fishery to support the community	Duly Noted	
		Will be forced to retire	Duly Noted	
		Will increase lost gear	Analyzed	Chapter 6
		$80,000 cost predicted to modify	Analyzed	Chapter 6
		Zone 2, 200 traps: worries about those depending on fishing	Analyzed	Chapter 6
		$50,000 required to change rope and 400-500 hours of unpaid work to rig new groundline	Analyzed	Chapter 6
		Jobs should come before a whale	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		$3,500 for more endlines and a couple of weeks of modification	Analyzed	Chapter 6
		Running gear back and huge snarls are concerns, not being able to recover gear	Duly Noted	
		Reducing traps or end lines will reduce revenue by 50%	Analyzed	Chapter 6
		Will impact all of the town's economy contributing to loss of businesses, jobs, and create higher taxes, lose schools (especially in smaller communities)	Duly Noted	
		Concern over the time period between regulation and the implementation date to achieve compliance, especially if regulation will require 100% compliance by May 2020.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		The cost associated with line/trap reductions, such as hiring additional help, buying new/replacing gear, or loss of fishing efficiency or time spent to modify gear (i.e., time), will create and economic hardship.	Analyzed	Chapter 6
		Estimated cost to modify vessels may be approximately $10,000.	Analyzed	Chapter 6
		20% of income would go to new ropes, hydraulics, stern extension, hoses, motor, tank, and fittings to be able to comply with proposed regulations	Analyzed	Chapter 6
		Economy depends on lobster industry and modifications will affect communities' economies significantly by loss of revenue or jobs.	Analyzed	Chapter 6
		Small boat fishery would be lost due to modifications	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Fishermen have suffered enough from high bait price and low lobster price	Duly Noted	
Coordination with Canada		Urge to regulate Canadian fisheries with whale safe measures	Discussed	Chapter 3
		50% whale responsibility for US lobster fishery is unfair	Duly Noted	
		Canadian waters have contributed more to recent year RW mortalities	Discussed	Chapter 2, 4
Disentanglement efforts		Train lobstermen as whale observers and disentangle teams	Rejected Alternative	
Research	**Whale distribution**	Right whales have not been sighted to overlap with the distribution of the lobster fishery	Duly Noted	
		Track whales through tagging	Outside of Scope, Duly Noted	
		Acoustic monitoring	Discussed	Chapter 3
		Increase aerial survey coverage and occurrences	Discussed	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Need better monitoring of whales in US shipping lanes, particularly south of Nantucket.	Discussed	Chapter 3
		Tracking the whales migration patterns, understanding environmental issues affecting the whales feed and supply of same need to be done	Discussed	Chapter 3
		Need better whale distribution data for more rules	Discussed	Chapter 3
		More research on behavior - is feeding behavior more risky for entanglement than traveling whales	Outside of Scope, Duly Noted	
		DMR is going to try and find some funds to try and do aerial surveys.	Duly Noted	
		Need to study whether there is any interaction with the whales and Maine lobster gear	Duly Noted	
	Prey distribution	Research copepods and develop predictive zooplankton model	Outside of Scope, Discussed	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Ropeless		Not possible in short or medium term. Offshore fishermen willing to continue to work with developers	Duly Noted	
		Ropeless gear won't apply to rocky bottom, and too expensive to afford it	Duly Noted	
		Ropeless gear has been successfully tested in 40-140 feet of water	Duly Noted	
		Need to set up a system to prevent the mobile gear fleet from interacting with the buoyless system.	Discussed	Chapter 3, 5
		An EFP option remains desirable within the Atlantic Large Whale Take Reduction Plan and hope that this remains a priority for NOAA	Discussed	Chapter 3
		Buoyless fishing isn't feasible	Duly Noted	
		Most of traps are in shoal waters and are incapable of trawls using buoyless	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		There's not a chance ropeless tech will survive actual commercial fishing, nor can it even be used in a competitive fishery	Duly Noted	
Decision Support Tool		Should be looking at 2015 and not 2017. 2017 should only apply to areas that haven't made an effort to reduce vertical lines.	Duly Noted	
		Should look at decline since 2010, period of analysis, to capture line reductions in those LMAs that have implemented effort controls and limited entry programs	Discussed	Chapter 3
		Start from scratch	Duly Noted	
		Was designed for closure and has been overused	Duly Noted	
		DST isn't capturing recent reductions in effort	Considered	Chapter 3
		Need to consider other factors into risk reduction model like water temperature, feed etc.	Considered	Chapter 3, Appendix 3.2

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Need more data, update the science	Duly Noted	
		Use all of the new data available	Discussed	Chapter 3
		Use the aquariums 72% published risk estimate	Duly Noted	
Risk reduction	**Allocation**	Keen on the idea of equity, split between US and Canada as well as among areas in the US	Discussed	Chapter 2
		Consider takes by state so Maine is exempt	Duly Noted	
	Target	The MLA continues to reject NMFS' 60% risk reduction goal for the Maine lobster fishery because it is unsupported by documented evidence of interaction between right whales and Maine lobster gear.	Duly Noted	
	Credit	Happy about 18% credit, but want to see more credit, started reductions in 2015, so need credit for that in the model.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Prior and ongoing efforts to reduce the amount of gear fished should be given risk reduction credit.	Proposed Alternatives	Chapter 3
		Credit for existing area 2 trap reductions. already very little line that is not captured in the DST	Proposed Alternatives	Chapter 3
		We appreciate the risk/line reduction credit the substantial closure of the 3000 square nautical miles, known as, "Massachusetts Restricted Area" has achieved within the current rule making process	Proposed Alternatives	Chapter 3
Other	**Support**	Support what came out of TRT	Duly Noted	
	General	Need a seat at TRT for Maine lobster union	Duly Noted	
		People who fish should make the rules	Duly Noted	
		Consider what the states propose	Considered	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Any new rules applied to Maine fisherman should only be applied to large distances from shore (30+ miles) as we have minimal to no interaction inside of that.	Rejected Alternative	Chapter 3
		Apply same rules to all LMA3 and federal permitted lobstermen equally	Duly Noted	

State Manager/Congress/Marine Mammal Commission

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Exemptions		Regulating exempted waters would not have a benefit to right whales	Duly Noted	
		Preserve the exemption line	Considered	Chapter 3
Safety	**Trawling up**	Trawling up is a safety concern	Considered	Chapter 3, 5, 6
		Triples or quads will be very difficult for skiff and the older generation lobstermen	Duly Noted	
		Longer trawls have safety issues: excessive rope on deck, less space on deck, less visibility by higher stacks of traps, more weight on deck	Considered	Chapter 5, 6
		Trawling up for offshore fisheries will create safety issues	Considered	Chapter 5, 6
		Longer trawls will increase the risk of accidents that could put lives at stake	Considered	Chapter 5, 6
		Safety would be a huge concern for me, and the vast majority of the fleet if we were forced into larger configurations, especially in shoals, closer waters, where gear density is higher, and whale frequency is non existent	Duly Noted	
	General	Weak rope also has safety issues	Discussed	Chapter 6

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Line/Effort Reduction	**Trap reduction**	Consider trap and buoyline reductions that have already occurred in the areas 2 and 3 in DEIS analysis	Proposed Alternatives	Chapter 3
		Eliminating single traps in Mass is not effective (in summer along coast with no whales present)	Duly Noted	
		ASMFC Add 18 (really 21/22) had trap cap reductions, will help get us to where we need to be	Duly Noted	
		GARFO need to take action on trap cap reduction.	Outside of Scope	
		Vertical line reduction can be achieved by reducing fishing effort	Outside of Scope	
		Absolute effort reduction and may be the only effective solution and should be considered by NMFS	Outside of Scope	
	Line reduction	Consider buoy line reductions that have already occurred in the areas 2 and 3 in DEIS analysis	Proposed Alternatives	Chapter 3
		Get a cap on the offshore endlines	Proposed Alternatives	Chapter 3
		Trawling up hard to regulate but should be done for those that have deck space.	Duly Noted	
		Longer trawls offshore are only workable on some vessels	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Trawling up is impractical for inshore fishermen	Duly Noted	
		Trawling up reduces gear efficiency	Analyzed	Chapter 6
		Substantial reductions in vertical line numbers in all states and LMAs	Proposed Alternatives	Chapter 3
Monitoring	**Fishery**	Supports measures expanded harvester reporting	Discussed	Chapter 3
		Collaborating with the states to collect complete information on lobster fishing effort (e.g., numbers of end lines)	Duly Noted	
		NMFS, in cooperation with the states, take immediate steps to collect data to provide reliable information on the numbers of end lines in use before and after the implementation of any line reduction measures, thus allowing the effectiveness of such measures to be assessed	Duly Noted	
	Regs	Management measures adopted through rulemaking should be studied to assure the measures are effectively reducing risk after implementation.	Discussed	Chapter 3, 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Needs to contain provisions to assess the effectiveness of those measures and modify them promptly if the take reduction goal(s) of the MMPA are not achieved.	Discussed	Chapter 3, 5
Enforcement		Increased efforts from NOAA OLE, in coordination with the states, can lead to effective and timely prosecution of cases.	Duly Noted	
		Enforcement in offshore waters should be made a priority by NOAA Fisheries, e.g. obtain a large vessel that is capable of hauling gear and could operate year-round in offshore areas.	Duly Noted	
Gear Marking		Support expanded gear marking	Proposed Alternatives	Chapter 3
		State wide gear marking in Maine	Proposed Alternatives	Chapter 3
		If replace 20% of lines in each year, would have all line marked in 5 years.	Rejected Alternative	Chapter 3
		Collaborate with the states to implement comprehensive gear marking.	Considered	Chapter 3
		The use of any other proven measures that will reduce entanglement severity, such as high-visibility rope	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Vertical line reduction can be achieved by prohibiting fishing in areas where and/or at times when whales are most likely to be present either with fixed (like Massachusetts) or dynamic (like Canada) time-area closures	Proposed Alternatives	Chapter 3
		Time-area closures to protect the largest and most predictable concentrations and migratory pathways of right whales	Proposed Alternatives	Chapter 3
		Time area closures in the fishery may be the only effective solution and should be considered by NMFS	Duly Noted	
		NMFS evaluate the use of dynamic closures in the DEIS, such as those that have been implemented in Canada. NMFS tried to use fishery DMAs in the past and rejected their use due to logistical difficulties faced by fishermen, but the DEIS should, at a minimum, identify the logistical, economic, and operational difficulties, and discuss potential solutions.	Outside of Scope	
Stressors	**Ship strikes**	Ship strikes (including navy ships without speed limits)	Outside of Scope, Discussed	Chapter 8

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Aquaculture	NMFS should reconsider offshore aquaculture.	Outside of Scope, Discussed	Chapter 8
	Noise	Sonar	Outside of Scope, Discussed	Chapter 8
		NMFS should reconsider offshore wind.	Outside of Scope, Discussed	Chapter 8
		NMFS should reconsider seismic testing.	Outside of Scope, Discussed	Chapter 8
	Climate change and food	Whale distribution is changing along the change of the food sources and GOSL is the new food source for RW	Discussed	Chapter 8
Funding/Subsidies	**Gear innovation funding**	Explore rapid and intense research into different gear config.	Outside of Scope	
	Other	Increase funding for the Joint Enforcement Agreement which would allow for more extensive coverage of MMPA and ESA regulations.	Outside of Scope	
		Funding research on the relationships between types of gear and the severity of injuries	Outside of Scope	
Weak Rope	**1700 lbs**	The use of 'weak' rope (1,700-pound equivalents) in every pot/trap fishery	Duly Noted	
		If more time was given to experiment 1700 lbs weak links it could be a solution for everyone's problems	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	General	Should use weak links/rope	Proposed Alternatives	Chapter 3
		No change to gear configurations in state waters	Rejected Alternative	Chapter 3
		Load cell testing says feasible for 50 fathoms and shallower.	Duly Noted	
		Look at having 1 week vertical line and 1 strong vert line.	Analyzed	Chapter 3, 5
		Supportive of ways to weaken line. Put another weak link lower in line.	Proposed Alternatives	Chapter 3
		Sleeves and 1,700-pound rope are not now commercially available in sufficient quantities to supply all U.S. lobster fisheries; this creates some uncertainty regarding their feasibility as entanglement mitigation measures in the short term.	Duly Noted	
		For alternatives that include the weak sleeve option, that NMFS undertake a careful analysis of the pertinent science and make use of modeling to determine the optimal distance between sleeves for right and other large whales, and include that distance in its DEIS analyses and proposed regulations	Considered	Chapter 3, 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Sleeves have not been scientifically tested and it is unknown how they will perform in entanglement situations.	Duly Noted	
Economic Concerns		Continue to work with industry and staff to develop a plan that does not have adverse social and economic effects on the industry.	Considered	Chapter 3, 4, 6
		Ban import of Canadian lobster or snow crab until on par with US	Outside of Scope	
		Trap reduction will make offshore fishermen hard to make a profit	Duly Noted	
		The gear configuration of longer trawls reduces the efficiency of each lobster trap, which may impact the profitability of individual operations.	Analyzed	Chapter 6
		A 50% reduction in endline would be catastrophic financially for me	Analyzed	Chapter 6

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Coordination with Canada		NMFS continue and expand on these efforts and that the importance of working with Canada be reflected in the DEIS. Among other things, the DEIS might usefully discuss the applicability of the MMPA fish import rule in helping to ensure that Canada's take reduction program for its fisheries is and remains comparable to that of the United States.	Outside of Scope	
		NMFS should take into account the aggressive conservation program administered by the Commonwealth and its fishermen during the rulemaking process.	Duly Noted	
		The DEIS might also consider steps to formalize ongoing coordination and collaboration with Canada on take reduction and monitoring through a binding bilateral agreement.	Outside of Scope	
Research	**Whale distribution**	Support aerial surveys	Discussed	Chapter 3
		Support increased NARW surveillance, aerial and acoustic	Discussed	Chapter 3
		Support tagging/tracking whales	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Continue and expand visual and acoustic whale surveys (including an assessment of how frequent and extensive such surveys need to be to meet management objectives),	Outside of Scope	
Ropeless		Eliminate vertical lines through ropeless-seen as the solution that can reduce lines without reducing fishing effort	Discussed	Chapter 3
		If it turns out that the offshore lobster fishery cannot make the weak-rope option work, then NMFS should require the offshore fishery to make the transition to ropeless gear on an aggressive, time-bound schedule.	Duly Noted	
Decision Support Tool		Reconsider the use of the "baseline year" of 2017	Will Not Achieve Purpose	
		Within the 100m isobaths has low Calanus but is not included in the habitat model	Duly Noted	
		Would like improved habitat suitability model	Duly Noted	
		NMFS should utilize the 72% published estimate of risk reduction (Knowlton et. al 2015)	Considered	Chapter 3, 5
		NMFS should be cautious about the impacts and measurability of additional "trawling up" scenarios	Analyzed	Chapter 5, 6

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Conducting further research on the relationships between types of gear and the severity of injuries	Outside of Scope	
		Measures contained in rule are as certain as the best available science can assure to reduce serious injury and mortality to below PBR. The decision-support tool is built on the best available data and science, and, along with other tools, analyses and sources of information, is the tool that should guide NMFS in the EIS and rulemaking process	Considered	Chapter 3
Risk Reduction	**Allocation**	Focusing all of the risk reduction efforts on Maine's lobster fishery is not sufficient for protection of the species	Duly Noted	
		Review methodology which attributes serious injury and mortality from unattributed gear to the US and Canada. Examine two time series of entanglement data, 2010-2018 and 2013-2018, when assigning serious injury and mortality from unattributed cases to the two countries.	Discussed	Chapter 2

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Re-evaluate the current risk reduction target, as the data indicate that Canadian fisheries have an increased role in the serious injury and mortality of NARWs	Duly Noted	
		Detected serious injury and mortality should be considered a minimum, as 40-50 percent of all presumed dead right whales go undetected.	Discussed	Chapter 2
		NOAA need re-consider the attribution of unknown whale entanglement cases to fishery and country	Duly Noted	
		Increase in Canadian mortalities needs to be considered when developing alternatives	Discussed	Chapter 2, 3
		Consider region-wide as well as state specific approaches for reducing those risks.	Proposed Alternatives	Chapter 3
	Target	NMFS should develop and include alternatives designed to achieve an 80 percent reduction in entanglement risks	Considered	Chapter 3
	Credit	Give credit for Mass closure	Proposed Alternatives	Chapter 3
		ME DMR requests NOAA include a method for conservation equivalency within the proposed rule.	Discussed	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		NMFS should take into account the aggressive conservation program administered by the Commonwealth and its fishermen during the rulemaking process.	Duly Noted	
		Consider major actions taken by Mass (including speed restrictions), and give credit for closure	Proposed Alternatives	Chapter 3
Other	**General**	Measures to fishermen fishing in the same federal areas should be equitable, spread burden among states	Considered	Chapter 3
		NMFS should propose only measures that apply equally to fishermen from ALL states who fish in commonly fished federal waters	Rejected Alternatives	Chapter 3
		An immediate next step should be for NMFS to undergo the process necessary to promulgate equivalent regulations for all U.S. fisheries that entangle, or have the potential to entangle, right and other large whales.	Outside of Scope	
		Consider how the rule can be implemented by zone or subregion while considering the diversity and geographic features of ME	Considered	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Other regions step up to the same level of protection as Massachusetts	Duly Noted	
		Need protocol to put people on boats to see gear testing	Outside of Scope	

Scientist

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Exemptions		No exemptions for gear marking	Proposed Alternatives	Chapter 3
Safety	**Trawling up**	Fishing more than two traps per trawl is neither practical nor safe for many of our boats	Duly Noted	
Line/ Effort Reduction	**Line reduction**	Benefits of trawling up will be negated if rope gets heavier	Analyzed	Chapter 5
Enforcement		LMA3 lacks of enforcement and need ropeless gear to reduce risks	Duly Noted	
Gear Marking		Gear marking should occur everywhere	Proposed Alternatives	Chapter 3
		Work with ME DMF and LMA on gear marking	Proposed Alternatives	Chapter 3
		No exemptions for gear marking	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Closures and other time/area proposals	**Additional areas to consider**	New Closure in New England	Proposed Alternatives	Chapter 3
		New closure in offshore/deep waters	Proposed Alternatives	Chapter 3
	General	Recommend the approach used in Cape Cod Bay be applied in areas with high chance of human impact (e.g. M/V)	Outside of Scope	
		Create closures based on data on where prey are and can be modified in the future as things change	Proposed Alternatives	Chapter 3
		Micromanaging specific areas sets you up for a big risk	Duly Noted	
Stressors	**Ship strikes**	Ship strikes are the main issue	Outside of Scope, Discussed	Chapter 2, 8

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Noise	Ocean noise are increasing due to navy training, oil and gas exploration, and wind construction and larger transport vessels	Outside of Scope, Discussed	Chapter 8
	Climate change and food	Links between ecosystem changes and reduced reproduction and increase in mortality	Outside of Scope, Discussed	Chapter 2, 8
	Other	Dam projects are a threat to food source (copepods), examine this link (e.g. via changing ocean layers)	Duly Noted	
		Sublethal trauma is an issue, impacts health and reproduction	Discussed	Chapter 2, 8
Ecosystem Considerations		Cape Cod area is a non-linear dynamic ecosystem	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Consider ecosystem approach to species management and cumulative risk assessment	Duly Noted	
		Changes in the marine food web (consider for critical habitat)	Outside of Scope, Discussed	Chapter 8
		Need to learn something from fishery scientists who are studying the link between cod recruitment and the North Atlantic Oscillation	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Large whales contribute to the health of our ocean ecosystems; the loss of this species will have a cascade of long-lasting and far-reaching effects on nutrient cycling and plankton communities	Duly Noted	
Funding/Subsidies	**Fisherman assistance**	Subsidize cost of ropeless (fed, state, surcharge paid by consumers)	Outside of Scope	
		Convention costs should be completely subsidized, primarily by federal and state governments, but also through a modest 'ropeless surcharge" for lobsters and crabs to be paid by consumers.	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Weak Rope	**1700 lbs**	1700 lb should be the upper bound for rope strength. Weak links might not work for whales to break the rope	Analyzed	Chapter 3, 5
		Not a long term solution and Knowlton suggests has to be far less than 1700 to break.	Duly Noted	
	General	Weak rope can be a useful tool to reduce SI/M if tailored to what we know about entanglements	Discussed	Chapter 5
		Weak rope will reduce mortality but not sublethal trauma	Discussed	Chapter 5

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Economic Concerns		Proposed regulations for lobster fishing in the Gulf of Maine are inappropriate and would impose undue hardship on both our independent fishermen and our small coastal communities	Analyzed	Chapter 6
Coordination with Canada		Given the demonstrated and extreme risks for right whales in Canadian waters on top of numerous deaths associated with Canadian fishing gear, there must be a high level and coordinated working agreement between the US and Canada to protect the species.	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Research: Whale and Prey distribution		Whale surveys and plankton tows have been very spotty in Gulf of Maine waters, which hampers NMFS' ability to understand right whale transiting behavior and any spatial and temporal correspondence between the lobster industry in Maine and right whale fitness.	Discussed	Chapter 3
Ropeless		Support ropeless fishing	Discussed	Chapter 3
		LMA3 needs ropeless gear to reduce risks	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Allow fishermen to commercially fish with exclusively ropeless fishing gear in areas that are otherwise closed to trap/pot fishing due to the presence of right whales.	Proposed Alternatives	Chapter 3
		Support the development and testing of ropeless gear by providing a gear cache, offering compensation to fishermen involved in testing, and expediting the process to obtain an Experimental Fishing Permit to test ropeless gear.	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Buoyless fishing has to be a win-win and has to be used as a viable long term solution	Duly Noted	
		Phased in approach to ropeless	Discussed	Chapter 3
		Do not consider time tension cutters	Duly Noted	
		Ropeless is important, encourage light line as a path to ropeless.	Discussed	Chapter 3
		Need to eliminate line/ work with fishermen to accomplish this through things like ropeless fishing	Duly Noted	
		Allow/develop ropeless gear inside and outside of closed areas	Considered	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Decision Support Tool		Recalculate risk reduction in MA LMA1 and OCC. Previous measures should not be accounted for new risk reduction.	Duly Noted	
		Existing data is not predictive of the future	Duly Noted	
		Improve DST	Duly Noted	
Risk Reduction	**Allocation**	Ones found in US likely drowned and are likely US mortalities	Duly Noted	
Other	**Support**	Support recommendations of the TRT	Duly Noted	

Environmental Organizations

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Exemptions		Remove exemption line	Rejected Alternative	Chapter 3
Safety	**Trawling up**	Trawling up to 30-40 traps in the offshore is a safety issue and not enforceable	Considered	Chapter 5
Line/Effort Reduction	**Trap reduction**	3 trap reduction	Outside of Scope	
		25% trap reduction	Outside of Scope	
		Trawling up within the exemption line isn't likely to do much	Duly Noted	
		Reduce vertical lines through trap reduction	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Analyze alternatives requiring a minimum 25 percent trap reduction for both state and federal permit holders eligible to fish in LMA1, increased as necessary such that when combined with LMA 1 area closures the total risk reduction in LMA1 entanglement risk reduction is 80 percent or greater;	Outside of Scope	
	Line reduction	Support vertical line reduction in Maine waters	Duly Noted	
		Cap the number of vertical lines in all U.S. fixed-gear fisheries subject to the TRP	Proposed Alternatives	Chapter 3
		Significantly reduce the number of vertical lines in the water that entangle right whales.	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		A requirement to use no more than one endline in Lobster Management Area 3 ("LMA3") year-round	Rejected Alternative	Chapter 3
Monitoring	**Fishery**	Require all federal permits reporting fishing areas in 10 min squares by 2020	Discussed	Chapter 3
		Require real-time vessel monitoring and trip reporting in all state and federal waters for the American lobster and Jonah crab fisheries	Considered	Chapter 3
		Better spatial information, including VMS and AIS use in fishery (e.g. 100% VMS/eReporting)	Rejected Alternative	Chapter 3
		Require fishery monitoring and reporting	Discussed	Chapter 3
		A requirement for all vessels in U.S. fixed gear fisheries to use Vessel Monitoring Systems ("VMS") and electronic Vessel Trip Reporting ("VTR");	Rejected Alternative	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Regs	Develop categorization for monitoring and deciding when the trt will need to come back to the table	Duly Noted	
		Review and revise time/area closures annually based on sightings within 3 years.	Considered	Chapter 3
		EIS should have criteria to dissolve static management regulations, change based on surveys	Duly Noted	
		Adjust closures 3-5 years after implemented based on sightings and surveys	Discussed	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Sustained scientific research in the Gulf of Maine and other New England waters is recommended to continue monitoring the status of the North Atlantic right whale population and determine changes in their spatial and temporal distribution resulting from climate change	Discussed	Chapter 3
		Time-area closures should be reviewed annually to adaptively manage for future distribution shifts. The closure could be lifted if best available scientific information demonstrates that right whales are no longer using the area to the same extent.	Considered	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Enforcement		Prioritize and increase enforcement efforts related to NARW protections in state and federal waters.	Discussed	Chapter 3
Gear Marking		Mark gear within the exemption area	Proposed Alternatives	Chapter 3
		Gear marking, if implemented, should be used across all fisheries off the east coast of both the United States and Canada.	Outside of Scope	
		Ideally gear should be identifiable down to the individual operator	Rejected Alternatives	Chapter 3
		Gear marking solutions that take advantage of new smart technologies	Proposed Alternatives	Chapter 3
		Identifying gear associated with an entanglement should be mandated so that useful data will be documented and reported.	Duly Noted	
		Expand gear marking to all US fisheries	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Gear marking every 40 feet (reflecting location, fishery, country, even sub region/ individual if possible)	Rejected Alternatives	Chapter 3
		Require regional gear markings every 40 feet of line for all fixed-gear fisheries along the U.S. East Coast in state and federal waters.	Rejected Alternatives	Chapter 3
		Require new gear markings (in all fisheries, including the currently exempt areas that comprise 70 percent of Maine's waters) on all fishing gear every 40 feet so that gear can be traced back to a specific fishery, area fished, and country.	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		It is essential that all fishing gear, without exception, be thoroughly, and comprehensively marked so as to clearly indicate the specific fishery, and specific area fished	Outside of Scope	
Closures and other time/area proposals	**S. of Nantucket and Martha's Vineyard**	Analyze alternatives and propose a preferred alternative to create a vertical line trap and pot fishing closure in the high whale density area south of Martha's Vineyard and Nantucket (portions of LMA2 and LMA3);	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Increased importance of the waters south of Nantucket and Martha's Vineyard, especially in the winter and spring, we urge NMFS to propose and analyze a new fishing closure in this area as part of the preferred alternative in its EIS. We recommend that the boundaries of the closure reflect the highest relative density of right whales	Proposed Alternatives	Chapter 3
		Offshore area closures in south of Martha's Vineyard and Nantucket	Proposed Alternatives	Chapter 3
		A new seasonal protected area south of Martha's Vineyard and Nantucket that allows and incentivizes ropeless fishing	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Take emergency action to establish an interim closure to all vertical line trap/pot fishing in the high whale density area south of Martha's Vineyard and Nantucket (portions of Lobster Management Areas 2 and 3 (LMA2 and LMA3), effective until rulemaking is completed and permanent measures are implemented.	Rejected Alternatives	Chapter 3
		Implement seasonal restriction south of Nantucket, bounded by those 30-minute squares that capture 80% of the most recent (defined as the last three years) of right whale sightings (Dec-May) and passive acoustic data.	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Propose a seasonal protected area south of Nantucket as a preferred alternative in the forthcoming Draft Environmental Impact Statement	Proposed Alternatives	Chapter 3
	Additional areas to consider	In addition, we recommend that NMFS evaluate the potential for new fishing closures in the offshore areas of the Gulf of Maine (i.e., offshore areas of Lobster Management Area 1) and Lobster Management Area 3 as part of its preferred alternative. Arguably, the most severe entanglements originating in the U.S. occur in the offshore fishery, due to the use of more durable vertical line that is comparatively more likely to contribute to serious injury and mortality	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Take emergency action to establish an interim closure to vertical line trap/pot fishing during the summer and fall in offshore waters East of Maine in LMA1 and LMA3.	Rejected Alternatives	Chapter 3
		Closures during the summer (June, July, August) and fall (Sept./Oct.) in offshore waters South and East of the Maine coast in LMA1 and LMA3.	Rejected Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Analyze alternatives and propose preferred alternatives creating vertical line trap/pot fishing closures during the summer and fall in offshore waters East of Maine in LMA1 and LMA3. NMFS should analyze a range of vertical line closure alternatives between the exemption line extending to the Hague line, and a range of alternatives in the western Gulf of Maine where plankton research shows potential feeding areas.	Considered, Rejected Alternatives	Chapter 3
		Consider proposing additional protected areas in Lobster Management Area 3 ("LMA3") in its DEIS	Proposed Alternatives	Chapter 3
		Closed area in LMA 3 (trap/pot and perhaps gillnet)	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Consider closures offshore LMA 1 off Maine	Proposed Alternatives	Chapter 3
		Consider protected areas in Gulf of Maine	Proposed Alternatives	Chapter 3
		Extension of Cape Cod closure to New Hampshire border	Rejected Alternatives	Chapter 3
		A temporal and spatial expansion of the current Massachusetts Restricted Area that allows and incentivizes ropeless fishing (with the exception of inside Cape Cod Bay);	Rejected Alternatives	Chapter 3
		Consider other offshore (e.g. Jordan Basin, MD Rock, and Jeffry's Ledge)	Proposed Alternatives	Chapter 3
	General	Establish new seasonal or year-round fishing closures to protect North Atlantic right whales where they are congregating.	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Range of alternatives for dynamic management areas that change based on whale aggregations/ co-occurrence	Discussed	Chapter 3
		Consider all time area management proposals provided last fall by Oceana	Rejected Alternatives	Chapter 3
		Evaluate closed areas with updated data in the DST: whales most common/heaviest gear	Duly Noted	
		Dynamic closures should be considered given increase in unpredictability	Rejected Alternatives	Chapter 3
Stressors	**Ship strikes**	Mandatory speed restrictions (if not everywhere, then in particular areas/closures)	Outside of Scope, Discussed	Chapter 8
		Deal with threats such as ship strikes	Outside of Scope, Discussed	Chapter 8

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Noise	NMFS must also deal with threats such as ship strikes and all forms of pollution, including noise pollution	Outside of Scope, Discussed	Chapter 8
	Climate change and food	Climate change is already having an impact on the ecosystem and contributing to extinctions	Outside of Scope, Discussed	Chapter 8
	Other	Consider existing UME and reduced reproductive success	Discussed	Chapter 2, 8
		Entanglement also impacts their health and reproduction	Discussed	Chapter 2, 4, 8
		Understand the suffering of entangled individuals	Duly Noted	
Ecosystem Considerations		Whales are keystone species, important for ecosystem function and maintaining productive fisheries (e.g. nutrient enrichment)	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Consider ecosystem changes	Outside of Scope, Discussed	Chapter 8
Funding/Subsidies	**Fishermen assistance**	NOAA should subsidize ropeless	Outside of Scope	
		NOAA should fund and help make the transition to ropeless, starting in closed areas.	Outside of Scope	
		NMFS and other federal agencies as well as state government should financially assist fishers, through subsidies and other means, in making the changes that are necessary	Outside of Scope	
	Gear innovation funding	Funding for gear research, technology	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Other	Additional and sustained federally funded scientific research in the Gulf of Maine and other New England waters is recommended to continue monitoring the status of the North Atlantic right whale population and determine changes in their spatial and temporal distribution resulting from climate change.	Outside of Scope	
	(incl whale)	Remind NMFS of long-term funding for RW recovery	Outside of Scope	
Weak Rope	**1700 lbs**	The use of the 1,700-lb breaking strength benchmark for reduced breaking-strength (RBS) rope, which may not reduce entanglements of juvenile right whales and may still negatively impact adult survival	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	General	Weak rope may add line, particularly in Maine where there are snagging concerns with rocky bottoms.	Discussed	Chapter 5
		Concerns about the ability of weak rope to meet ESA needs even if it meets MMPA (address in EIS)	Discussed	Chapter 5
		Weak rope is not a sufficient change for calves, should not be the main part of the proposed rule	Duly Noted	
		Concern that weak rope will add line to the water, increase lost gear	Discussed	Chapter 5
		Weak rope may not be enforceable	Duly Noted	
		Decreasing breaking strength is important	Analyzed	Chapter 5
		Weak rope won't prevent entanglement	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Capping rope diameters should not be considered a solution without also reducing rope strength to 1700 lb. (771.1 kg)	Discussed	Chapter 3
		Gear modifications to reduce the breaking strength of vertical ropes so that entangled whales could more easily break free are also important	Proposed Alternatives	Chapter 3
Economic Concerns		Consider people's economic concerns	Analyzed	Chapter 6
		Trap reduction of 25% should not have economic impact since catch has declined	Outside of Scope	
		Evaluate technology based solutions, while supporting coexisting economy	Duly Noted	
		High catch per unit effort an important goal: minimize effect of gear and maximize profits (explore EIS)	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Operational challenges of the fishers' down time and cost must be addressed within the Plan and DEIS	Analyzed	Chapter 6
Coordination with Canada		Recommend NMFS at minimum continue its support of Canada's right whale protection efforts	Discussed	Chapter 3
		Work with colleagues in Canada to ensure solutions are complementary and effective throughout the biological range of the North Atlantic right whale.	Duly Noted	
		Gear marking, if implemented, should be used across all fisheries off the east coast of both the United States and Canada.	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		NMFS and other agencies of the US government should work closely with the Canadian government and fisheries to protect right whales	Duly Noted	
		Increase support for disentanglement efforts in the U.S. and Canada	Duly Noted	
Disentanglement		Increase collaborations to facilitate and prioritize disentanglement actions to include NARW individuals that may be significantly impacted by entanglement over time, even if initial observation of the individual does not reveal it to be suffering from "serious injury".	Duly Noted	
		Increase support for disentanglement efforts in the U.S. and Canada	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
Research	**Whale distribution**	Increase comprehensive year round aerial, shipboard, and acoustic surveys and monitoring of right whales along the U.S. East Coast (particularly in late summer)	Discussed	Chapter 3
		Recommend NMFS increase survey effort delineate the contemporary late spring, summer, and fall distribution and movements	Discussed	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		It is not currently known if right whales are utilizing a defined biological corridor or if additional foraging habitats are emerging en route to the Gulf of St. Lawrence. We strongly urge NMFS to further investigate the level of risk faced by right whales as they transition from U.S. waters to the Gulf of St. Lawrence to ensure the species is protected.	Duly Noted	
		NMFS should expand right whale surveillance efforts in U.S. waters, particularly in the Gulf of Maine	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		While the temporal and geographic scope of both acoustic and aerial surveys have expanded in recent years, additional efforts off the mid-Atlantic, the coast of Maine, and Nova Scotia should be considered.	Duly Noted	
		Sustained scientific research in the Gulf of Maine and other New England waters is necessary to continue assessing the risk of serious injury and mortality to North Atlantic right whales resulting from entanglements and monitoring the effects of regulatory changes.	Duly Noted	
		Significantly increase year-round aerial and acoustic surveys of right whales in U.S. waters;	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		NMFS to enhance survey effort and review carcass drift analyses	Duly Noted	
		Need more data on aggregations	Duly Noted	
	Prey distribution	Increase monitoring of NARWs primary prey species, along the northeast Atlantic coast.	Outside of Scope	
		Significantly increase year-round surveys of right whales prey in U.S. waters;	Outside of Scope	
		Analyze plankton data for foraging habitats in the offshore areas of the Gulf of Maine	Outside of Scope	
		increase plankton surveys along the U.S. East Coast;	Outside of Scope	
Ropeless		Ropeless plan - experimental first then commercially viable within 5 years, also in currently closed areas	Rejected Alternatives	Chapter 3
		Remove legal barriers to ropeless, move towards implementation	Discussed	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		Supportive of vertical line reductions through ropeless gear	Duly Noted	
		Include alternatives that would allow for "ropeless" fishing in new closed areas created through this action and existing closed areas (with the exclusion of Cape Cod Bay), and alternatives that would create incentives and increase development of ropeless technology and experimental fishing with ropeless gear	Proposed Alternatives	Chapter 3

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		NMFS should include a "ropeless roadmap" in the EIS, detailing how ropeless fishing systems will be advanced to a point that they are commercially viable, and how they will subsequently be implemented for commercial fishing, both within certain closed areas and elsewhere.	Outside of Scope	
		Ropeless fishing systems are the most effective way to reduce the risk of right whale entanglement—given the complete removal of the vertical line from the water column—while allowing fishing with pot and trap gear	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		A closure south of Nantucket and Martha's Vineyard could also represent a valuable opportunity to advance the testing of ropeless fishing systems	Duly Noted	
		Include plan in DEIS for developing, testing, and implementing ropeless fishing (closed areas and elsewhere)	Outside of Scope	
		Implement, incentivize, and enforce ropeless fishing requirements by fixed-gear fisheries in key areas that overlap with current and projected NARW movements.	Proposed Alternatives	Chapter 3
Decision Support Tool		Conduct a rigorous, best-practice expert elicitation to assess the risk posed by different gear configurations	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		The density maps currently being used by the agency to assess right whale risk, and the effectiveness of risk reduction measures, do not accurately reflect current levels of right whale habitat use, including in inshore and nearshore areas.	Duly Noted	
		The agency has a significant amount of recent data from state monitoring efforts, passive acoustic monitoring data, opportunistic marine mammal sightings data, and other data sources—that are particularly informative for some of the areas such as south of Nantucket and Martha's Vineyard. All these sources should be used to develop and inform the risk-reduction measures in the EIS.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		By not including the sub-lethal effects of entanglements on North Atlantic right whales, the decision support tool likely underestimates the risk of severity from different gear types.	Duly Noted	
		Update and peer review the decision support tool	Considered	Chapter 3
		Immediately validate and update the decision support tool with up-to-date right whale data from all sources i.e. state and federal waters, visual data (sightings), acoustic data	Duly Noted	
		Cannot rely on past data to predict the future	Duly Noted	
Risk reduction	**Allocation**	Representatives of Lobster Management Area (LMA) 3 did not commit to any new risk reduction measures.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
	Target	NMFS should strive for an 80 percent risk-reduction target	Duly Noted	
		Analyze alternatives for targeted vertical line and trap reductions, in order to reach 80 percent entanglement risk reduction;	Duly Noted	
		Set the target risk reduction in U.S. waters at 80 percent, which is necessary to reach the allowed potential biological removal, and analyze all alternatives and combination of alternatives as to whether they meet this standard.	Duly Noted	
		NMFS must amend the Atlantic Large Whale Take Reduction Plan (ALWTRP) to reduce the risk and severity of entanglements by 80 percent in U.S. waters.	Duly Noted	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		60% risk reduction is not enough for RW recovery, need at least 80%	Duly Noted	
Other	**Support**	NMFS Must Act Immediately with Strong and Targeted Measures to Reduce the Risk of Entanglement to North Atlantic Right Whales	Duly Noted	
		Rules should be focused on co-occurrence of gear and whales.	Analyzed	Chapter 5
		NMFS should implement and enforce the April 2019 take reduction framework to reduce entanglements that cause serious injuries and mortalities to North Atlantic right whales in trap/pot gear in New England.	Discussed	Chapter 3
		Adopt the proposed options that were decided upon at the TRT	Rejected Alternatives	Chapter 3
	General	Request a scoping meeting in coastal Georgia	Outside of Scope	

Topic Area	Sub-category	Specific Comment Component	Category	DEIS Section
		There should be an expansion of geographic scope beyond New England in future rulemakings. North Atlantic right whales are occurring more frequently in mid-Atlantic waters, but the distribution of fixed gear fishing effort in that region is not well understood (and has not been presented at recent TRT meetings).	Outside of Scope	
		Exclusive focus of the current recommended take reduction framework on the US lobster fishery, ignoring the higher relative risk of other US fisheries.	Outside of Scope, Discussed	Chapter 2, 3, 8

Appendix 4.1 Full List of Species Caught Using Pots/Traps Gear* in 2018

Species	Landing Pounds	Landing Value($)
Alewife	609	3,380
Barracuda	10	10
Black Whiting/Silver Hake Mix	337	83
Bluefish	5,955	4,091
Bonito,Atlantic	29	45
Butterfish	190	190
Clam,Blood Arc	29	491
Clam,Razor,Atlantic	106	1,050
Clam,Soft	119	1,050
Clams,Hard	610	5,347
Cobia	10	35
Cod,Atlantic	917	2,363
Crab,Atlantic,Rock	2,409,371	1,498,471
Crab,Green	102,565	45,301
Crab,Horseshoe	13,779	10,589
Crab,Japanese Shore	1,000	1,000
Crab,Jonah	19,073,975	17,619,155
Crab,Lady	18	18
Crab,Red At	3,594,235	3,590,322
Crab,Snow (Tanner)	14,280	0
Crab,Spider	132	131
Crab,Unc	19,134	12,203
Crabs,Blue	171,562	168,628
Crevalle	23	21
Croaker,Atlantic	292	335
Cunner	294	425
Cusk	54	39
Dogfish,Spiny	29,106	16,744
Dolphinfish	2,062	5,143
Drum,Black	19	55
Drum,Red	33	74
Eel,American	9,638	31,883
Eel,Conger	40,493	34,604
Fish,Other	1,225	1,089
Flounder,Plaice,American (Dab)	108	218
Flounder,Summer (Fluke)	16,052	77,778

Species	Landing Pounds	Landing Value($)
Flounder,Winter	655	1,718
Flounder,Witch (Gray Sole)	2	4
Flounder,Yellowtail	156	269
Goosefish	54,054	65,057
Grouper,Gag	27	174
Groupers	18	118
Grunts	2,615	2,623
Haddock	403	582
Hagfish	1,991,923	2,260,003
Hake,Atlantic,Red	12,931	7,028
Hake,Atlantic,Red & White	28	8
Hake,Atlantic,White	4,696	6,763
Hake,Silver Unc (Whiting)	45,977	53,338
Halibut,Atlantic	93	691
Herring,Atlantic,Sea	446	347
Hind,Red	2	12
King Whiting	1	1
Kingfish,Northern	11	11
Lobster,American	139,062,737	591,447,859
Mackerel,Atlantic	12,460	6,611
Mackerel,King	9	21
Mackerel,Spanish	1	3
Mantis Shrimps	9,447	47,235
Menhaden	315,891	62,586
Mollusks,Unc	20,476	168,640
Mussel,Blue	158	105
Ocean Perch,(Redfish)	3	3
Octopus	39	72
Oyster,Eastern	560	14,842
Periwinkles,Atlantic (Cockles)	106	325
Pigfish	90	59
Pinfish	255	70
Pollock,Atlantic	5,180	6,114
Porgies,Unc	415	415
Porgy,Red	178	264
Puffer,Northern	1,621	7,756
Puffers	554	2,490
Scallop,Bay	114	4,972
Scallop,Sea	66,264	614,889
Scup	434,347	267,276

Species	Landing Pounds	Landing Value($)
Sea Bass,Bank	100	0
Sea Bass,Black	560,276	1,846,323
Sea Raven	17	22
Sea Robins	585	80
Sea Robins,Armored	1,310	237
Sea Robins,Northern	1,425	258
Sea Trout,Gray(Weakfish)	1,546	4,009
Sea Urchins	66	66
Skate,Little	782	-156
Skate,Winter	4,123	3,587
Skates	888	3,571
Snails(Conchs)	241,320	1,001,082
Snapper,Red	7	38
Snapper,Vermilion	193	774
Spot	188	339
Squid,Long Finned (*Loligo*)	293	467
Striped Bass	8,480	43,833
Tautog	44,618	153,840
Tilefish (Golden Tilefish)	217	504
Tilefish,Blueline	113	226
Tilefish,Sand	309	685
Toadfishes	128	450
Triggerfish,Gray	249	727
Triggerfishes	6,964	10,141
Tuna,Little (Tunny)	26	20
Unknown	1	49
Whelk,Channeled	600,534	5,956,124
Whelk,Knobbed	383,473	444,342
Whelk,Waved	6,052	4,095
Total	169,417,597	627,659,448

Notes: * negear2=8, 18, 20 and 21 Source: NMFS dealer report

Appendix 4.2 Social Indicators for Top Landing Ports of American Lobsters by State

State	Port	County	Pounds	Port Share	Value	Poverty	Labor Force	Housing Characteristics	Population Composition	Personal Disruption	Housing Disruption	Retiree Migration	Urban Sprawl	Commercial Engagement	Commercial Reliance
ME	Stonington	Hancock	15,152,984	12%	$57,674,407	0.155	0.281	0.846	-0.846	-0.058	1.489	0.149	-1.516	4.446	4.554
	Vinalhaven	Knox	8,916,960	7%	$39,207,878	-0.651	0.028	0.849	-1.171	-0.601	0.932	0.23	-1.341	2.635	2.622
	Beals	Washington	6,955,382	6%	$21,700,970	-0.446	0.91	N/A	-1.121	-0.372	0.298	0.357	-2.427	2.11	5.706
	Friendship	Knox	5,027,178	4%	$23,596,699	-0.182	0.201	0.392	-0.813	-0.473	-0.427	0.579	-1.118	1.725	1.663
	Portland	Cumberland	3,987,340	3%	$18,409,293	0.665	-0.99	0.349	-0.316	-0.088	0.583	-1.005	0.121	5.205	-0.031
	Spruce Head	Knox	3,960,384	3%	$15,914,903	-0.958	-0.27	0.481	-1.043	-0.734	-0.223	0.789	-1.084	3.333	1.287
	Jonesport	Washington	3,292,579	3%	$9,967,077	-0.111	1.103	1.249	-0.839	0.099	-0.025	0.7	-2.463	1.82	1.538
	Milbridge	Washington	2,845,255	2%	$10,081,280	-0.225	0.875	1.121	-0.475	-0.01	1.028	0.605	-2.272	1.227	0.786
	Cundys Harbor	Cumberland	2,836,017	2%	$12,108,318	-0.347	0.722	0.205	-1.166	-0.8	0.999	0.998	-0.348	3.657	0.665
	Owls Head	Knox	2,768,925	2%	$11,979,699	0.082	0.349	0.28	-0.79	-0.594	0.106	0.704	-1.196	1.084	0.69
	State Total		121,344,936	46%											
NH	Newington	Rockingham	4233958	70%	26463533.15	-0.775	-0.56	-0.705	-0.742	-0.841	0.607	-0.153	0.091	1.91	2.351
	Portsmouth	Rockingham	1344288.8	22%	6322403.26	-0.729	-0.9	0.072	-0.745	-0.677	0.631	-0.662	0.289	1.361	-0.058
	Seabrook	Rockingham	316024.28	5%	1469528.63	-0.365	-0.2	0.823	-0.851	0.089	-0.611	0.021	0.298	0.644	-0.041
	State Total		6,082,882	97%											
MA	Gloucester	Essex	4,148,414	23%	$21,150,942	-0.352	-0.12	0.018	-0.71	-0.314	0.211	-0.003	0.391	10.57	0.23
	New Bedford	Bristol	2,021,644	11%	$11,667,249	1.227	-0.18	0.5	0.743	0.877	0.314	-0.46	0.68	32.888	0.23
	Rockport	Essex	1,362,018	8%	$6,559,445	-0.641	0.057	-0.039	-0.886	-0.787	-0.267	0.404	0.484	0.908	0.016
	Marshfield	Plymouth	867,973	5%	$3,855,943	-0.497	-0.71	-0.592	-0.692	-0.637	0.223	-0.392	0.414	1.299	-0.072
	Provincetown	Barnstable	840,502	5%	$4,663,832	-0.341	0.075	0.116	-0.665	0.066	1.382	0.341	0.496	0.965	0.279
	State Total		17,690,692	52%											
RI	Point Judith	Washington	950,699	50%	$5,370,662	-0.861	0.092	-0.178	-0.976	-0.459	0.933	0.093	-0.063	9.854	0.495
	Newport	Newport	794,620	42%	$4,731,121	-0.004	-0.65	0.006	-0.36	-0.33	1.005	-0.71	0.255	1.425	-0.06
	Little Compton	Newport	126,892	7%	$674,959	-0.386	0.054	-0.278	-0.913	-0.574	0.938	0.192	0.042	0.474	0.05
	State Total		1,905,689	98%											

Appendix 4.3 Definition of Social Indicators

Social Vulnerability Indices	Poverty	A commonly used indicator of vulnerable populations. A high rank indicates a high rate of poverty and a more vulnerable population
	Labor Force	Characterizes the strength and stability of the labor force and employment opportunities that may exist. A high rank means likely fewer employment opportunities and a more vulnerable population
	Housing Characteristics	A measure of infrastructure vulnerability and includes factors that indicate housing that may be vulnerable to coastal hazards. A high rank means a more vulnerable infrastructure and a more vulnerable population. On the other hand, the opposite interpretation might be that more affordable housing could be less vulnerability for some populations
	Population Composition	Shows the presence of populations who are traditionally considered more vulnerable due to circumstances often associated with low incomes and fewer resources. A high rank indicates a more vulnerable population
	Personal Disruption	Represents factors that disrupt a community member's ability to respond to change because of personal circumstances affecting family life or educational levels or propensity to be affected by poverty. A high rank indicates more personal disruption and a more vulnerable population
Gentrification Pressure Indices	Housing Disruption	Represents factors that indicate a fluctuating housing market where some displacement may occur due to rising home values and rents. A high rank means more vulnerability for those in need of affordable housing and a population more vulnerable to gentrification
	Retiree Migration	Characterizes areas with a higher concentration of retirees and elderly people in the population. A high rank indicates a population more vulnerable to gentrification as retirees seek out the amenities of coastal living
	Urban Sprawl	Describes areas experiencing gentrification through increasing population and higher costs of living. A high rank indicates a population more vulnerable to gentrification
Fishing Engagement and Reliance Indices	Commercial Engagement	Measures the presence of commercial fishing through fishing activity as shown through permits and vessel landings. A high rank indicates more engagement
	Commercial Reliance	Measures the presence of commercial fishing in relation to the population of a community through fishing activity. A high rank indicates more reliance

Appendix 4.4 Community Profiles

Stonington, ME

Where is Stonington located?

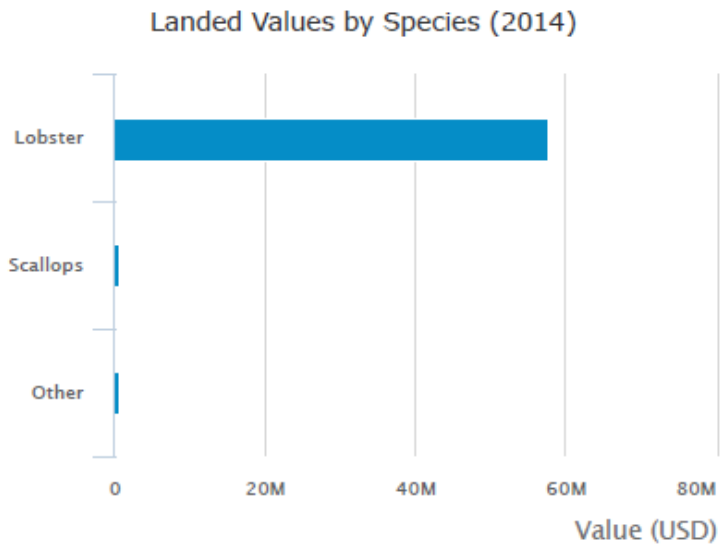
Stonington is a town with a population of 1,043 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

What species are landed in Stonington?

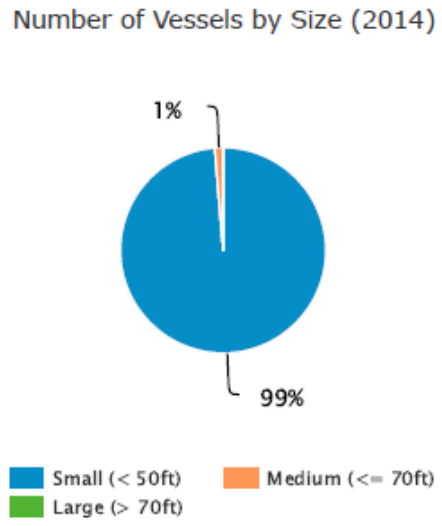
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Stonington?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

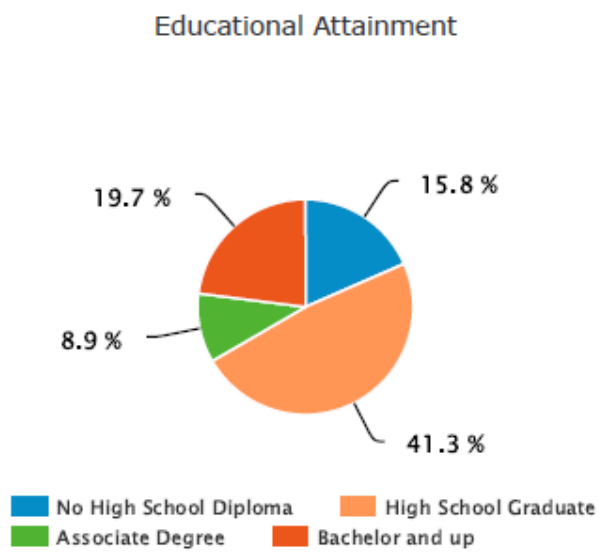


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

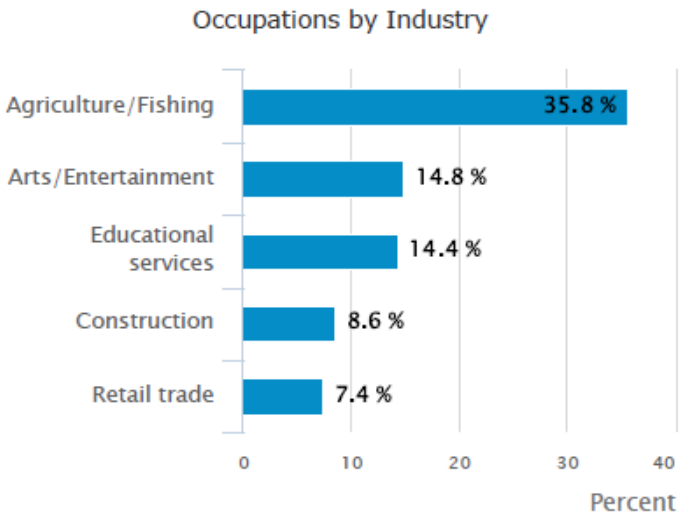
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Stonington?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working environment that fishermen would be comfortable



Unemployment Rate: **2%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the face of other opportunities.

Median Household Income: **$36,339.00**

National Average: **$51,914.00** (2011)

Individuals in Stonington living in poverty: **10.4%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job opportunities in fishing-related and other local

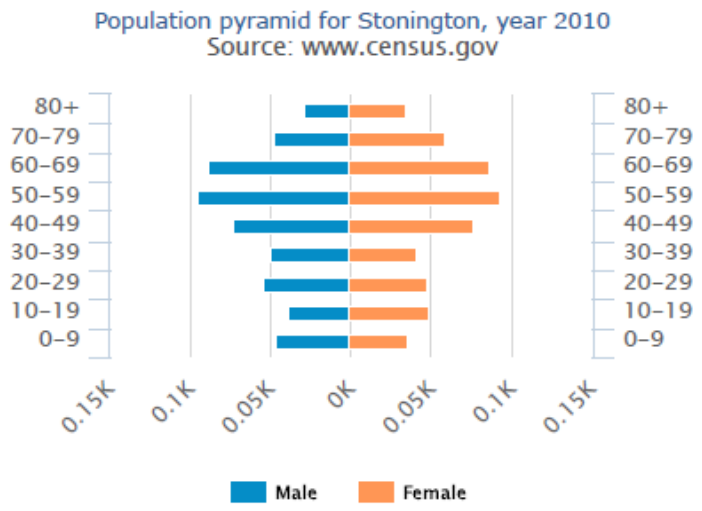
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community. A very large population of young people, on the

may indicate the presence of universities or a military base.

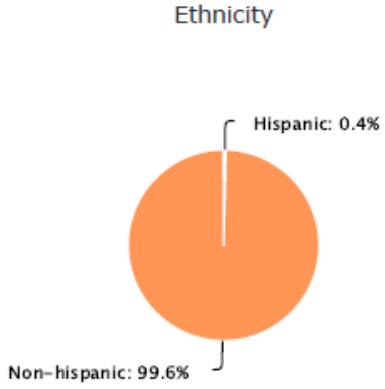
Median age: **50.7**

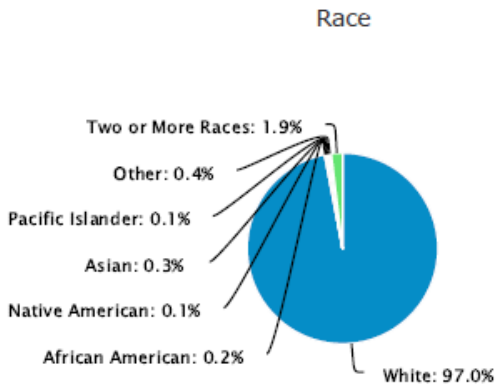
National median: **37.2**



Ethnicity and Race

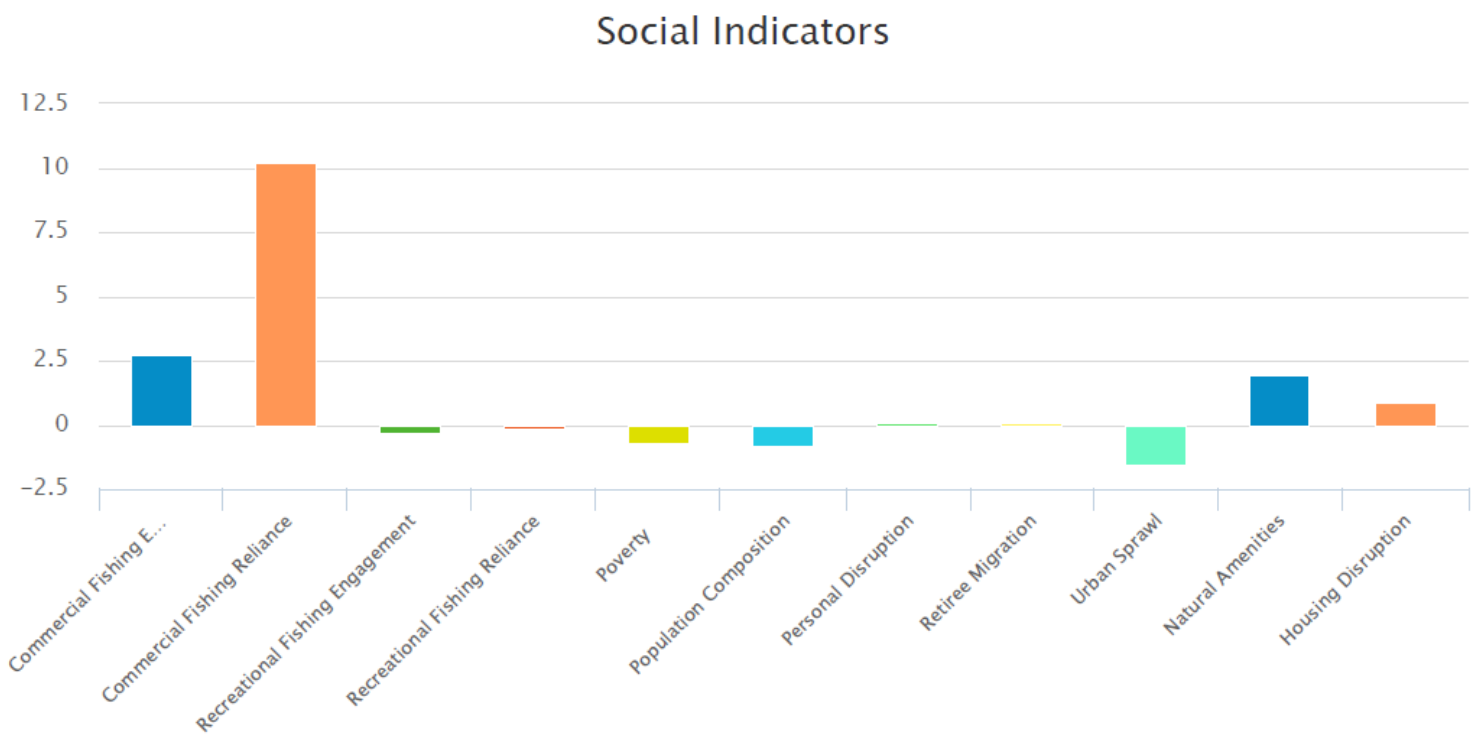
These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region





Language and Marginalization

Foreign Born: **2.1%**



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

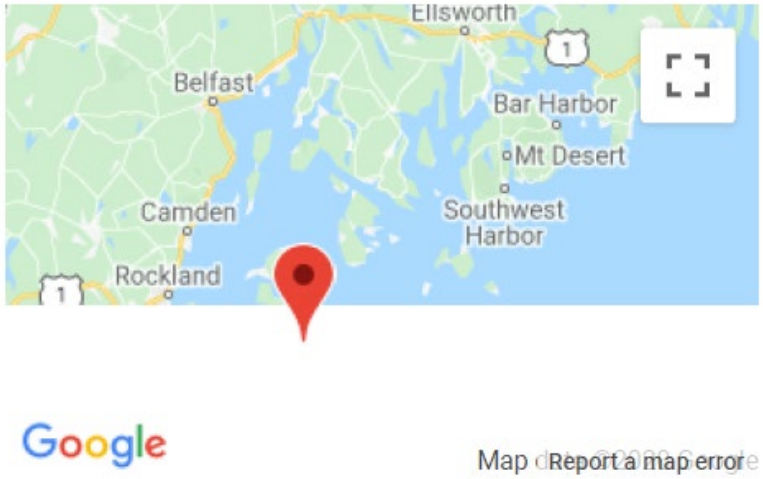
[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Vinalhaven, ME

Where is Vinalhaven located?

Vinalhaven is a town with a population of 1,165 and classified by the census as falling within a rural area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.

However, increasing urbanization can also mean



Involvement in Fisheries

What species are landed in Vinalhaven?

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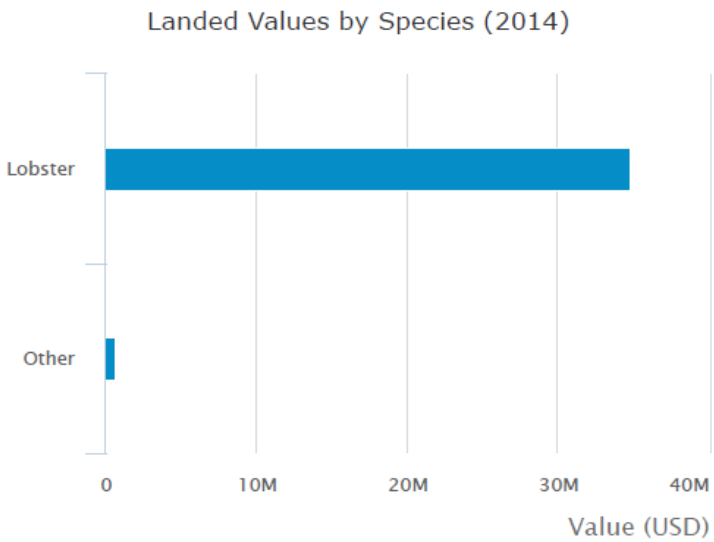
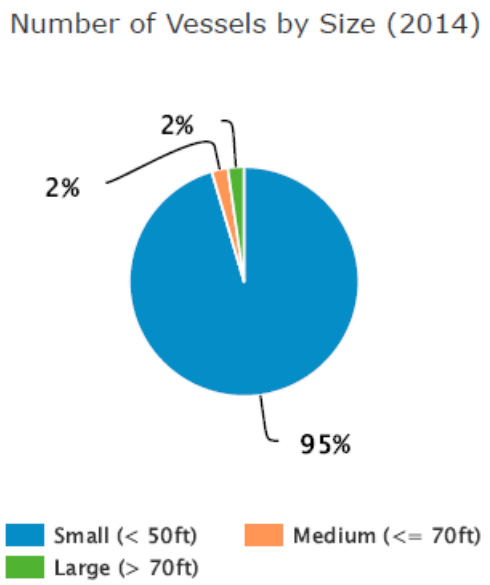
*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Vinalhaven?



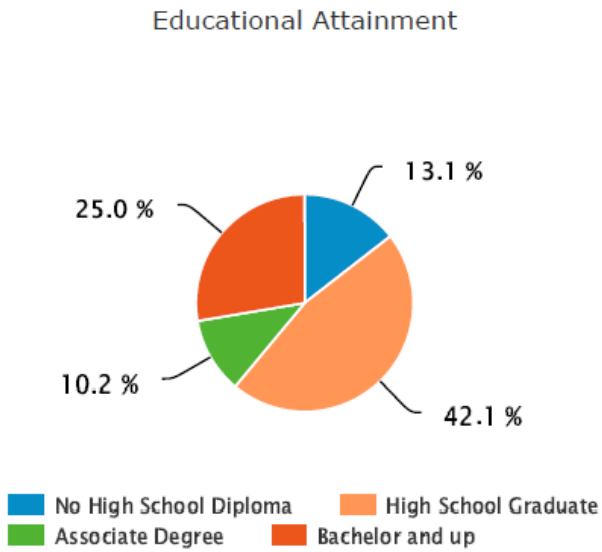
The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

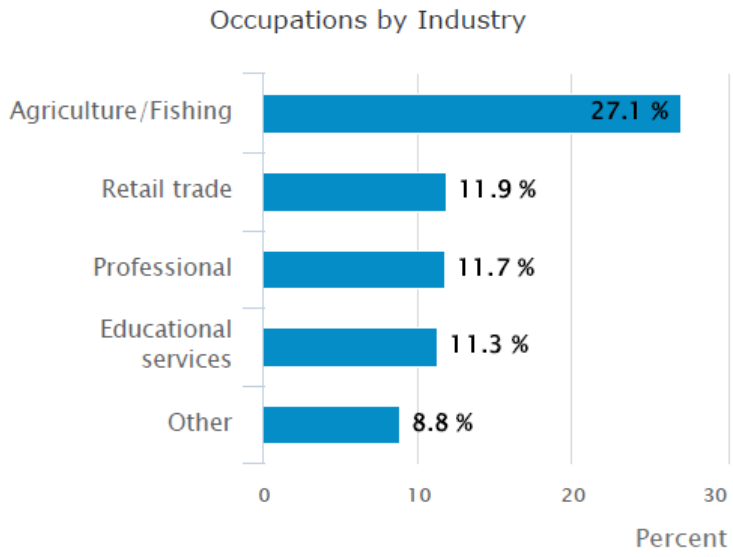
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Vinalhaven?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **1.2%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$40,526.00**

National Average: **$51,914.00** (2011)

Individuals in Vinalhaven living in poverty: **16%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job

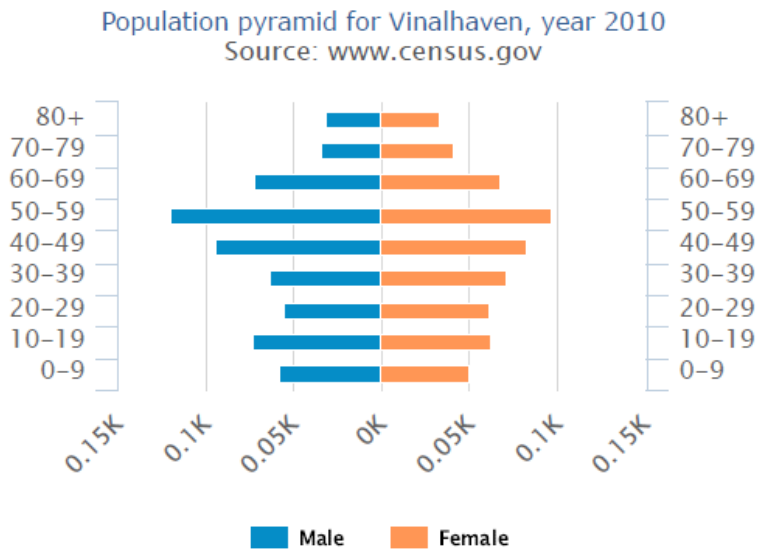
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

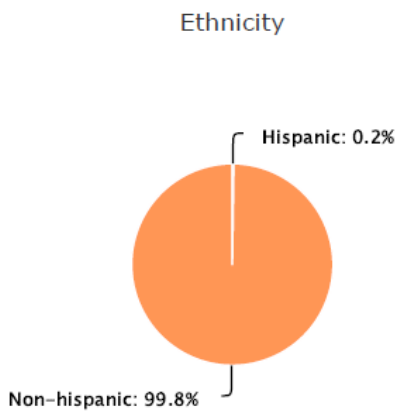
Median age: **45.1**

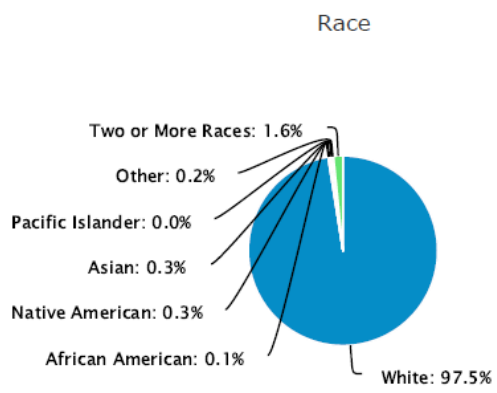
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **.9%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Stonington they may indicate a

National Average: **12.7%**

Speak English less than very well: **.5%**

National Average: **8.7%**

Social Indicators

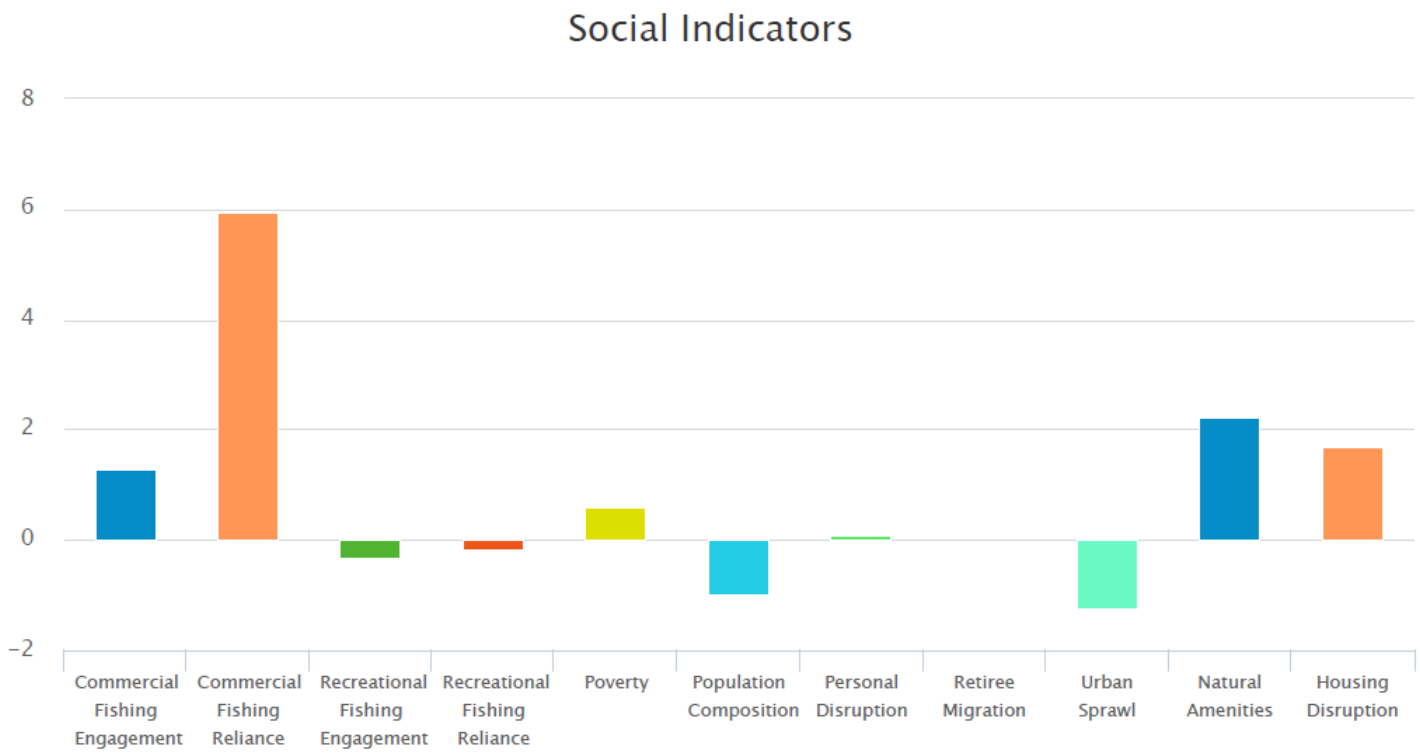
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Stonington that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

Beals, ME

Where is Beals located?

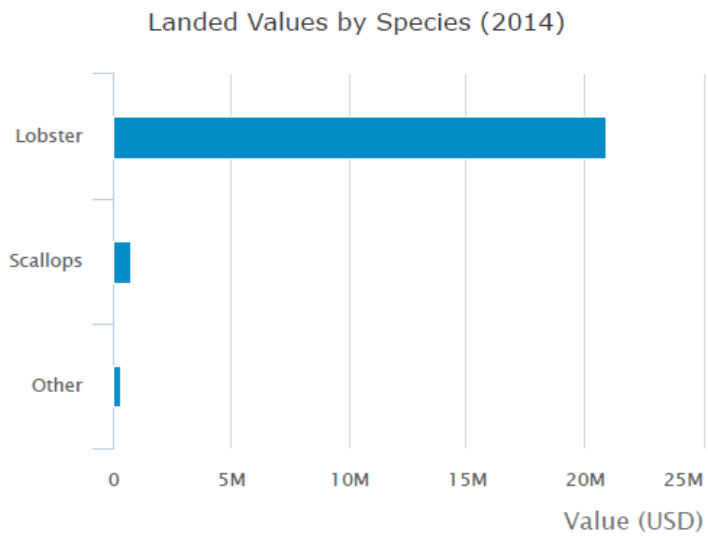
Beals is a town with a population of 508 and classified by the census as falling within a rural area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers. However, increasing urbanization can also mean greater pressure to transform

Involvement in Fisheries

What species are landed in Beals?

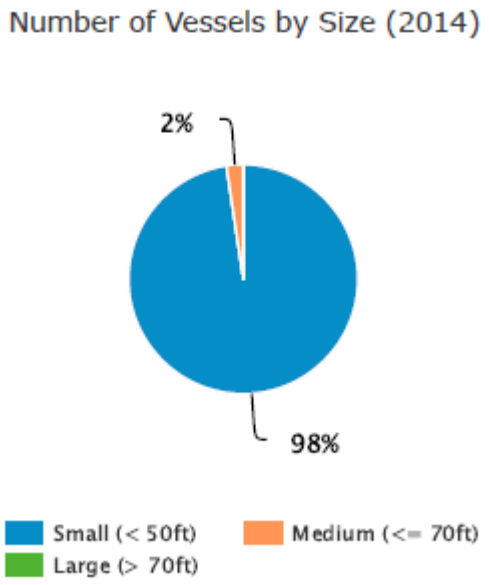
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Beals?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

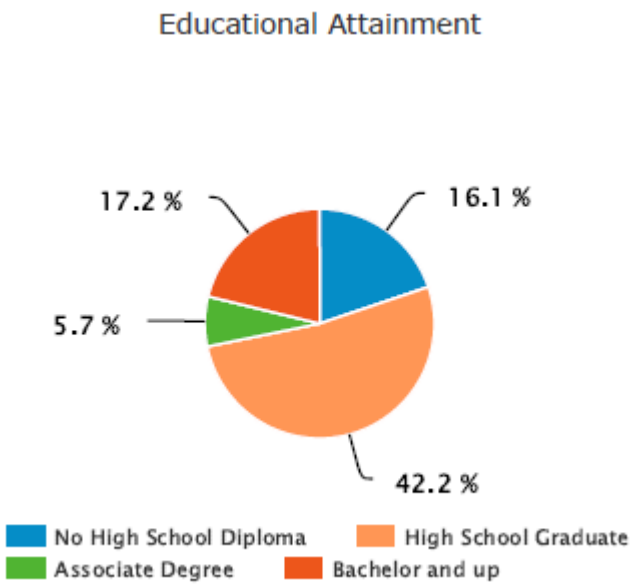


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

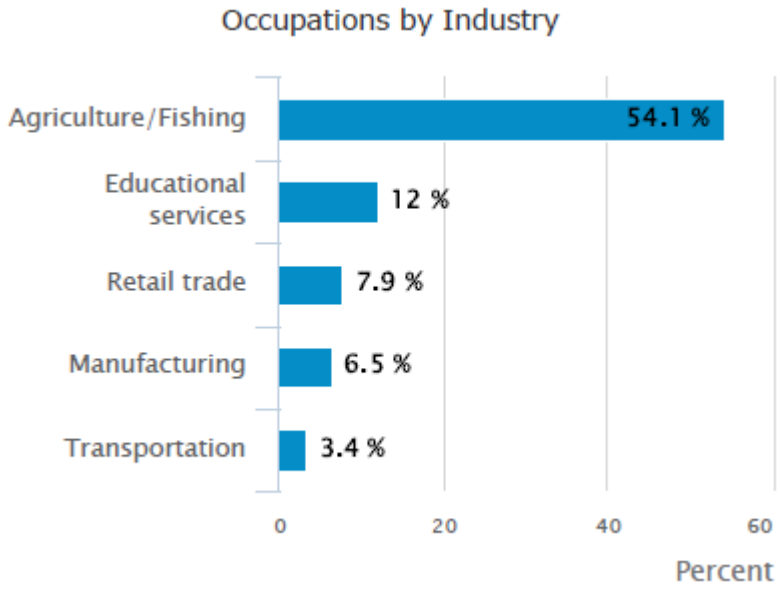
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Beals?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **4.1%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$32,500.00**

National Average: **$51,914.00** (2011)

Individuals in Beals living in poverty: **16.8%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job opportunities in fishing-related and other local

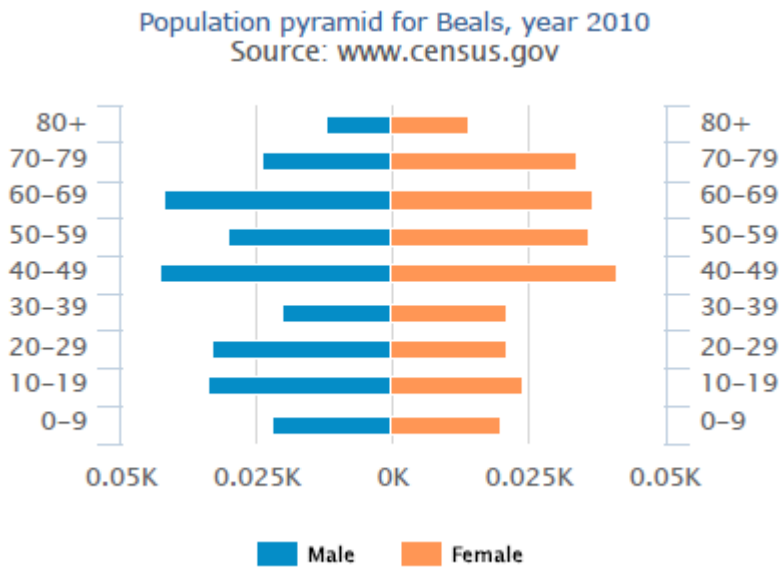
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

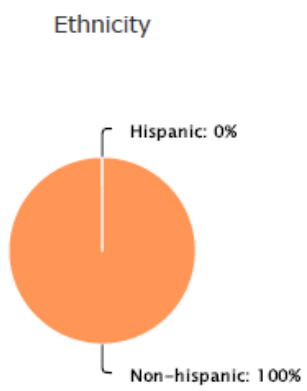
Median age: **48.1**

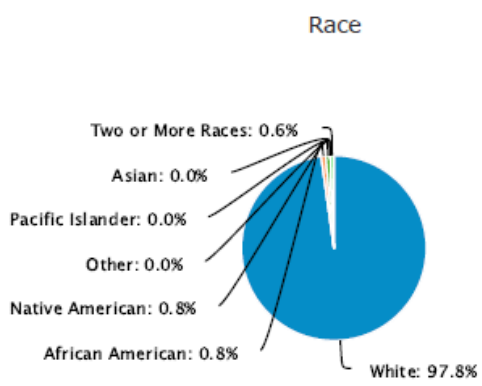
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **.3%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Beals they may indicate a population

National Average: **12.7%**

Speak English less than very well: **.9%**

National Average: **8.7%**

Social Indicators

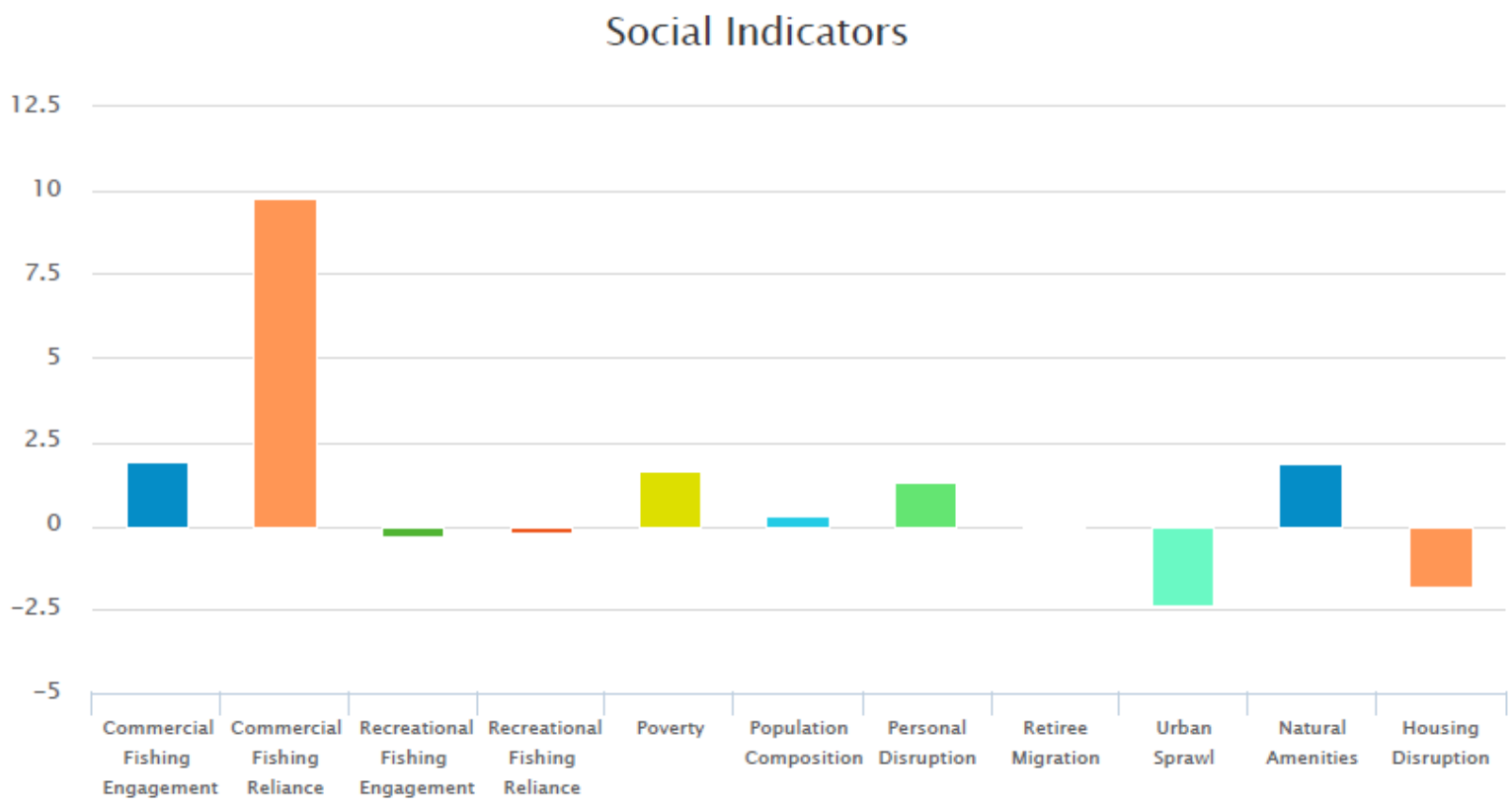
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Beals that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

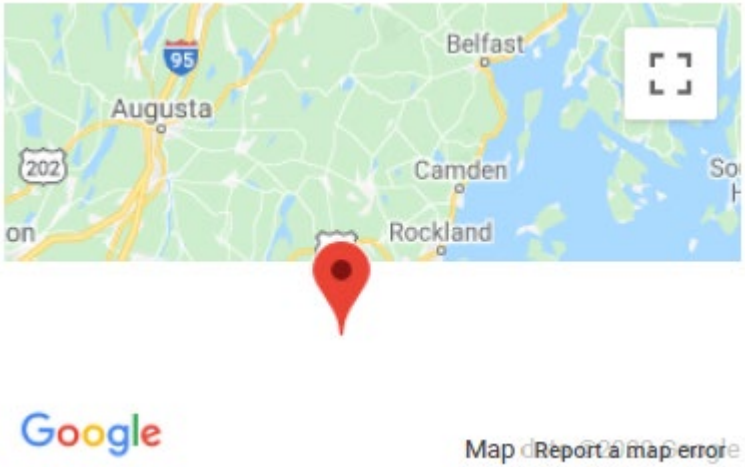
Northeast Fisheries Science Center

Social Sciences Branch

Friendship, ME

Where is Friendship located?

Friendship is a town with a population of 1,152 and classified by the census as falling within a rural area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

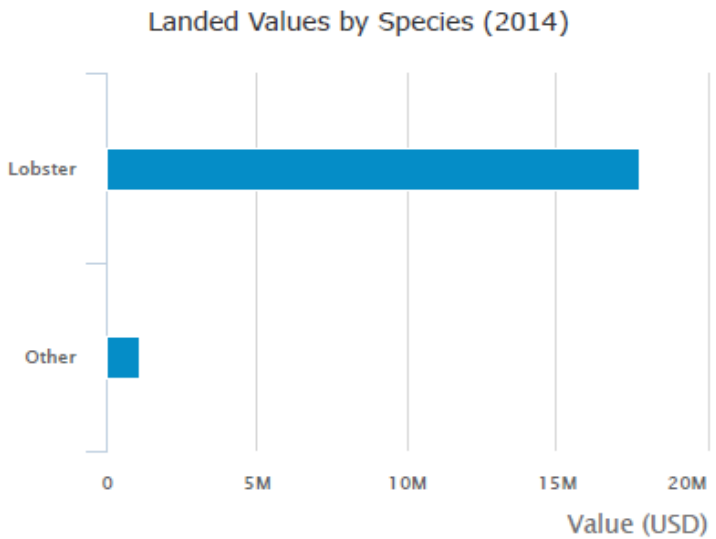


Involvement in Fisheries

What species are landed in Friendship?

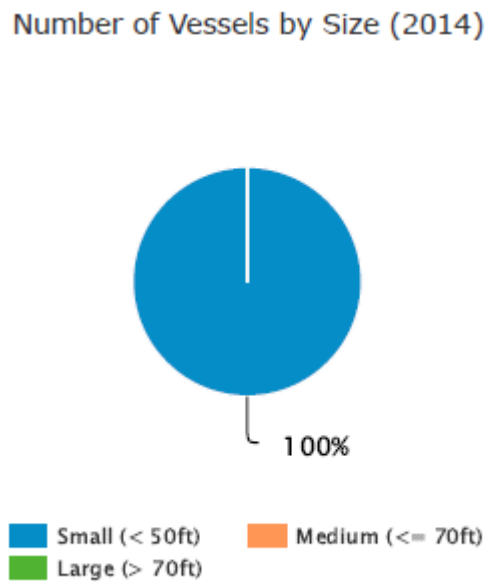
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Friendship?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

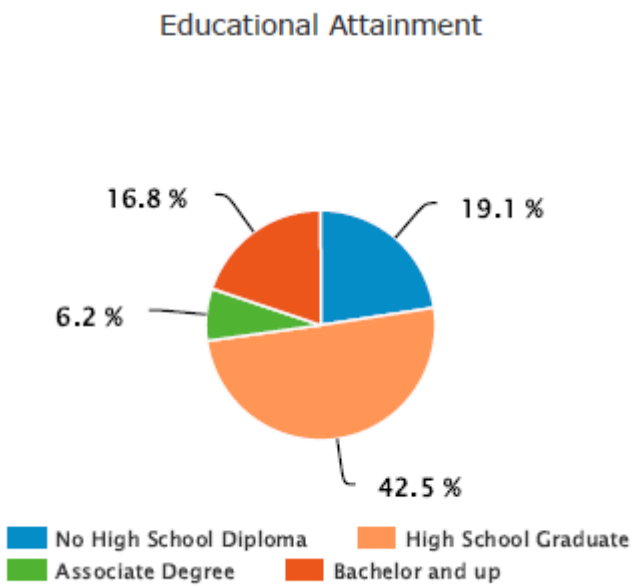


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

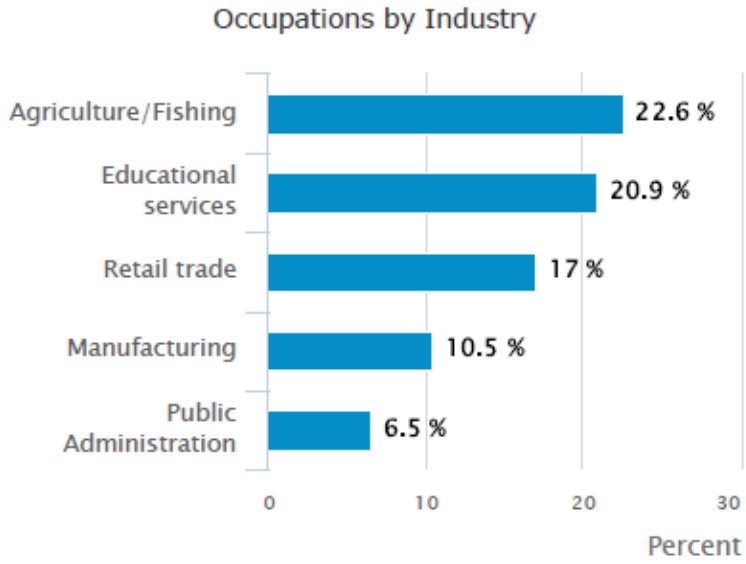
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Friendship?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **3%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$48,026.00**

National Average: **$51,914.00** (2011)

Individuals in Friendship living in poverty: **10.9%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job

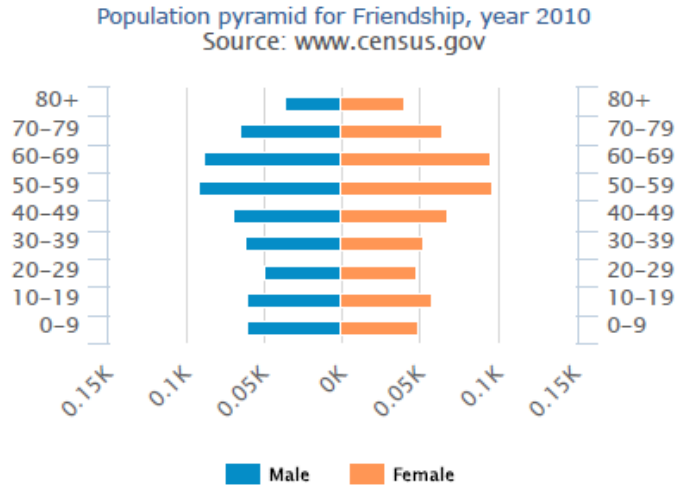
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

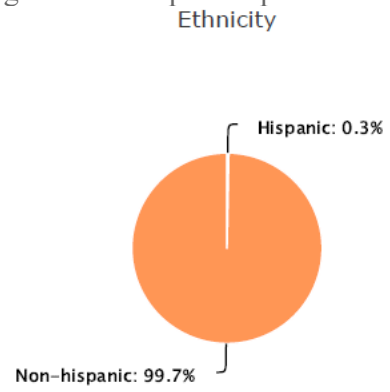
Median age: **50.1**

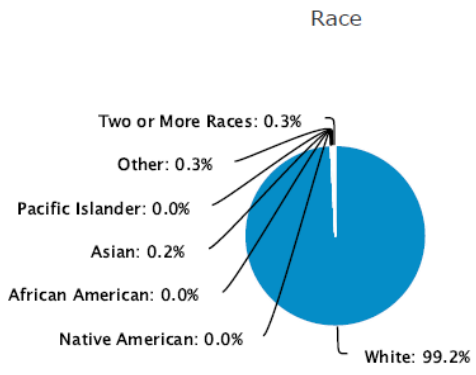
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **.6%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Friendship they may indicate a

National Average: **12.7%**

Speak English less than very well: **0%**

National Average: **8.7%**

Social Indicators

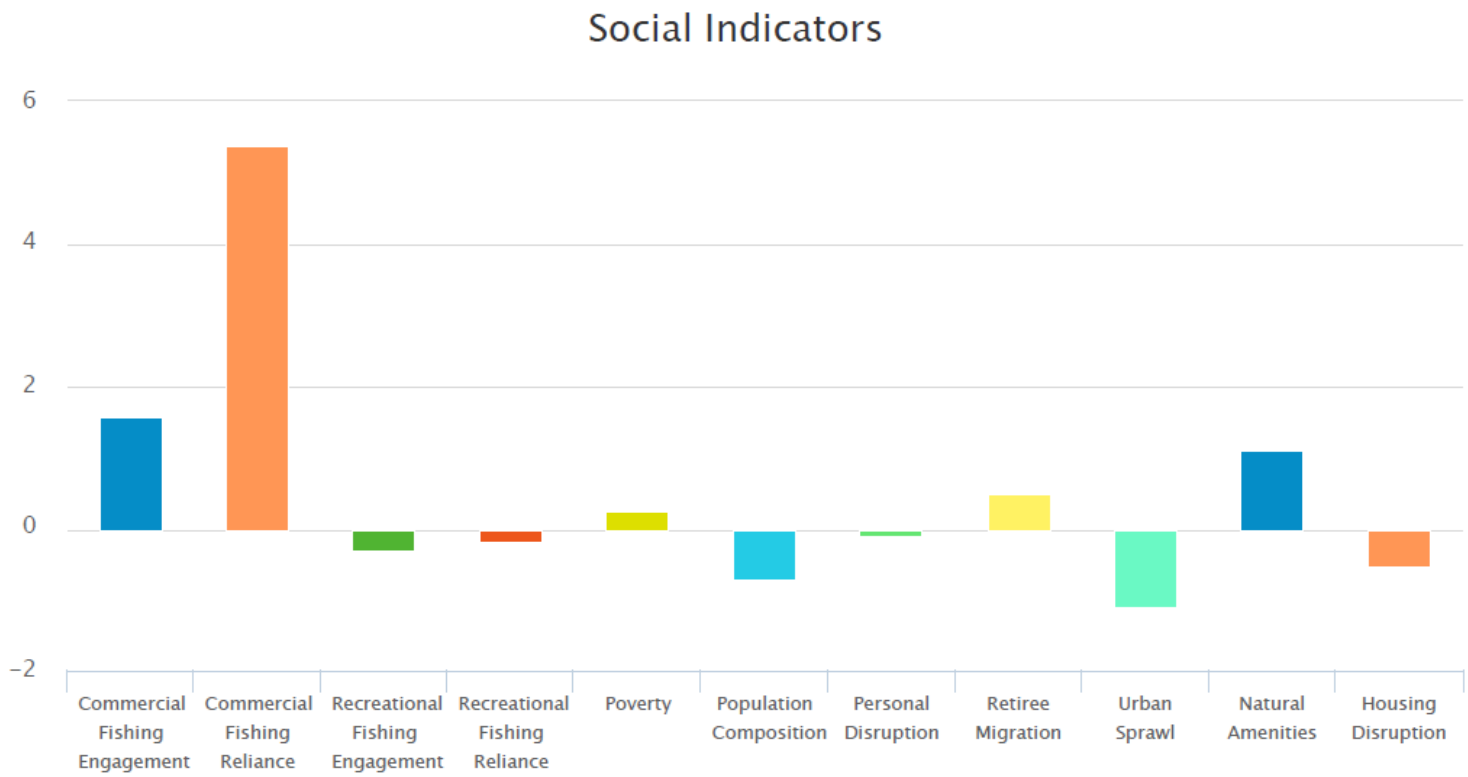
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Friendship that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



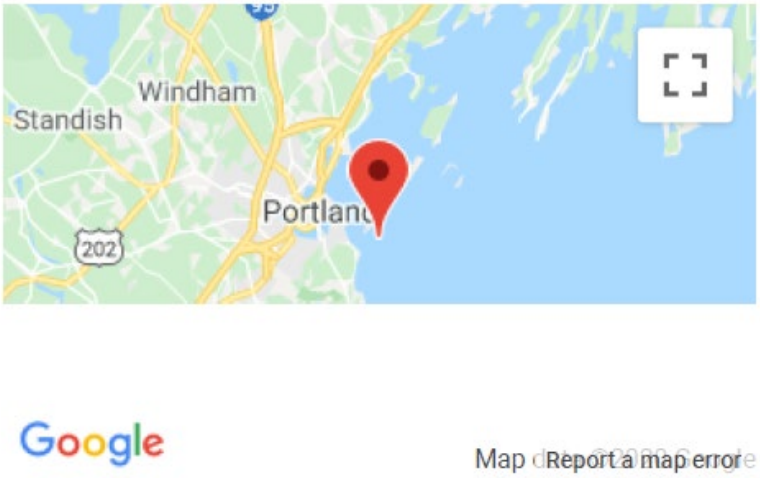
[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

Portland, ME



Where is Portland located?

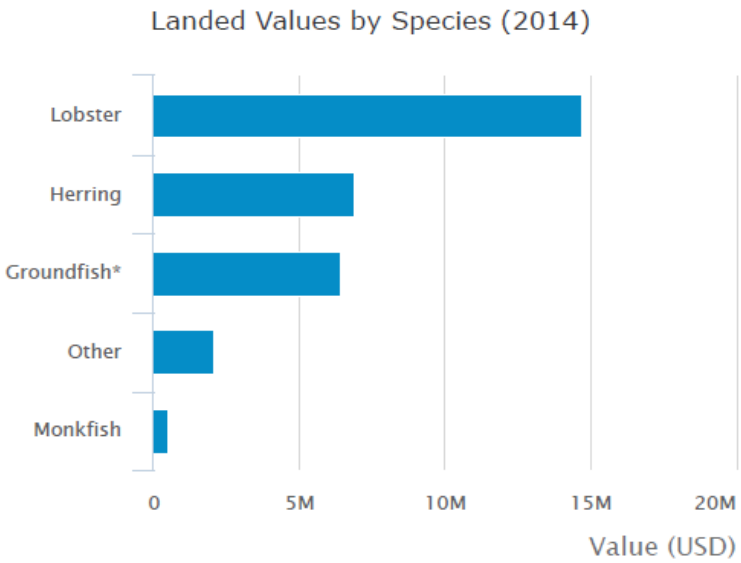
Portland is a town with a population of 66,194 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

What species are landed in Portland?

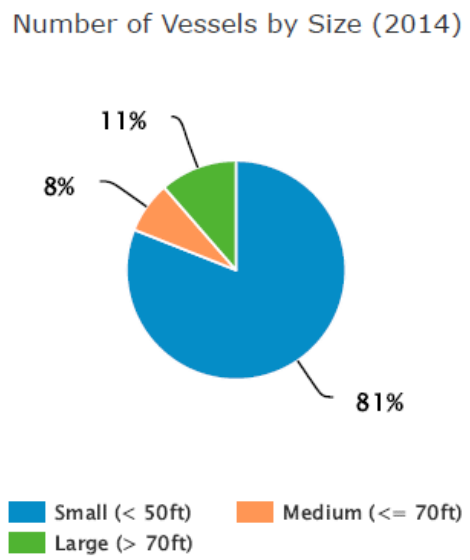
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Portland?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

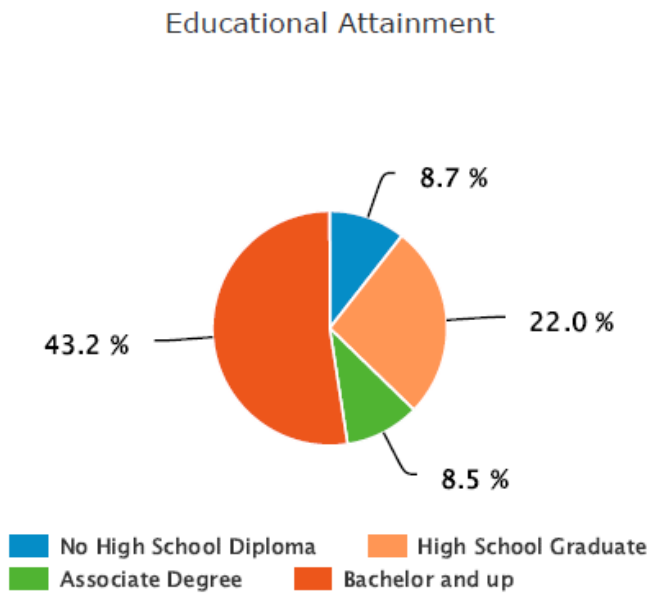


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

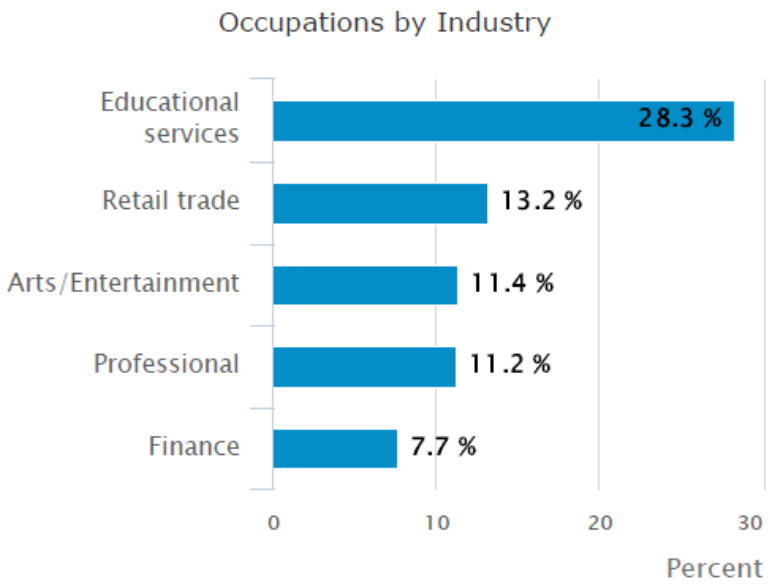
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Portland?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **3.7%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$44,422.00**

National Average: **$51,914.00** (2011)

Individuals in Portland living in poverty: **17.5%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job

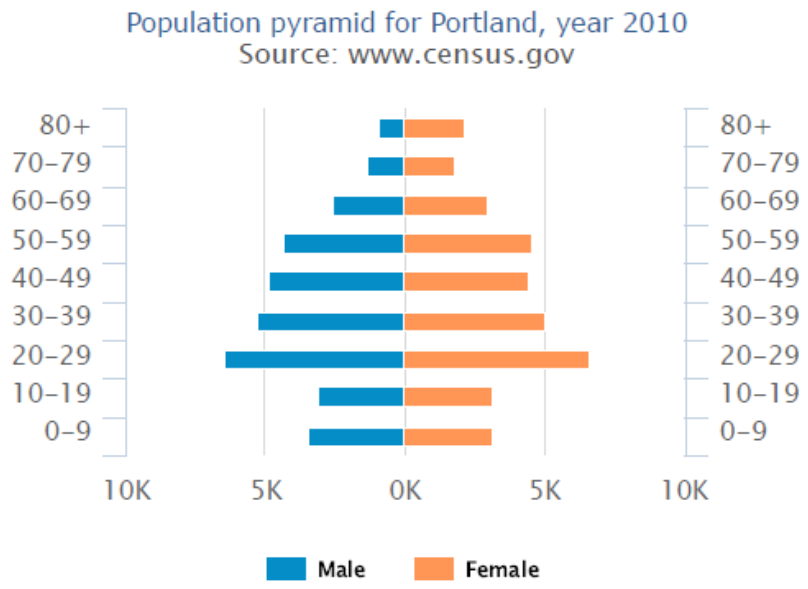
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

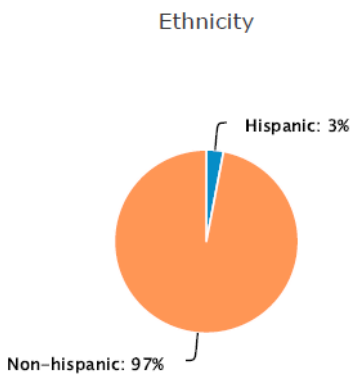
Median age: **36.7**

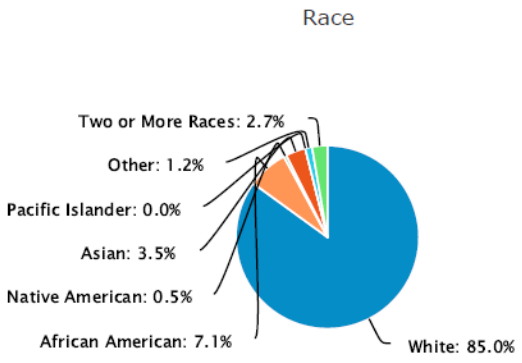
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **11%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Portland they may indicate a

National Average: **12.7%**

Speak English less than very well: **6.6%**

National Average: **8.7%**

Social Indicators

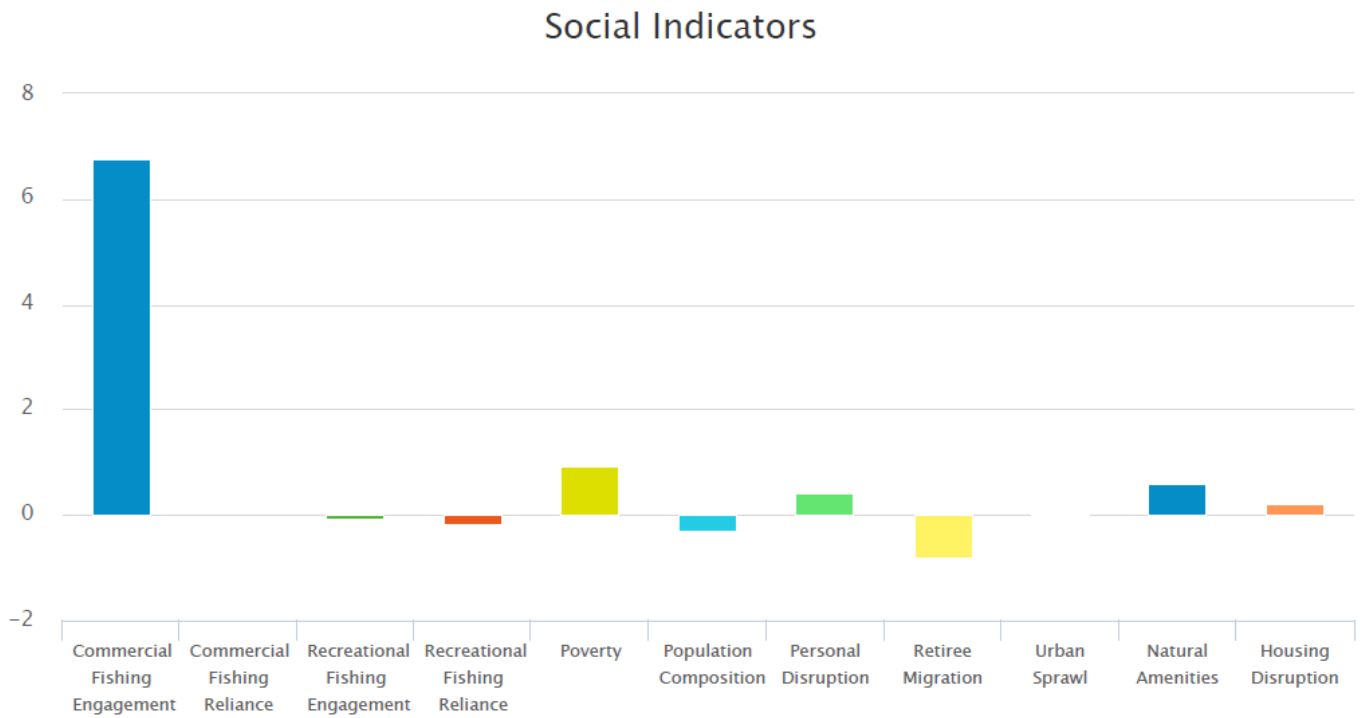
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Portland that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



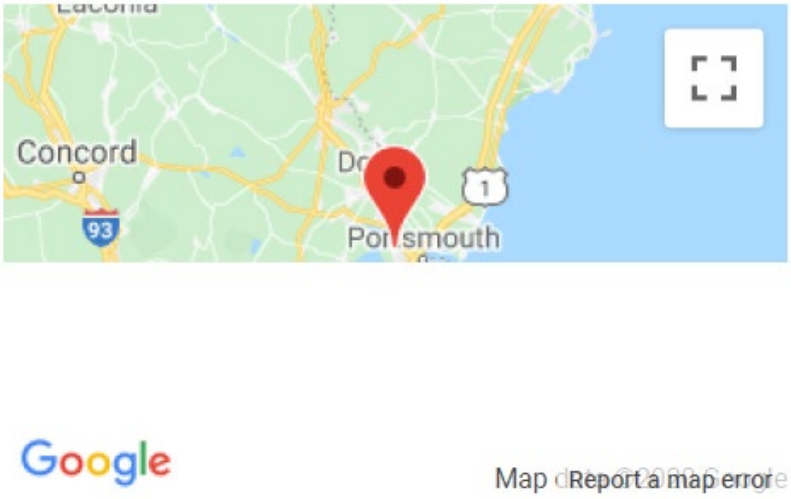
[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

Newington, NH



Where is Newington located?

Newington is a town with a population of 753 and classified by the census as falling within a rural area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

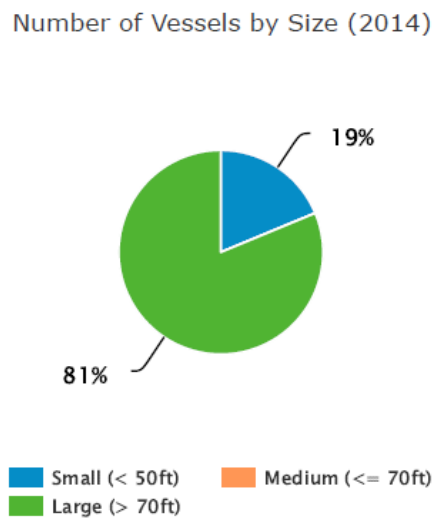
What species are landed in Newington?

The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.

What are the characteristics of the fishing vessels in Newington?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

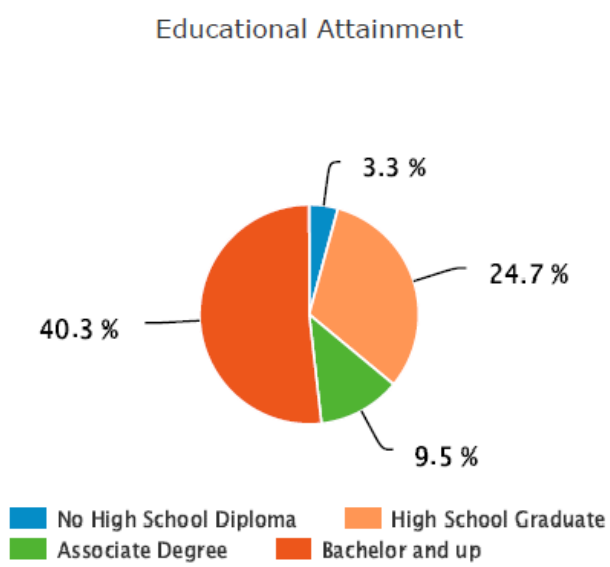


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

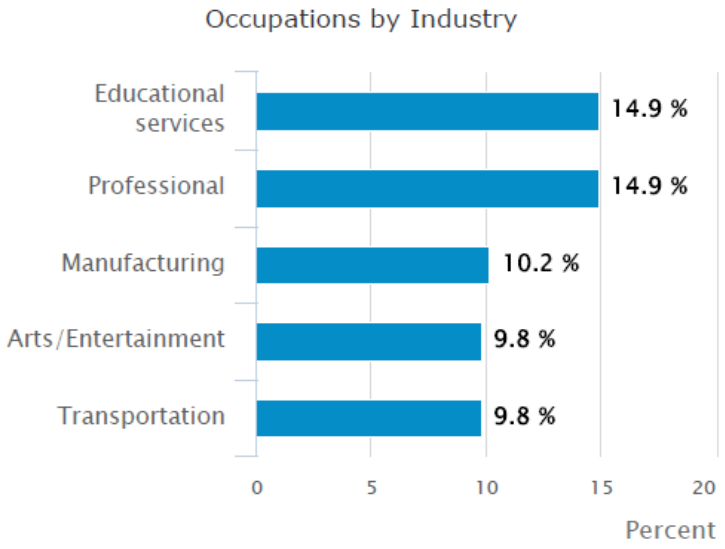
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Newington?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **0.9%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$78,500.00**

National Average: **$51,914.00** (2011)

Individuals in Newington living in poverty: **6.8%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job

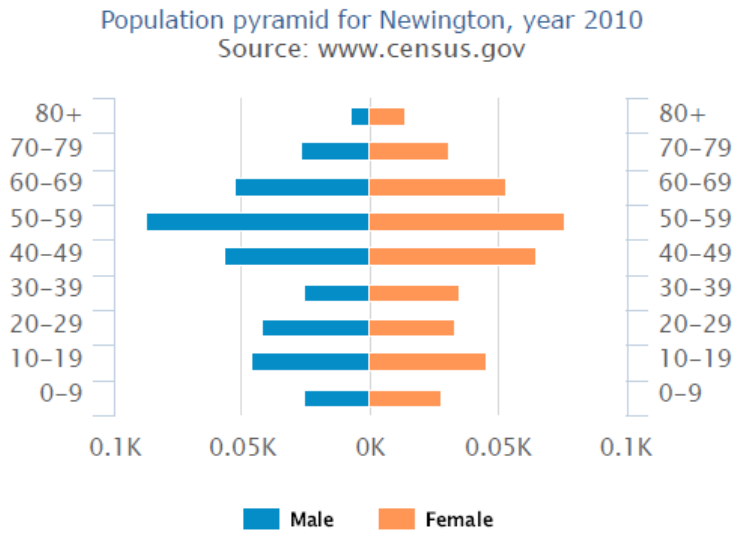
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

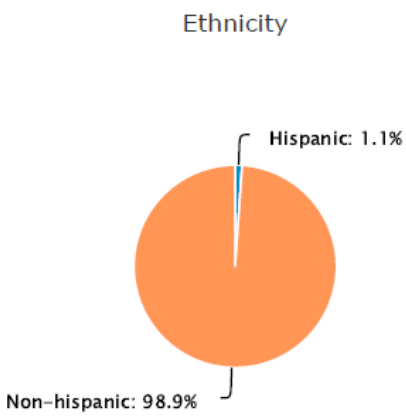
Median age: **48**

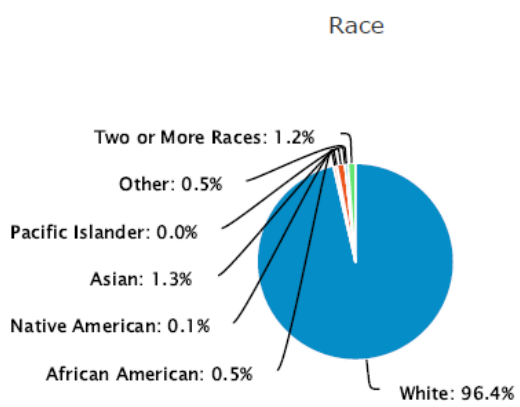
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **4.7%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Newington they may indicate a

National Average: **12.7%**

Speak English less than very well: **.4%**

National Average: **8.7%**

Social Indicators

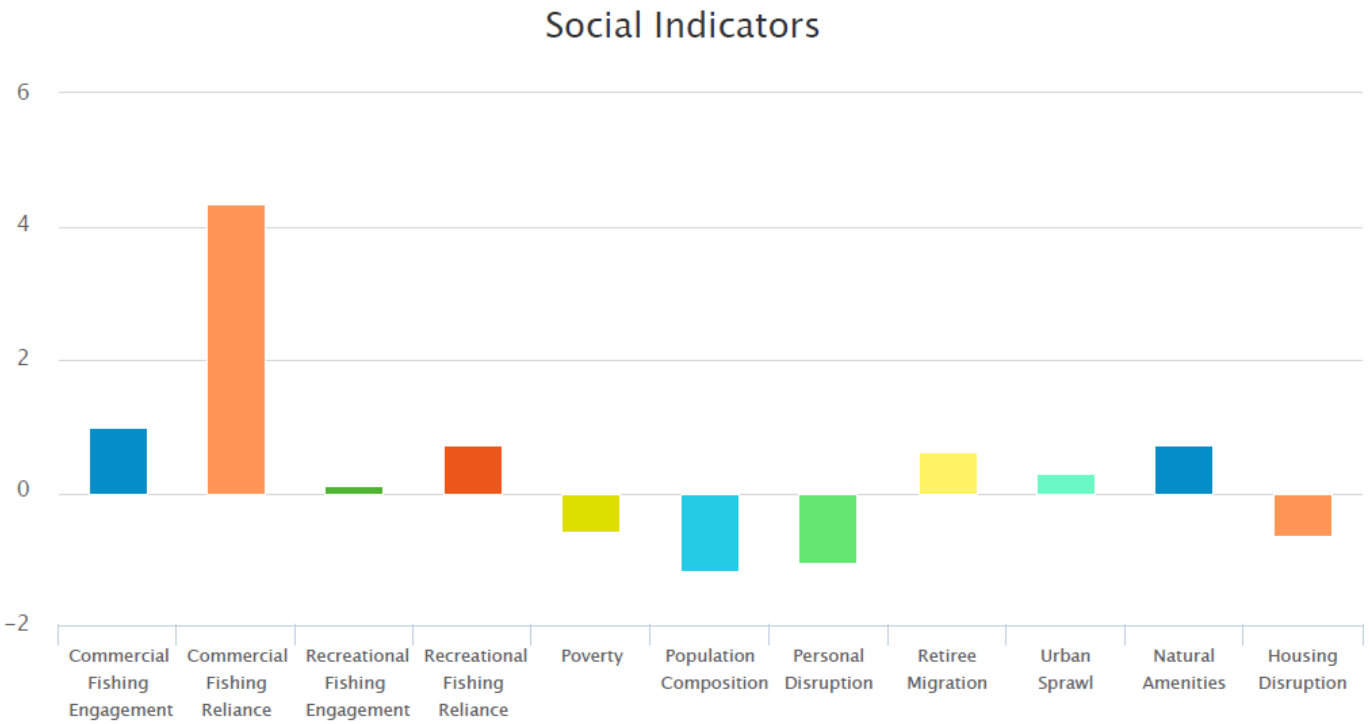
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Newington that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

Portsmouth, NH

Where is Portsmouth located?

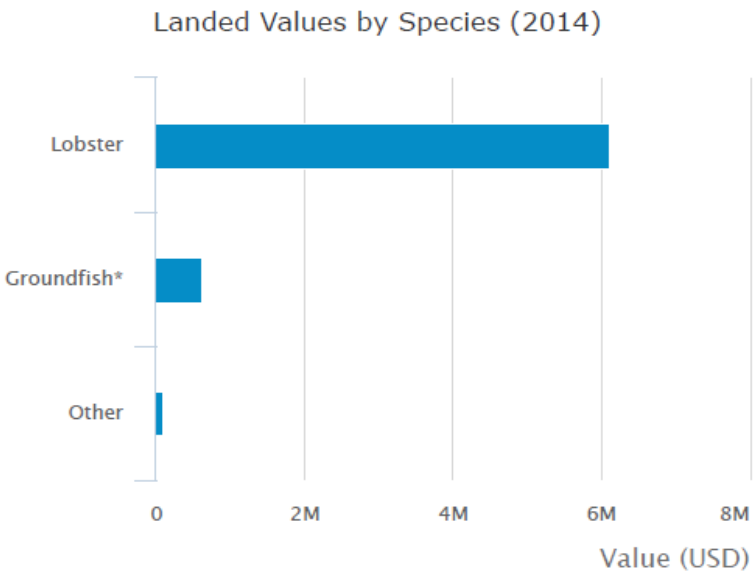
Portsmouth is a town with a population of 20,779 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

What species are landed in Portsmouth?

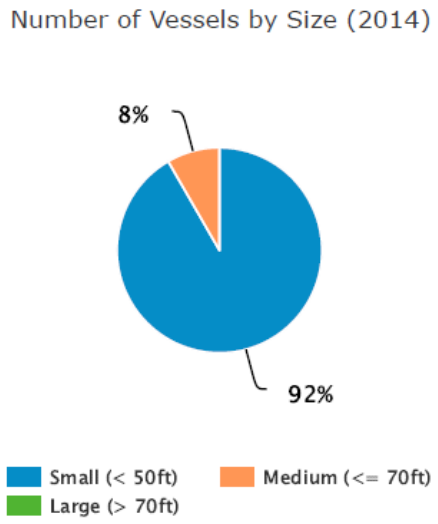
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Portsmouth?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

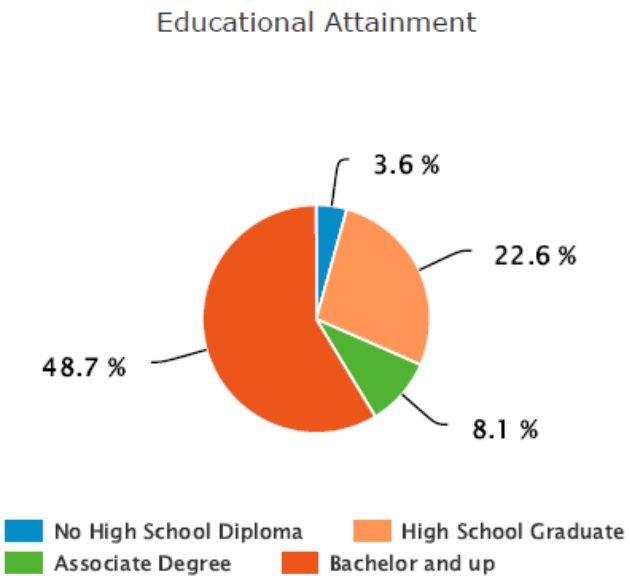


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

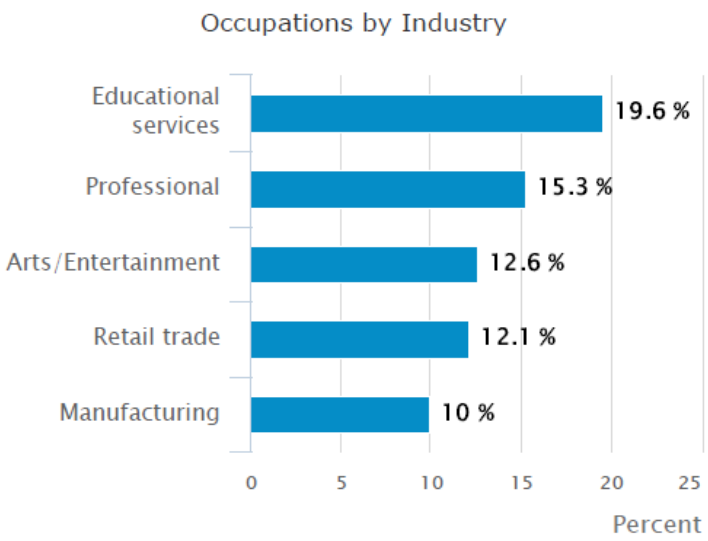
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Portsmouth?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **3.6%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$62,191.00**

National Average: **$51,914.00** (2011)

Individuals in Portsmouth living in poverty: **8.7%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job

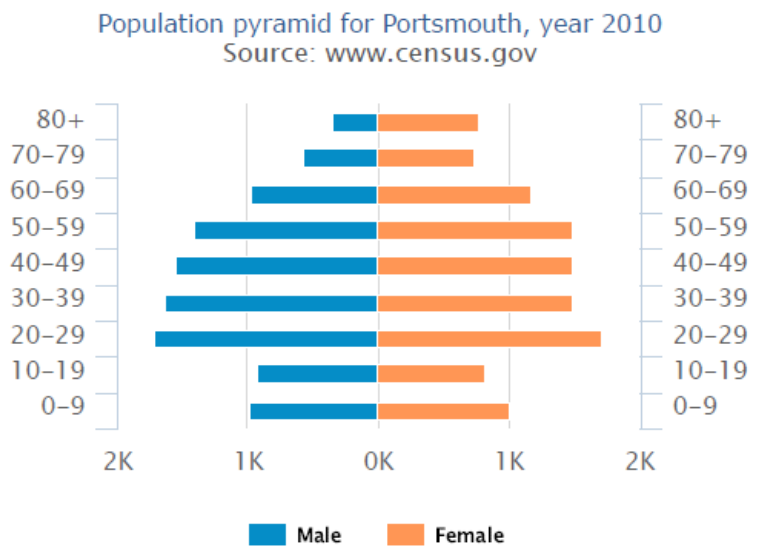
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

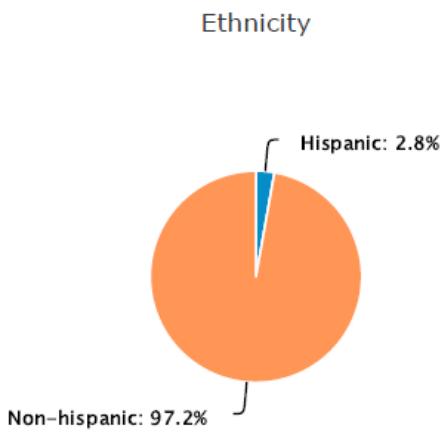
Median age: **40.3**

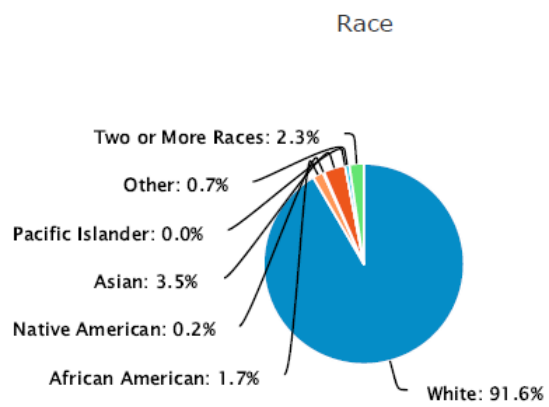
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **5.6%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Portsmouth they may indicate a

National Average: **12.7%**

Speak English less than very well: **1.5%**

National Average: **8.7%**

Social Indicators

Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Portsmouth that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

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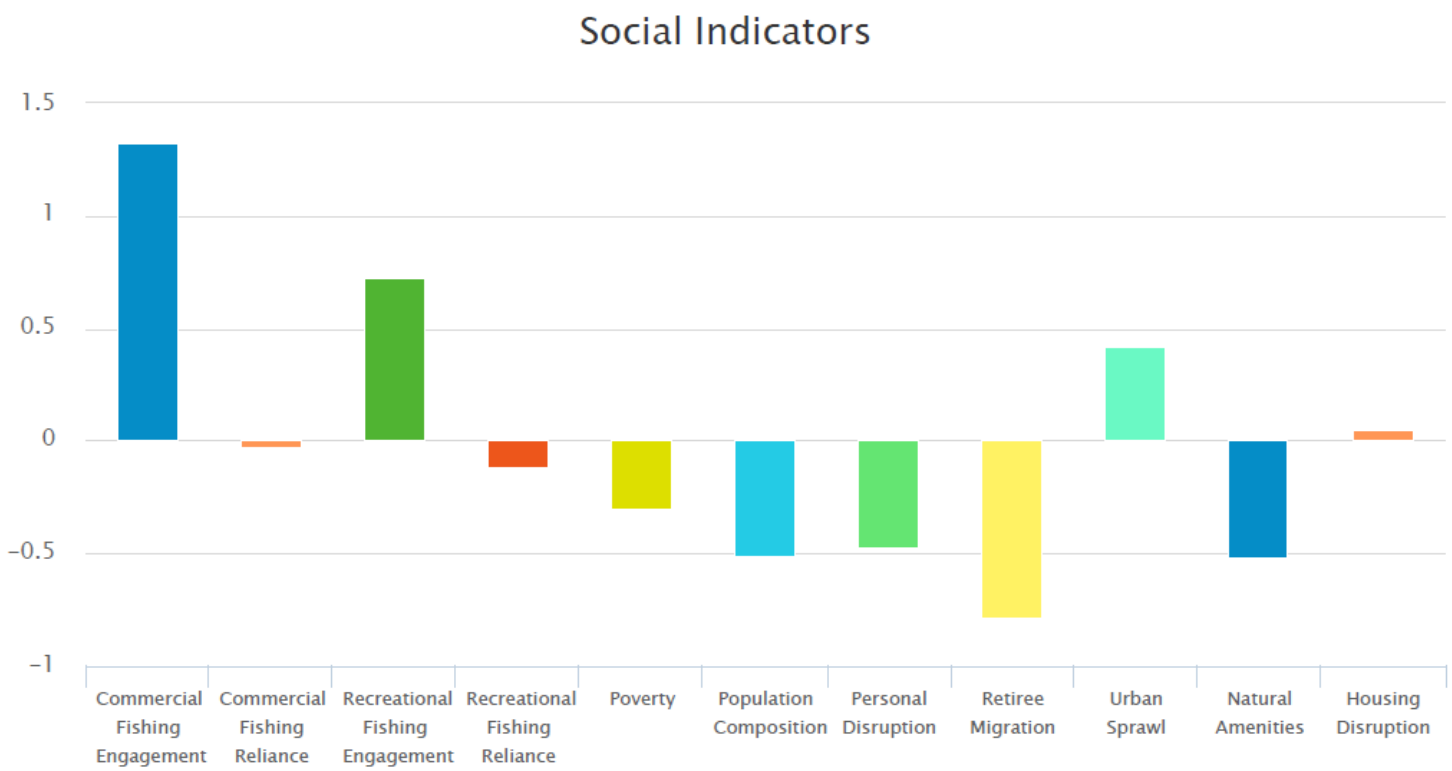


[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

Gloucester, MA

Where is Gloucester located?

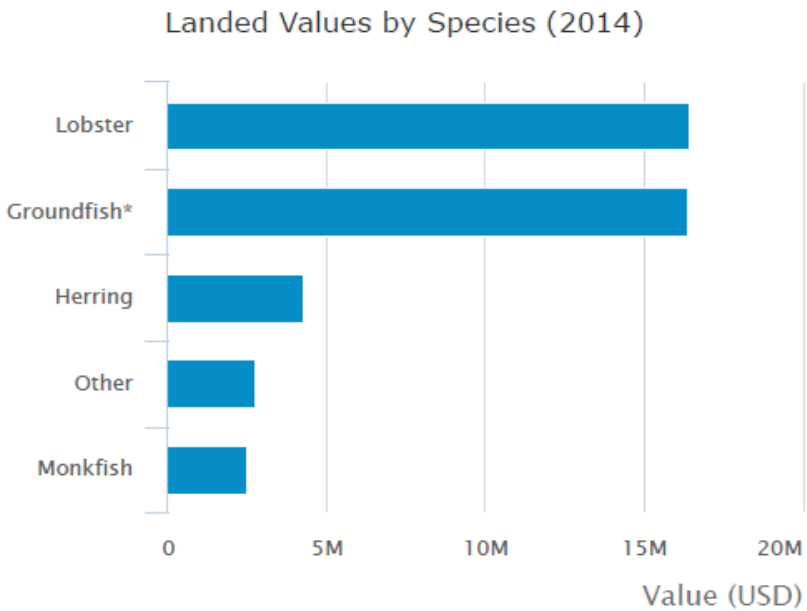
Gloucester is a town with a population of 28,789 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

What species are landed in Gloucester?

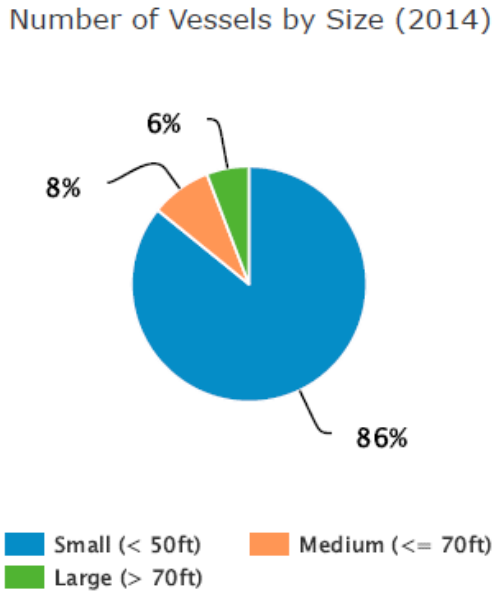
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Gloucester?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

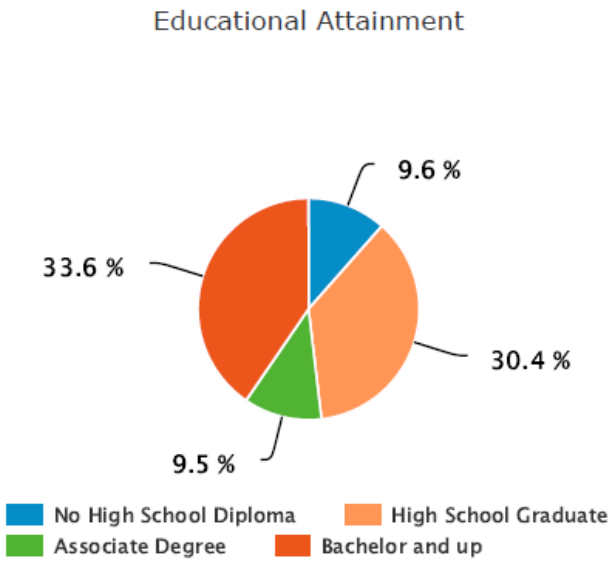


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

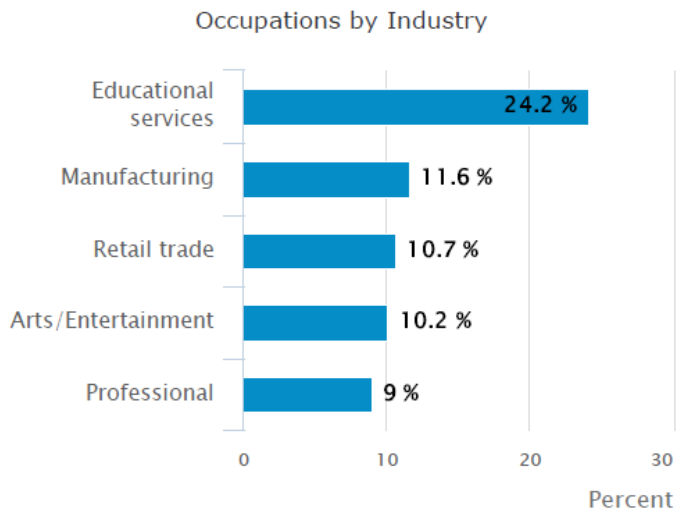
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local community



How do people make a living in Gloucester?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **4%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$60,506.00**

National Average: **$51,914.00** (2011)

Individuals in Gloucester living in poverty: **7.8%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job

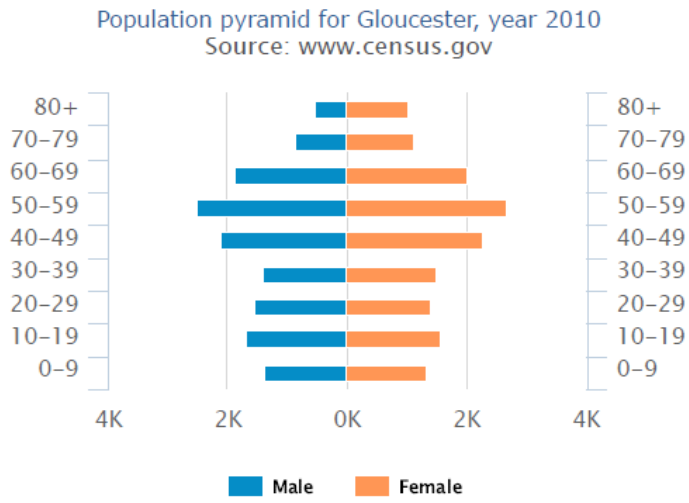
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

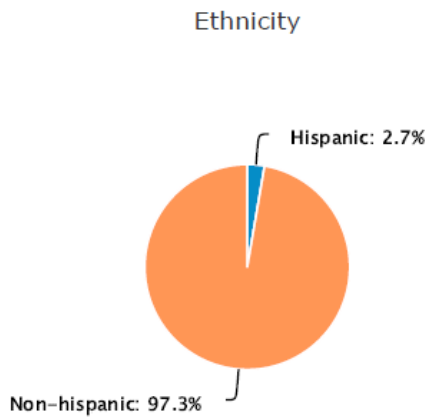
Median age: **46.4**

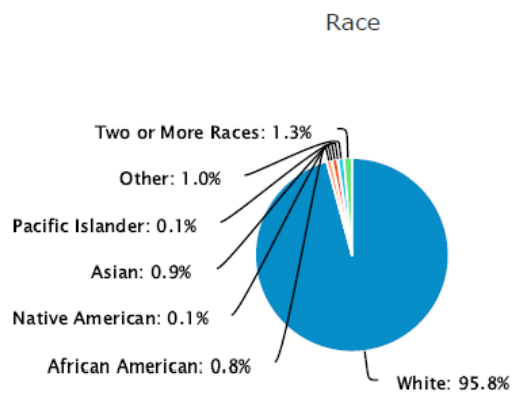
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: 7%

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Gloucester they may indicate a

National Average: **12.7%**

Speak English less than very well: **4%**

National Average: **8.7%**

Social Indicators

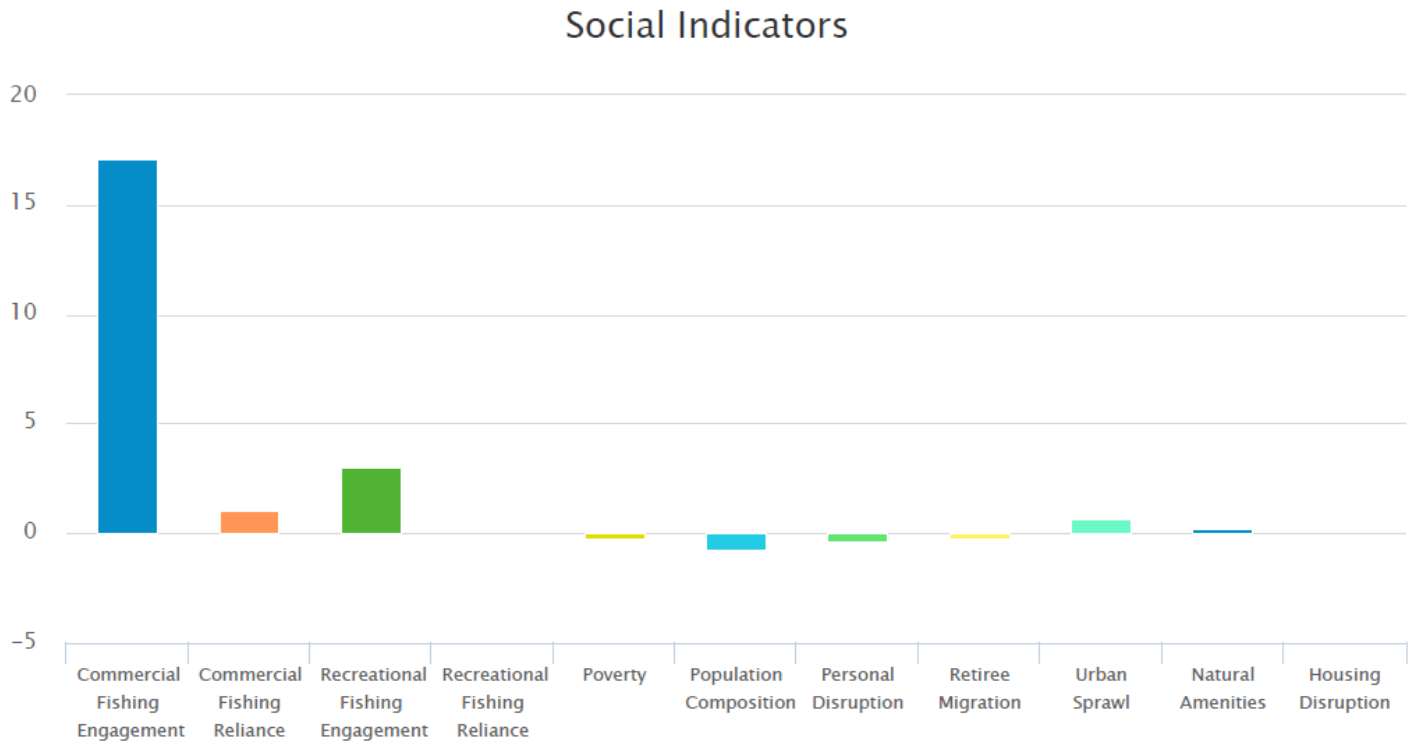
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Gloucester that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

New Bedford, MA

Where is New Bedford located?

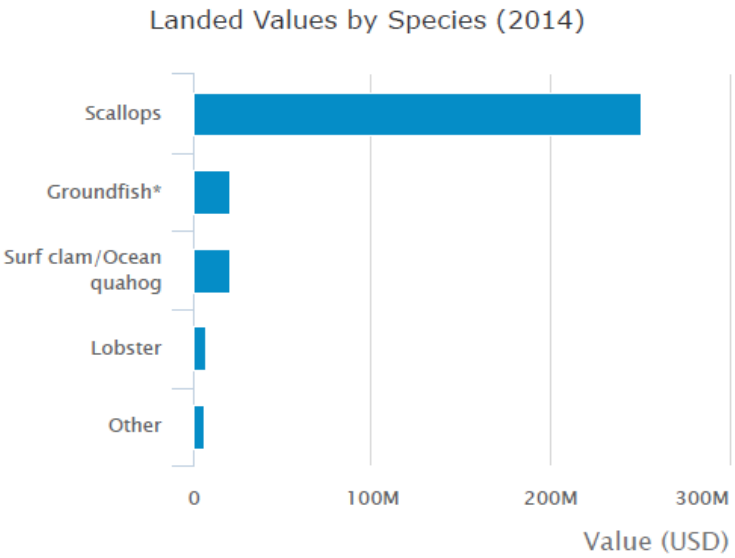
New Bedford is a town with a population of 95,072 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

What species are landed in New Bedford?

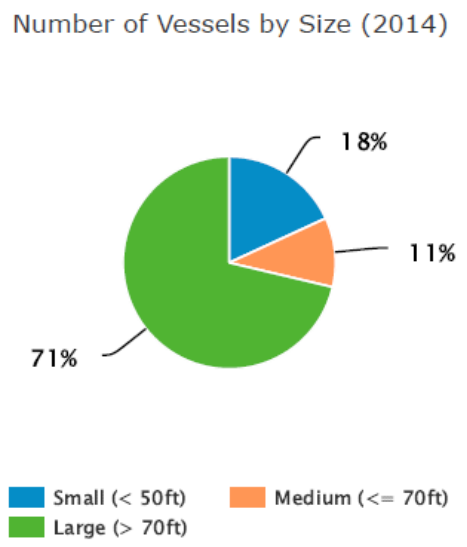
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in New Bedford?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

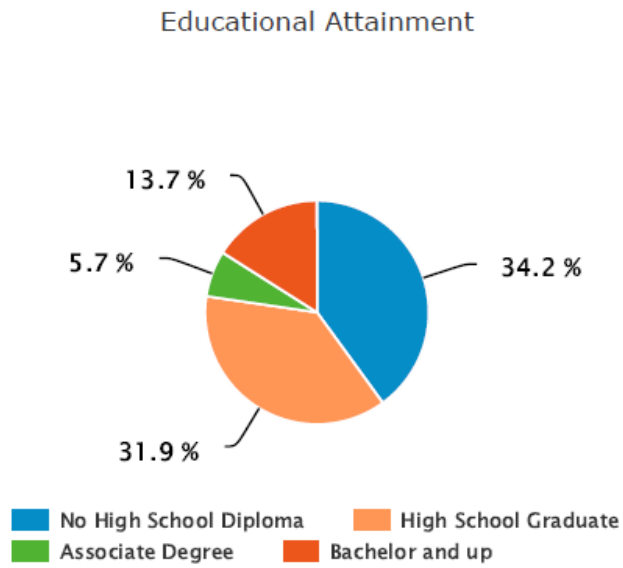


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

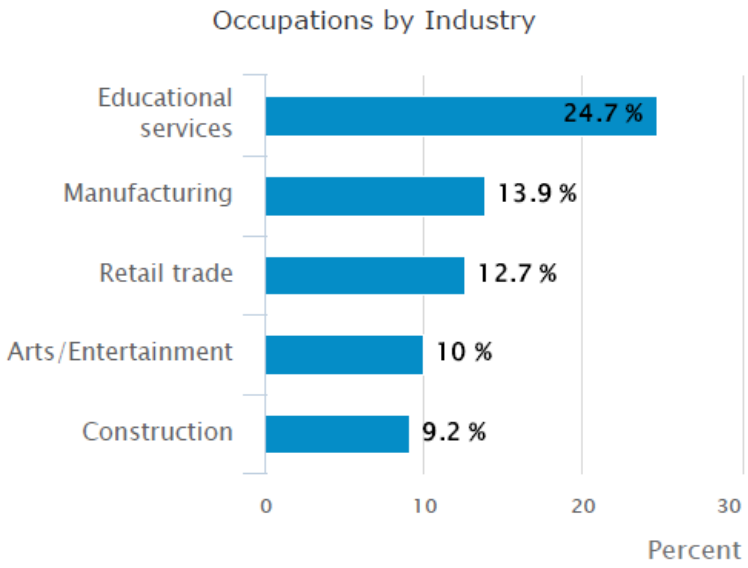
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in New Bedford?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **6.2%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$36,172.00**

National Average: **$51,914.00** (2011)

Individuals in New Bedford living in poverty: **22.7%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job opportunities in fishing-related and other local

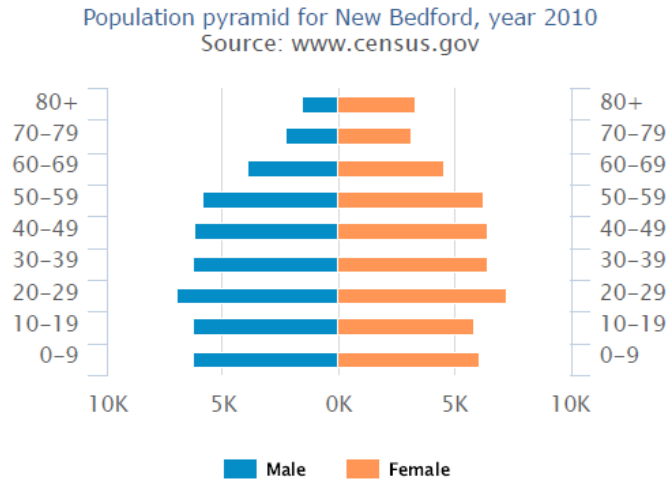
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work

large population of young people, on the other hand, may indicate the presence of universities or a military base.

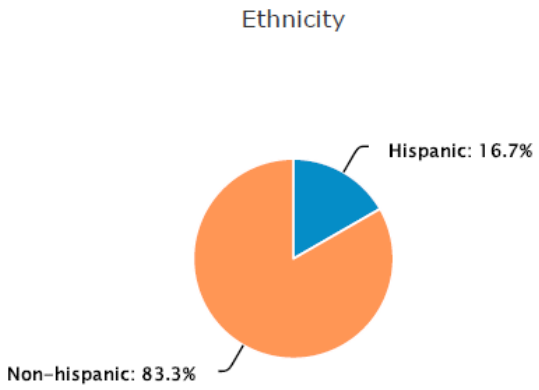
Median age: **36.6**

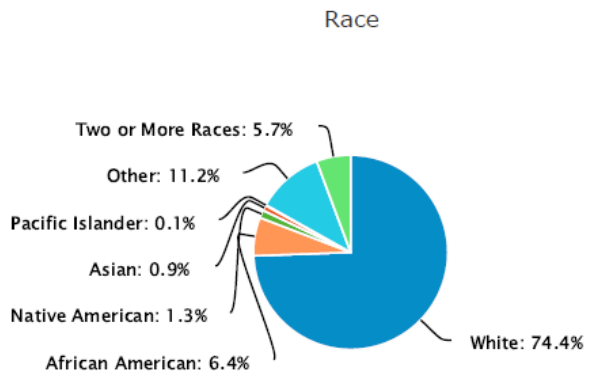
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **20%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in New Bedford they may indicate a

National Average: **12.7%**

Speak English less than very well: **17.2%**

National Average: **8.7%**

Social Indicators

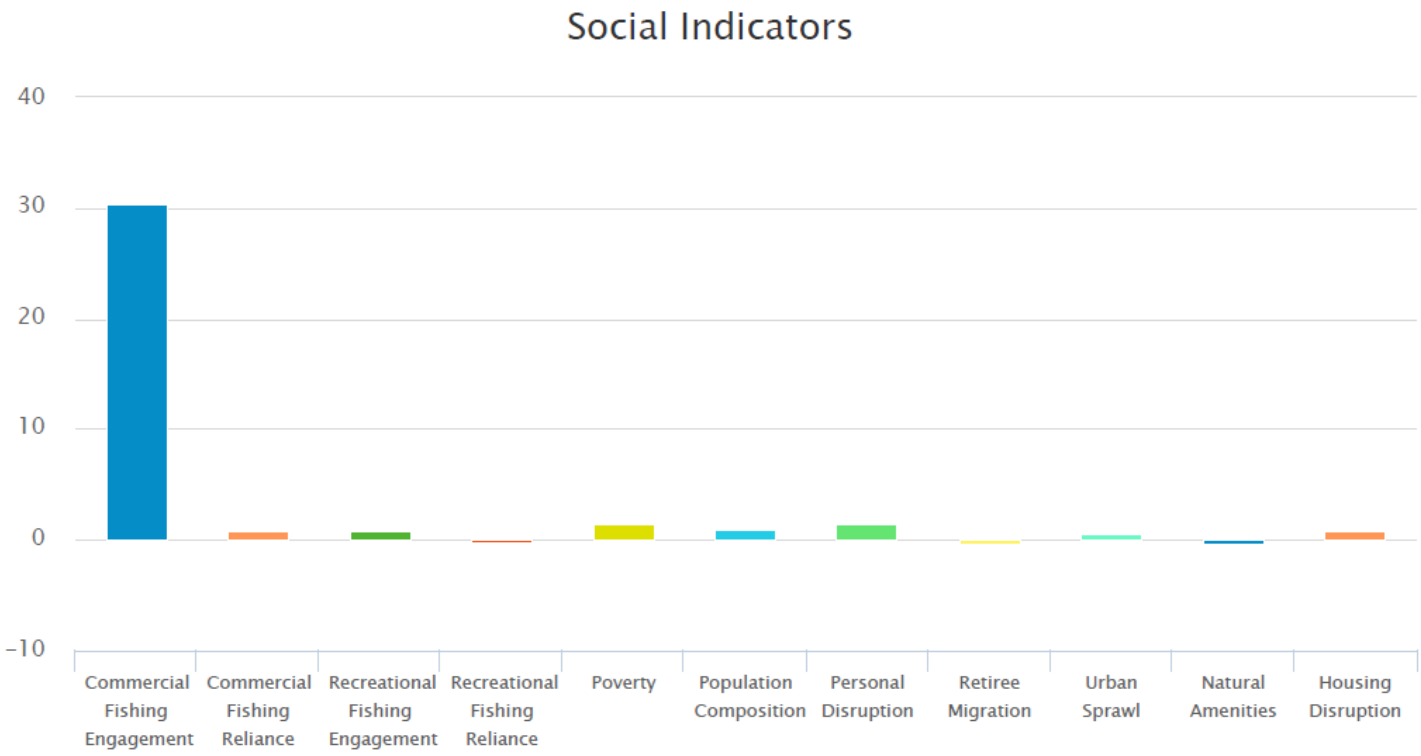
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for New Bedford that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

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Northeast Fisheries Science Center

Social Sciences Branch

Rockport, MA

Where is Rockport located?

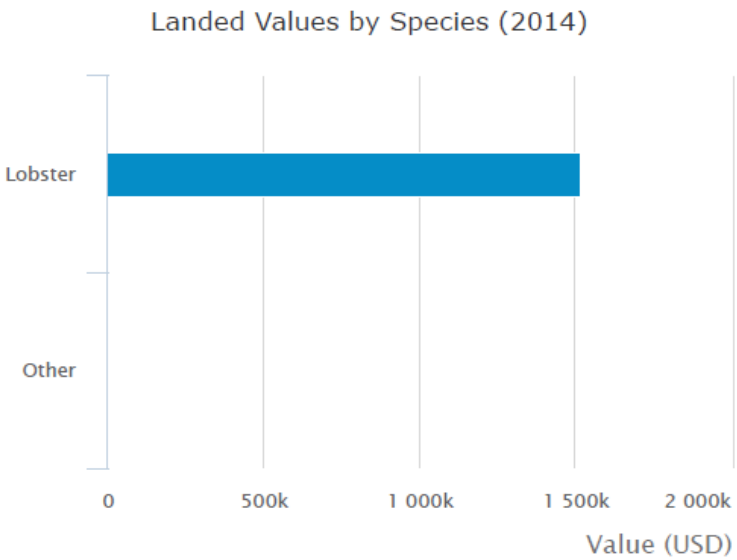
Rockport is a town with a population of 6,952 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

What species are landed in Rockport?

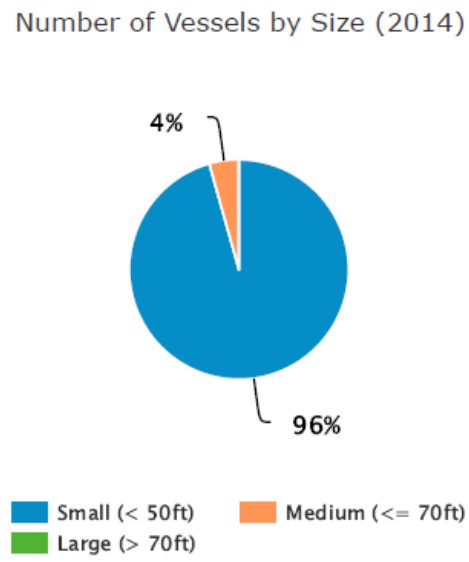
The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Rockport?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

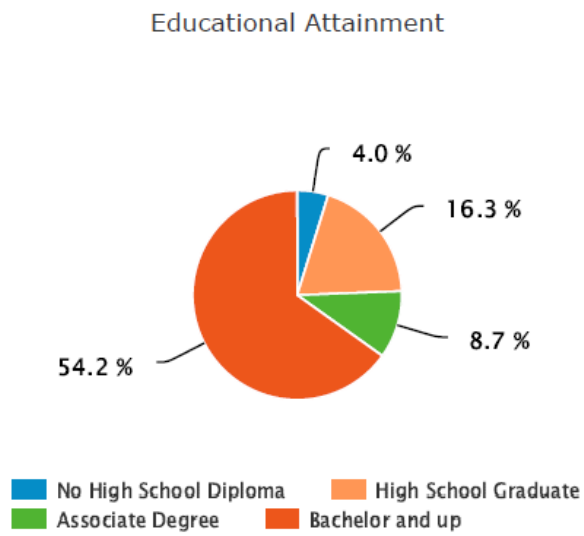


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

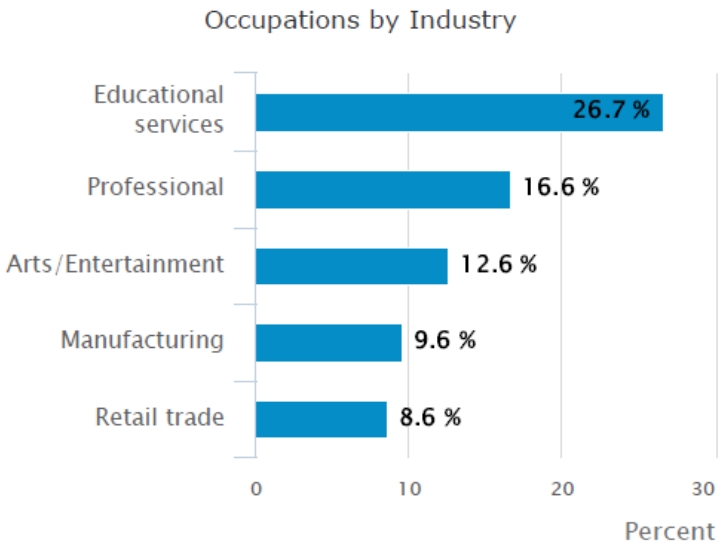
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Rockport?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **5.2%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$70,625.00**

National Average: **$51,914.00** (2011)

Individuals in Rockport living in poverty: **3.7%** The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job opportunities in

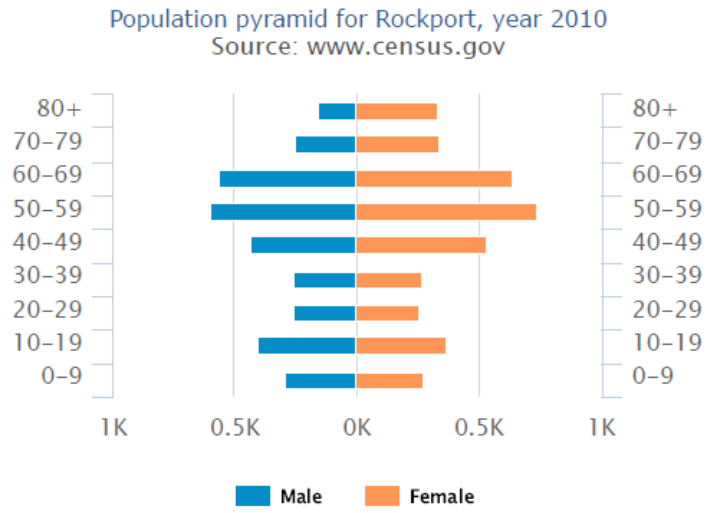
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

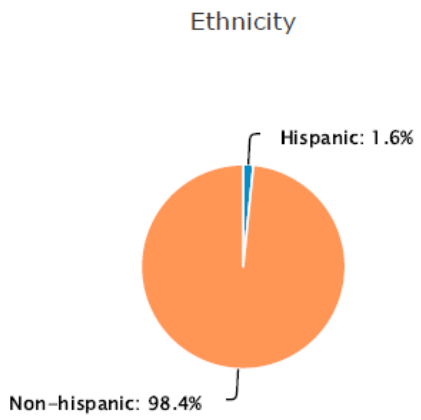
Median age: **51.2**

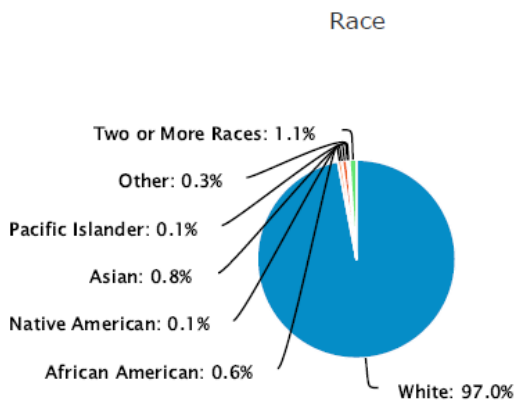
National median: **37.2**



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **3.9%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Rockport they may indicate a

National Average: **12.7%**

Speak English less than very well: **1.1%**

National Average: **8.7%**

Social Indicators

Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Rockport that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

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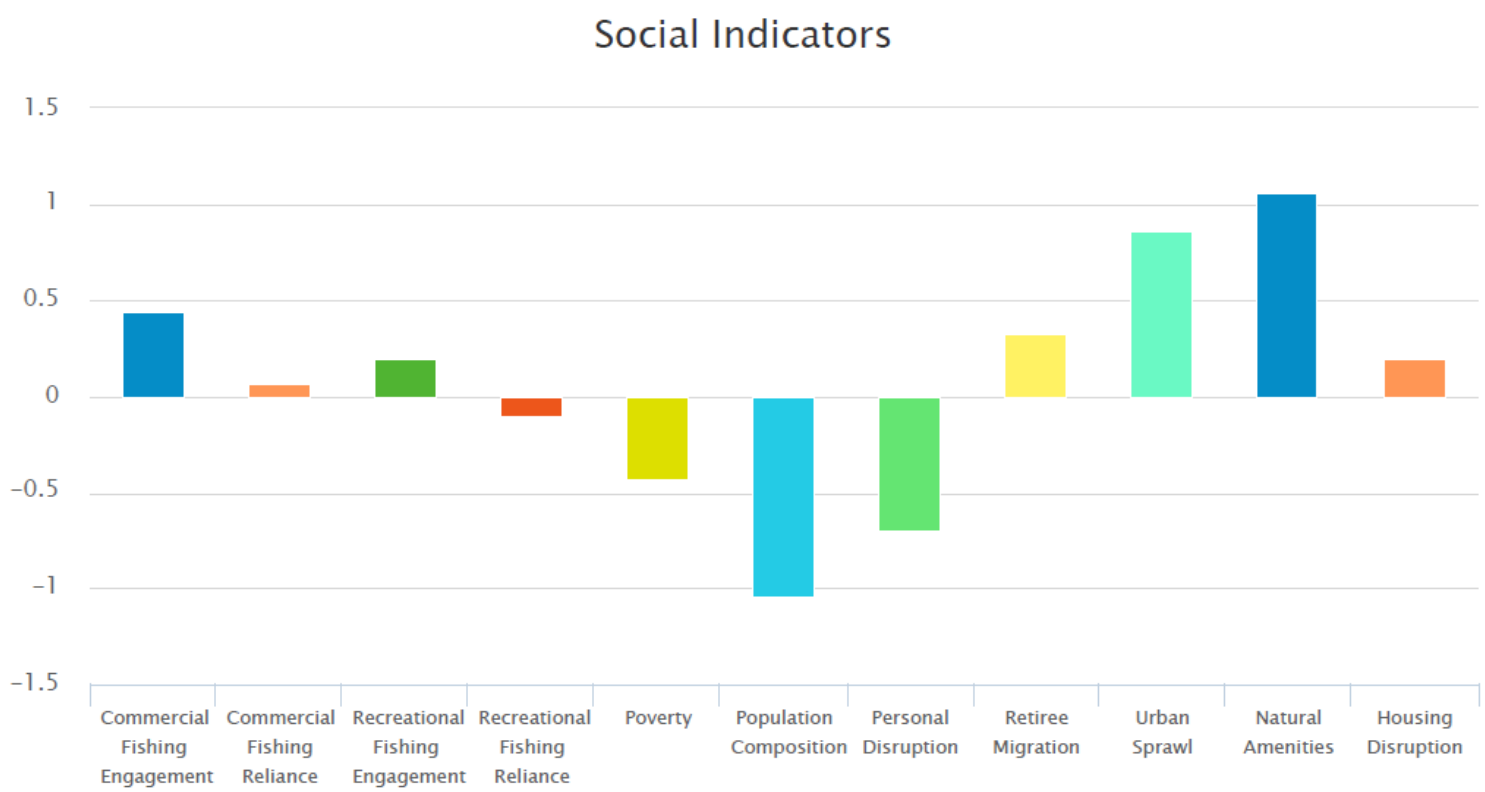

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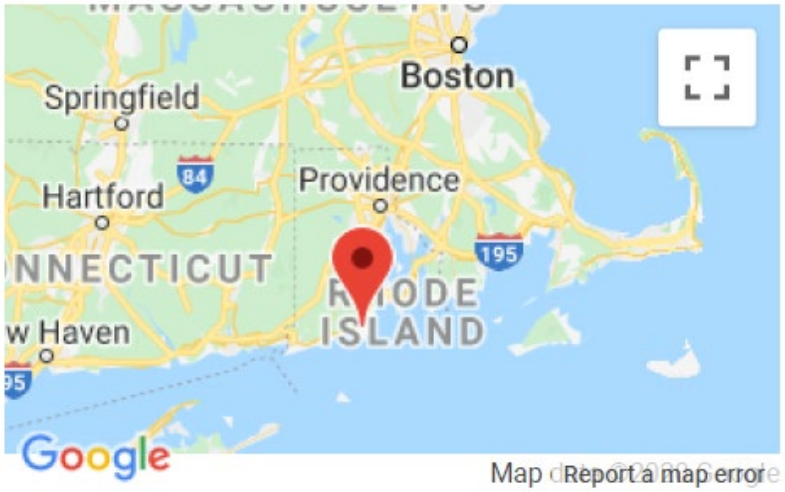
[2]Categories available are: Less than 9th grade; 9th to 12th grade, no diploma; High school graduate (includes equivalency); Some college, no degree; Associate's degree; Bachelor's degree; Graduate or professional degree.

Northeast Fisheries Science Center

Social Sciences Branch

Point Judith/Narragansett, RI



Where is Point Judith/Narragansett located?

Point Judith/Narragansett is a town with a population of 15,868 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum.

Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers. However, increasing urbanization can also mean greater pressure to

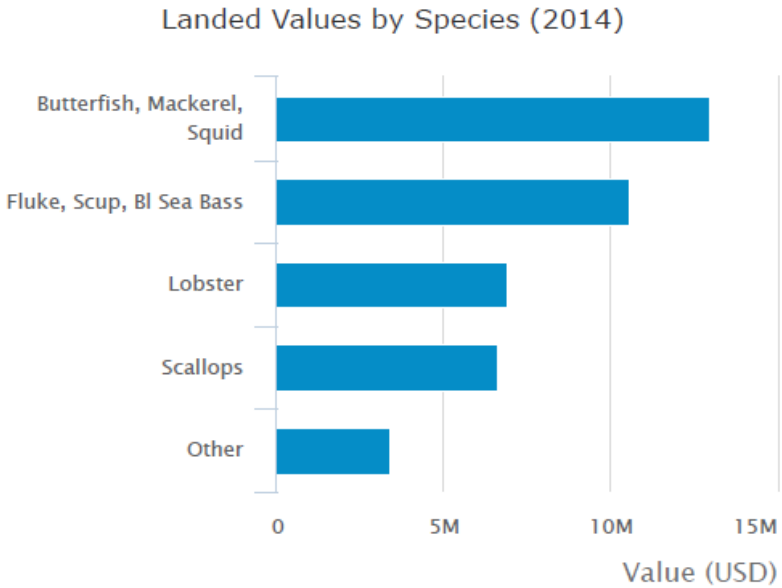
Involvement in Fisheries

What species are landed in Point Judith/Narragansett?

The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

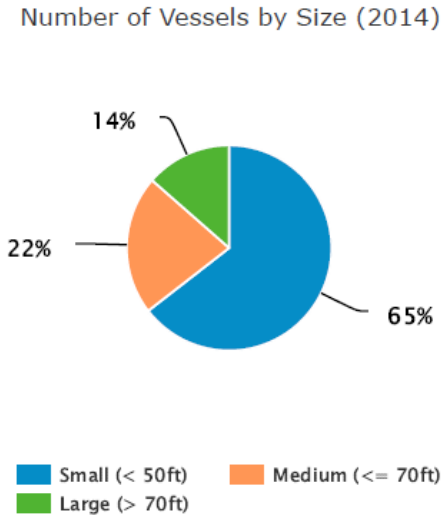
*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.

**Whiting includes red hake ocean pout black whiting whiting



What are the characteristics of the fishing vessels in Point Judith/Narragansett?

The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

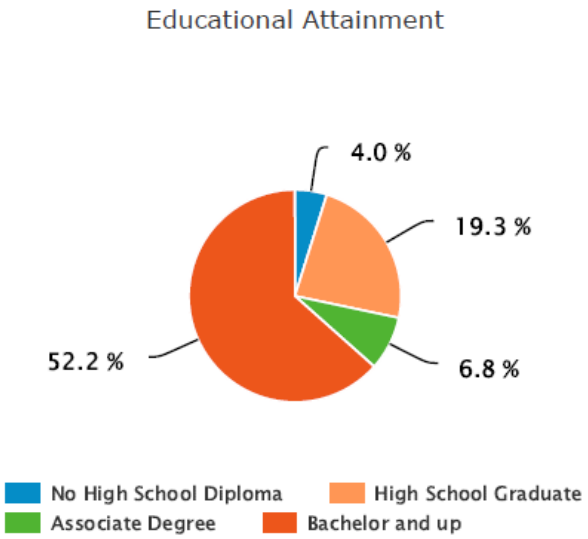


Apart from the lobster fleet, smaller boats also tend to catch a broader range of species where their larger counterparts are more specialized (e.g. limited access scallop boats and herring pair trawlers). All these characteristics help illuminate the

Demographic Attributes

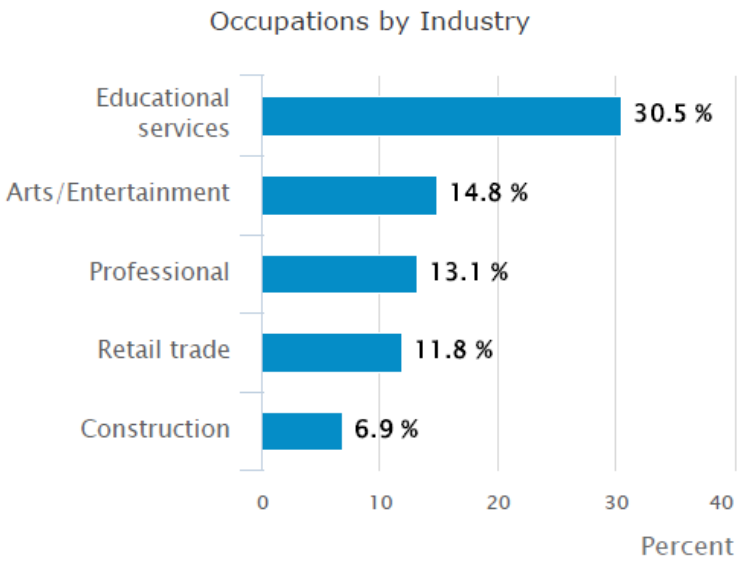
Educational Attainment

The level of educational attainment in a community is associated with issues important for community development, such as income and poverty levels, unemployment rates, and local participation in community activities.



How do people make a living in Point Judith/Narragansett?

Just as the range of fish species harvested by town residents speaks to their ability to adapt to environmental change, the diversity in local occupations indicates the ability of a community to adapt to economic changes, including changes in the local fishing economy. Is there one predominant industry, for instance, or is there a range of economic opportunities? How many occupations are available that offer incomes similar to fishing or require skills and education common to the average fisherman? How many jobs are available that would provide a working



Unemployment Rate: **3.3%**

National Rate: **7.9%***

The unemployment rate in a community is one indicator of the level of opportunity that may exist for fishermen who lose their jobs to find alternative ways of making a living. The unemployment rate may also indicate the desirability of fishing in the

Median Household Income: **$57,906.00**

National Average: **$51,914.00** (2011)

Individuals in Point Judith/Narragansett living in poverty: **17.2%**

The poverty threshold for an individual is defined by the US Census for 2010 as $11,139. The percentage of a town's population living under this economic threshold is an indicator of the residents' ability to adjust to loss of income and job opportunities in fishing-related and other local

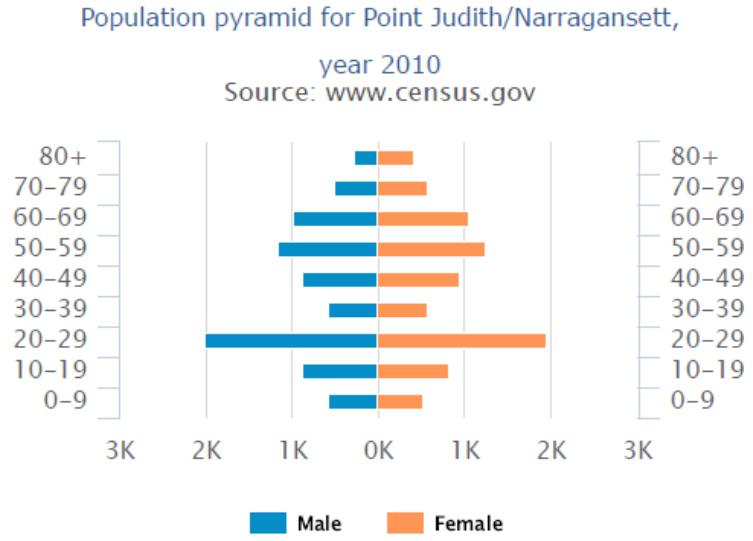
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work

large population of young people, on the other hand, may indicate the presence of universities or a military.

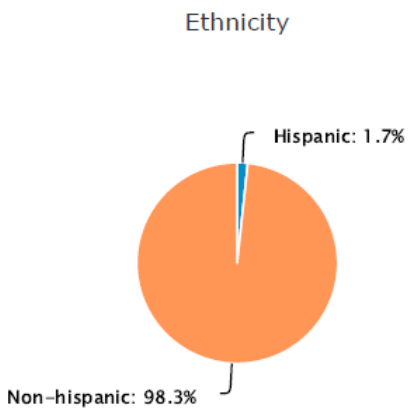
Median age: **40.4**

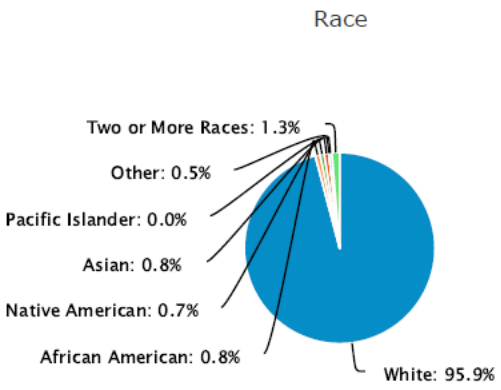
National median:



Ethnicity and Race

These factors give a sense of the cultural context of the community, and the relationship of fishing families and groups to the community in which they live. Is this community racially and ethnically diverse? In the northeast region, ethnic diversity in coastal communities tends to be higher in the Mid Atlantic than in New England, though there are significant exceptions in some fishing ports. Moreover, certain ethnic groups have long been associated with fishing in various specific ports throughout the region.





Language and Marginalization

Foreign Born: **2.7%**

Fishing regulations can be complex. Documents are rarely translated from English into other languages. Lack of strong English language skills could affect participants' ability to engage effectively in the fisheries management process. While these numbers correspond to the overall community in Point Judith/Narragansett they may indicate a population needing assistance in

National Average: **12.7%**

Speak English less than very well: **1.8%**

National Average: **8.7%**

Social Indicators

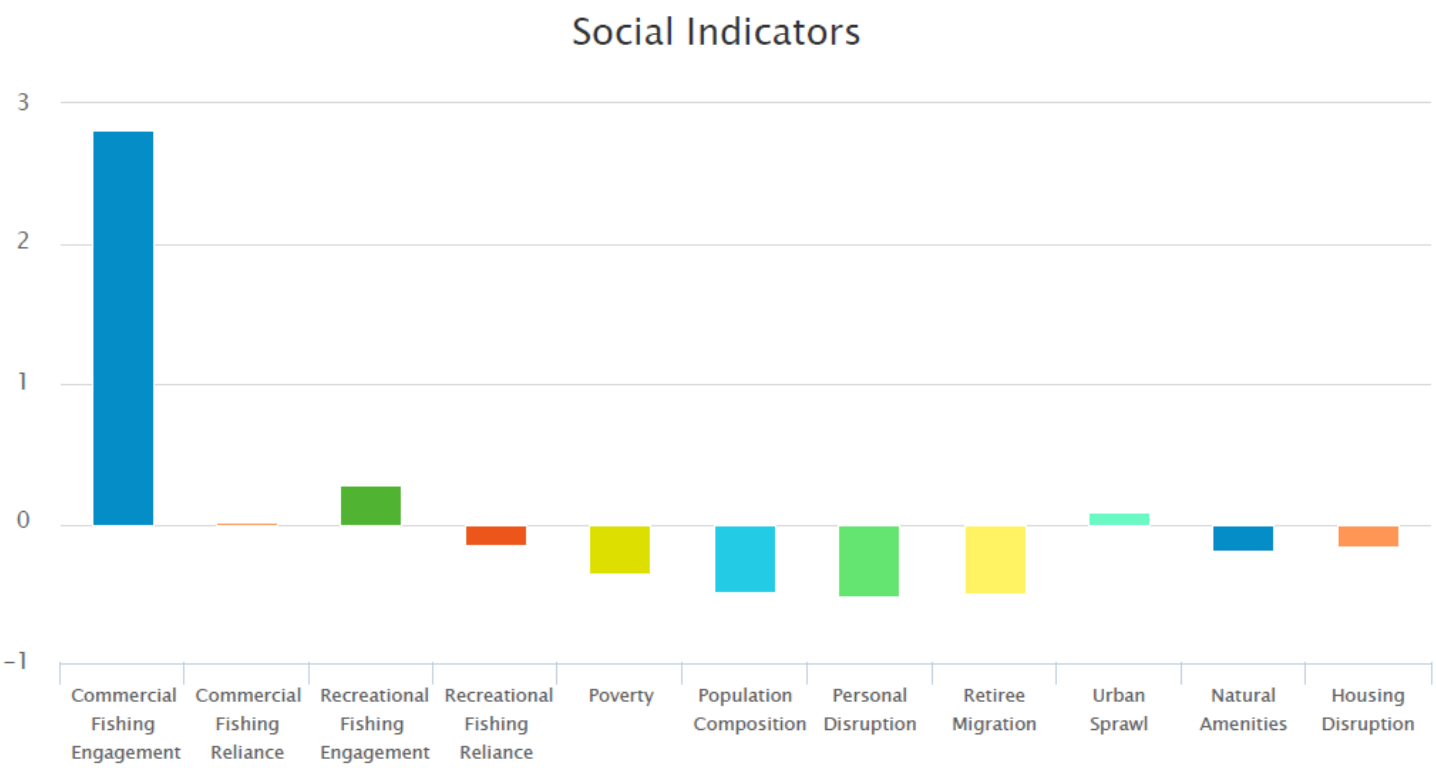
Social indicators are quantitative measures that describe the well-being of communities and are used to describe social phenomena over time. Below are a series of indices for Point Judith/Narragansett that provide measures of fishing engagement and reliance, and social vulnerability. An index combines variables of interest and are used to evaluate community well-being in terms of social, economic and psychological welfare.

Fishing engagement and reliance indices portray the importance or level of dependence of commercial or recreational fishing to coastal communities. The indices include: Commercial Engagement, Commercial Reliance, Recreational Engagement and Recreational Reliance.

Social vulnerability indices represent social factors that can shape either an individual or community's ability to adapt to change. These factors exist within all communities regardless of the importance of fishing. The indices include: Poverty, Population Composition, and Personal Disruption.

Gentrification Pressure indices characterize those factors that, over time may indicate a threat to the viability of a commercial or recreational working waterfront, including infrastructure. The indices include: Retire Migration, Urban Sprawl, Natural Amenities and Housing Disruption.

The factor scores for each index are normalized so that zero is the mean. Therefore, a higher value implies



[1]The Census Bureau currently identifies two types of urban areas: urbanized areas of 50,000 or more people, and urban clusters of at least 2,500 and less than 50,000 people, both representing densely developed territory and encompassing residential, commercial, and other non-residential urban land uses. Rural areas are all those outside of urbanized areas and urban clusters. For more information see: **http://blogs.census.gov/2012/04/04/how-do-we- measure-urban-areas** and **http://www.census.gov/geo/www/ua/2010urbanruralclass.html#lists**.

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Northeast Fisheries Science Center

Social Sciences Branch

Newport, RI

Where is Newport located?

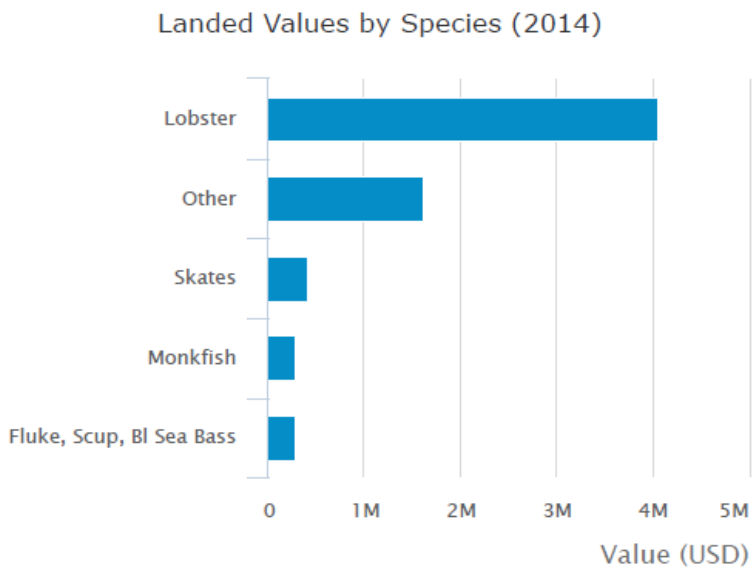
Newport is a town with a population of 24,672 and classified by the census as falling within an urbanized area. Rural to urban is really a continuum. Increasing urbanization indicates that a community has more jobs overall, more kinds of jobs, and more services like hospitals, social workers and job training centers.
However, increasing urbanization can also mean

Involvement in Fisheries

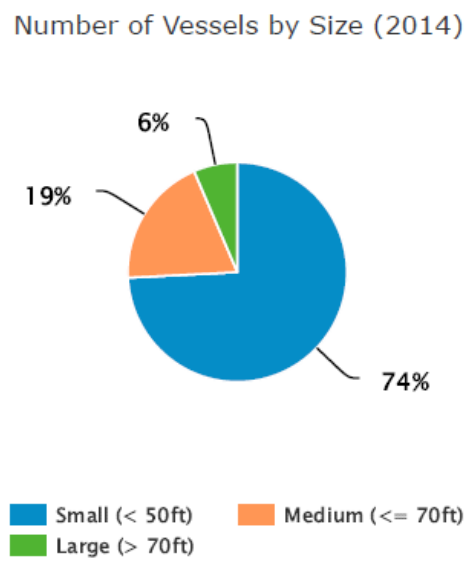
What species are landed in Newport?

The landings associated with a fishing community tell us what species are important to that community. The diversity of species caught also is indicative of a community's ability to adapt to changing environmental conditions (e.g. populations of specific fish stocks) or changes in fishing regulations that restrict access to resources.

*Groundfish includes cod, winter fl.,witch fl.,yellowtail fl., am.plaice, haddock, white hake,redfish, pollock.



What are the characteristics of the fishing vessels in Newport?



The number of fishing vessels in a given port provides a sense of the scale of fishing in that port. Where a large port may serve as the homeport for hundreds of vessels, a smaller one may only have a handful. The number of vessels also may provide a rough sense of the number of fishing-related jobs (e.g. crew positions, jobs in shoreside industries) available in a given location. Size also matters. Larger vessels can travel farther offshore and stay out for longer periods more easily than smaller vessels. These differences also affect family life. Smaller dayboat fishermen tend to return home every day whereas fishermen on

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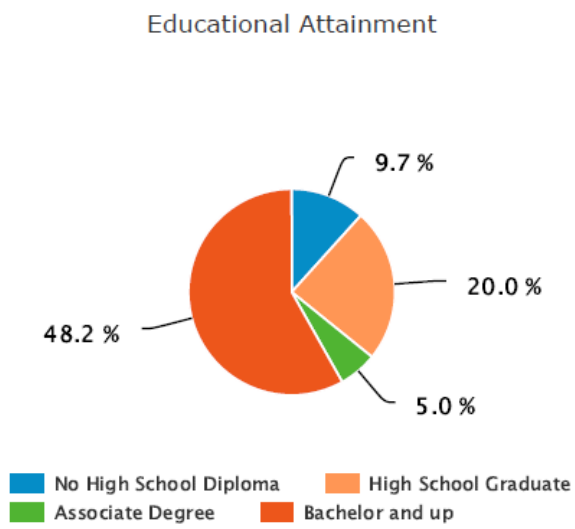

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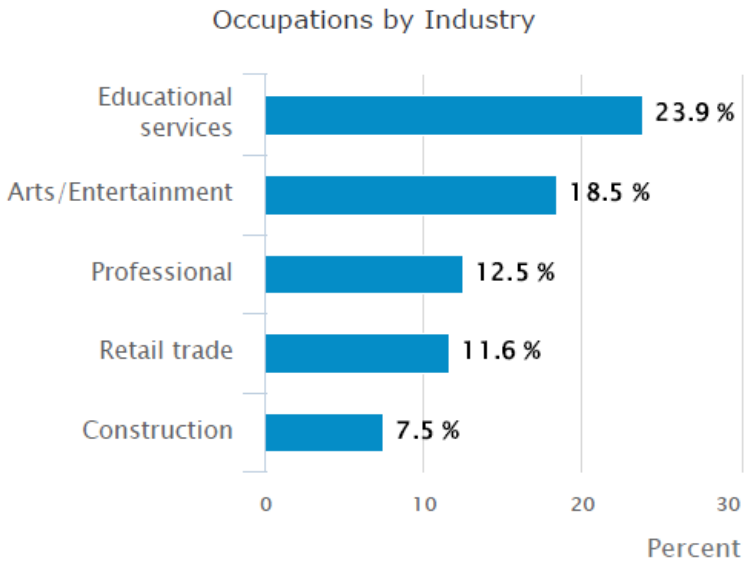

Unemployment Rate: **2.2%**

National Rate: **7.9%***

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Median Household Income: **$57,640.00**

National Average: **$51,914.00** (2011)

Individuals in Newport living in poverty: **10.2%**

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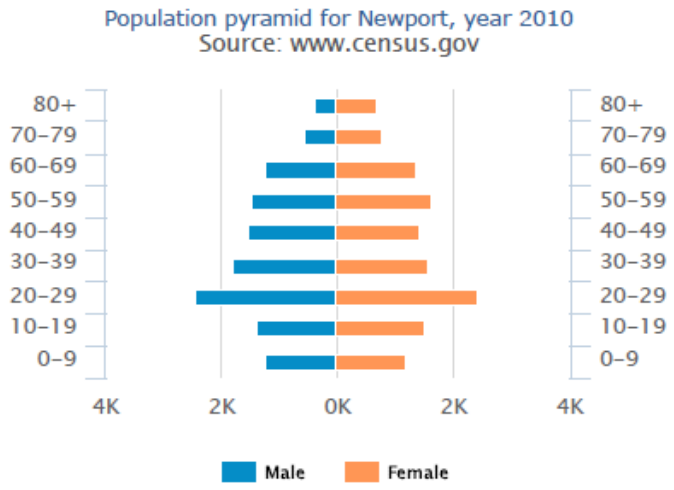
Age structure of residents

Age structure provides potential indications of many broader community issues and institutions. A large number of older residents may be associated with a retirement community or an out-migration of young people. For many fishing communities, an aging population can indicate gentrification, a process that may affect fishermen's access to the waterfront. In some remote coastal communities, people in their late teens or early twenties may leave to look for work or pursue an education outside of their community.

may indicate the presence of universities or a military base.

Median age: **36.4**

National median: **37.2**



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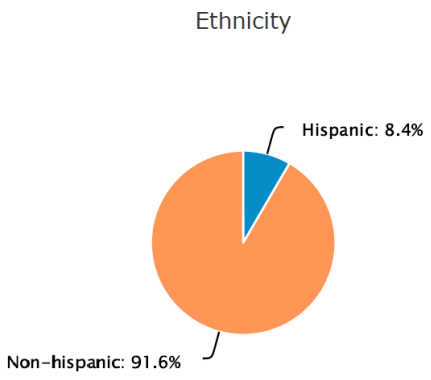

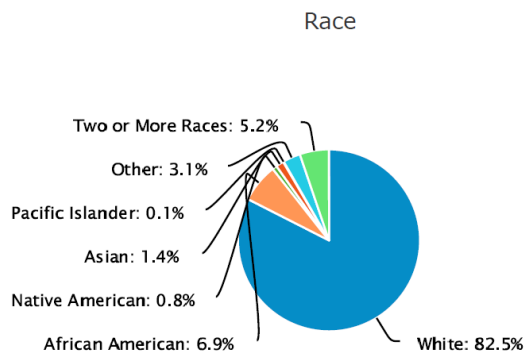

Language and Marginalization

Foreign Born: **7.6%**

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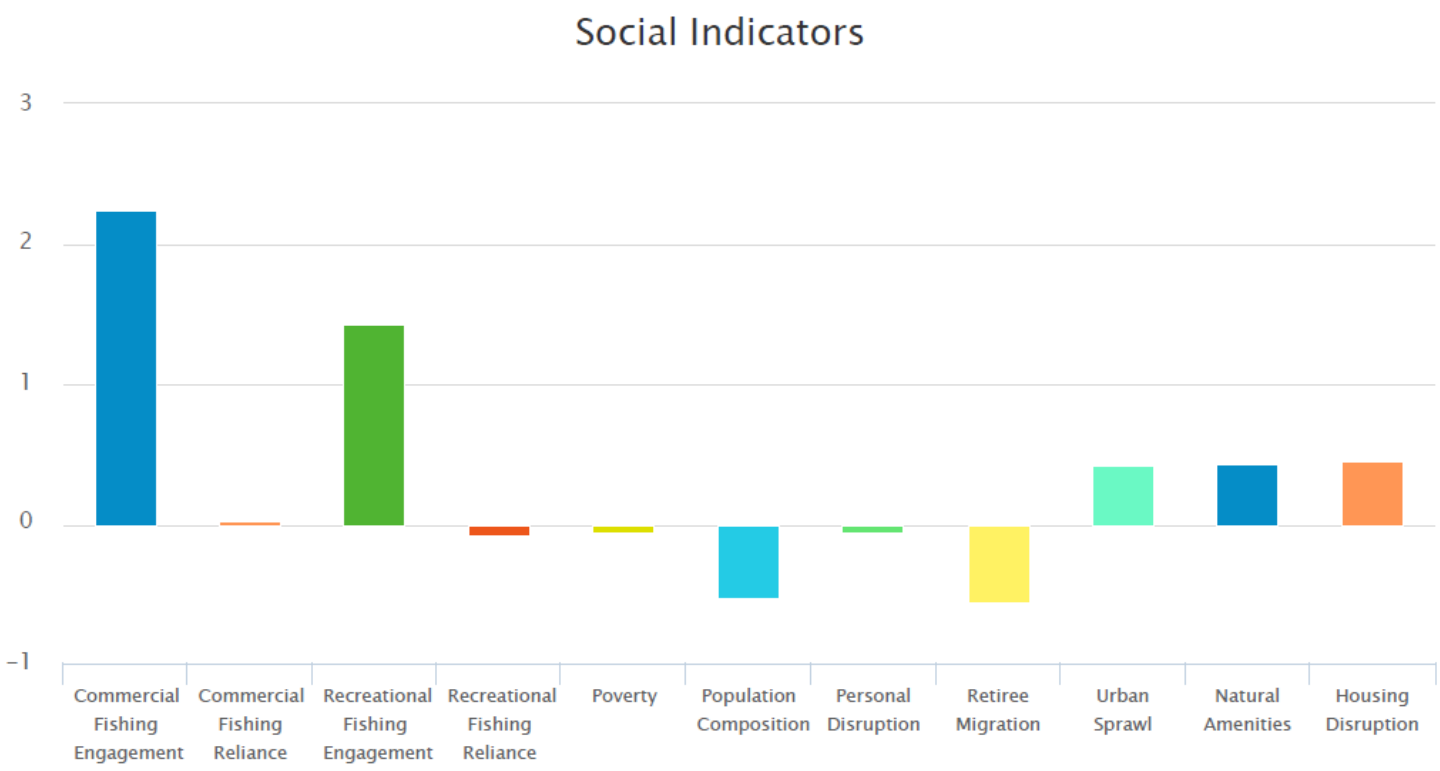

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1. INTRODUCTION

BACKGROUND

Commercial fishing gear can inadvertently pose a risk of entanglement to protected marine species, including whales. Along the Atlantic coast of the United States, the risk that whales may become entangled is of particular concern for four populations: the western North Atlantic stock of right whales; the Gulf of Maine stock of humpback whales; the western North Atlantic stock of fin whales; and the Canadian eastern coastal stock of minke whales. The effects of entanglement on members of these species can range from no permanent injury to serious injury or death.

Right whale and fin whale stocks are listed as endangered species under the Endangered Species Act (ESA); three species – Right, humpback, and fin whales – are protected under the Marine Mammal Protection Act (MMPA). Pursuant to the ESA and the MMPA, the National Marine Fisheries Service (NMFS) – with guidance from the Atlantic Large Whale Take Reduction Team (ALWTRT) – is responsible for the development and implementation of measures to reduce the risks of entanglement for these species. These measures are embodied in the Atlantic Large Whale Take Reduction Plan (ALWTRP). The Plan seeks to reduce the risks of entanglement through a set of gear modifications and other requirements that affect commercial fishing operations in Atlantic waters.

A continuing concern in the evolution of the ALWTRP is the risk of entanglement in vertical line; i.e., buoy lines associated with lobster trap/pot gear, other trap/pot gear, or gillnet gear. To better understand these risks and the potential impact of management measures designed to address them, NMFS requires information on the amount of vertical line used by various fisheries, as well the extent to which that line is fished in areas and during seasons in which whales are likely to be present.

The model described herein – the Vertical Line/Co-occurrence Model – draws on a variety of sources to assist both NMFS and the ALWTRT in their efforts to improve the effectiveness of the ALWTRP. The model, developed under contract to NMFS by Industrial Economics, Incorporated (IEc), is designed to address the following types of questions:

- Where do the fisheries that are subject to the requirements of the ALWTRP operate?
- Where are concentrations of vertical line the greatest?
- Do whales frequent areas with high concentrations of vertical line?

The model contains information on a wide range of fixed gear fisheries, including a number of gillnet fisheries, the American lobster fishery, the blue crab fishery, and other trap/pot fisheries. Through the integration of information on fishing activity and gear configurations, the model analyzes geographic and temporal variations in fishing effort and the distribution of fishing line in waters subject to the ALWTRP. The model also incorporates information on whale sightings and identifies areas and times at which whales and commercial fishing gear are likely to co-occur. The final product is a set of indicators that

provide information on factors that contribute to the risk of entanglement at various locations and at different points in time.

Development of the model began in 2005; since then, NMFS has directed a series of expansions and improvements (see timeline below). This document describes the latest version of the model and the methods and data employed to support preparation of NMFS' current proposal to incorporate new requirements into the ALWTRP.[1]

DATA LIMITATIONS AND UNCERTAINTY

The objective of the ALWTRP is to reduce the number of large whales that die or suffer serious injuries as the result of incidental entanglement in commercial fishing gear. In light of this goal, it is important to emphasize that the model does not provide a basis for estimating the frequency with which entanglements may occur, nor does it provide a basis for estimating the probability that an entanglement will result in a serious injury or death. The risk of serious injury or mortality due to entanglements is likely to be a function of many factors. For example, the *probability* that an entanglement will occur may depend on the amount of gear deployed in a particular area, the number of whales that are present, whether the gear is actively tended, the behavior in which a whale is engaged when gear is encountered (e.g., whether the whale is feeding), or other factors. Similarly, the risk of injury or death *in the event of an entanglement* may depend on the characteristics of the whale involved (species, size, age, health, etc.), the nature of the gear (e.g., whether the gear incorporates weak links designed to help a whale free itself), human intervention (e.g., the feasibility or success of disentanglement efforts), or other variables. The interrelationships among these factors are not fully understood, and the data needed to provide a more complete characterization of risk are not readily available. In light of these limitations, the model does not attempt to predict the frequency or severity of entanglements. Instead, it provides relative indicators of (1) the potential for entanglements to occur at different times and locations and (2) the effect that new regulatory requirements may have on the potential for entanglements to occur. These indicators do not measure entanglement risks or changes in entanglement risks; however, they provide a relative sense of risks in different areas, as well as insight to the potential impact of alternative regulatory requirements on those risks.

In addition to the limitations noted above, the quality of the information the model provides is constrained by limitations in the data it employs. Because the data underlying the model were derived from disparate sources, including fishing reports, survey data, and expert judgment, it is not possible to generate statistical confidence intervals that characterize the uncertainty in the model's output. Nonetheless, it is important to recognize several key sources of uncertainty:

- **The model draws on multiple sources of data to characterize commercial fishing activity and gear use.** There is no single, uniform source of data on commercial fishing activity in waters subject to the ALWTRP. Permitting and reporting requirements vary by political

[1] This documentation reflects updates to the Co-occurrence/Vertical Line Model carried out in support of ongoing NMFS rulemakings. The data and methods used to support the analysis of regulations enacted in 2014 and 2015 are addressed in "Draft Technical Documentation for the Vertical Line Model," Prepared for NOAA National Marine Fisheries Service by Industrial Economics, Inc., March 2014. The 2014 documentation provides outcomes of supplementary validation and sensitivity analyses conducted at the time in response to a Center of Independent Experts peer review. The 2020 documentation focuses on the current application of the model and does not recreate prior validation and sensitivity analyses. In addition, the 2014 documentation presents several appendices that, for reference, provide monthly baseline model outputs. The 2020 documentation provides several examples of baseline model outputs, but for brevity does not present the full suite of outputs.

jurisdiction, with states regulating activity in state waters and NMFS regulating activity in Federal waters. As a result, the available data on commercial fishing activity vary considerably across jurisdictions.

- **Data on fishing activity and gear configurations in state waters vary in specificity and quality.** IEc and NMFS worked directly with state marine resource officials to develop defensible modeling assumptions for vessels fishing exclusively in state waters. For some states, key activity and gear configuration parameters are estimated based on reporting data (e.g., logbook data) submitted by fishermen in accordance with state requirements. For others, surveys are the primary source of this information. In some cases, these surveys are one-time efforts, while others are administered annually (e.g., recall surveys). Finally, for some states, the characterization of fishing activity is based upon the professional judgment of state fisheries experts. In several cases, the data are taken from a mix of sources (e.g., surveys and best professional judgment). Section 4 describes the data and processes employed to develop the key fishing parameters for each state covered in the model.
- **Federal lobster permits currently impose no trip reporting requirements.** Unlike Federal permits for other commercial fisheries, Federal lobster permits do not require their holders to report the location of fishing activity; as a result, information on the location of trips taken by vessels that hold Federal lobster permits is limited to those that also hold permits for other fisheries (these vessels must report the location of all fishing activity). In the absence of better data, the current version of the model employs several approaches to estimate the number of lobster vessels fishing in Federal waters, based on recommendations provided both by state fisheries administrators and the Northeast Fisheries Science Center (NEFSC). These revisions improve the temporal and geographic resolution of the model's characterization of lobster fishing activity in Federal waters; however, the absence of trip report data remains an important source of uncertainty, particularly in LMA 1, where the majority of non-reporting vessels operate. Section 4 provides details on the model's revised approach to characterizing the activity of Federal lobster vessels.
- **Sightings Per Unit Effort (SPUE) data provide a limited basis for characterizing the distribution of whales.** The model relies on effort-corrected sightings data to characterize the likely distribution of whales within the waters that are subject to the ALWTRP. The dataset, however, is neither geographically nor temporally comprehensive, adding uncertainty to the analysis of both baseline co-occurrence scores and the impact of alternative management measures. In particular, uncertainty arises from the inclusion of SPUE values in areas or at times with very low survey effort, as well as from the absence of SPUE values (and therefore, co-occurrence values) in areas or at times for which effort-adjusted survey data are unavailable. In addition, other sources of information (e.g., acoustic data or data on habitat conditions, such as the presence of prey species) suggest that whales may be present in places and at times at which no sightings have been recorded. Thus, the SPUE data are both an incomplete and imprecise indicator of the distribution of whales. Section 2 provides additional detail on the SPUE data.
- **The geographic precision of the model's presentation of co-occurrence scores may be overstated.** As described in greater detail in Section 3, the model employs effort-corrected whale sightings information and estimates of the concentration of vertical line in an area to generate a co-occurrence score. These scores are assigned on a discrete basis to individual grid

cells; this may imply a higher degree of geographic precision in characterizing the potential for an entanglement than the underlying data support.

VALIDATION OF GEAR CONFIGURATION ASSUMPTIONS

As discussed in detail in Section 4, the model employs a range of assumptions on the configurations of gear used in ALWTRP-regulated fisheries to estimate the number of buoy lines in the water column. IEc reviewed its assumptions on gear use with representatives of state fisheries management agencies, NEFSC, NMFS gear experts, and fishermen on the ALWTRT. In addition, IEc shared its assumptions in writing and through multiple presentations to the ALWTRT and the Atlantic States Marine Fisheries Commission (see the timeline below) so that all participants were given the opportunity to review and comment. Commenters' suggestions were taken into account in subsequent revisions to the gear configuration assumptions.

DEVELOPMENT TIMELINE

IEc began development of the Vertical Line Model in 2005. Since then the model has undergone numerous updates and revisions, many of which reflect the guidance and assistance of the ALWTRT. Members of the TRT provided information on fishing activity and gear configurations employed within state waters, as well as available data on sightings of endangered whales. Below, we present a brief timeline of the model's development, including formal presentations to the full TRT or its subgroups.

2005 - 2009. Initial methods development, working prototype, and data collection.

- Created working prototype focused on Federal vessel activity in the Northeast for 2004.
- Presented methods and preliminary findings to ALWTRT in December 2006.
- Improved the characterization of commercial fishing activity and gear use.
- Updated the model to include federally permitted activity for 2005 and 2006.
- Incorporated data on State-permitted activity in the Northeast and Mid-Atlantic, and refined assumptions on gear configurations in Northeast State waters.
- Incorporated preliminary data on whale sightings for the Northeast.
- Presented expanded model to the ALWTRT in April 2008.
- Expanded the model to include fishing activity and gear configuration data for the Southeast (includes Federal and State waters).
- Presented updates to the model, along with requests for improved State data at separate Northeast and Mid-Atlantic/Southeast ALWTRT Subgroup meetings in April 2009.

2010. Co-occurrence indicator and scenario generator development.

- Developed distributional approach to characterize gear configurations in key Northeast states.
- Refined co-occurrence indicator using a preliminary effort-adjusted whale sightings dataset.
- Developed the capability to evaluate potential management scenarios, including closures.
- Produced draft model documentation.

- Presented a full accounting of the 2008 baseline, including an in-depth methods discussion, along with NMFS' straw man proposal at separate Northeast (November 2010) and Mid-Atlantic/Southeast ALWTRT Subgroup meetings (April 2011).

2011 – 2012. Proposal analysis and documentation.

- Worked directly with the ALWTRT's Northeast working group to evaluate and improve the model's methods and data sources.
- Incorporated coast-wide effort-adjusted sightings data provided by the North Atlantic Right Whale Consortium, based on recommendations from ALWTRT.
- Presented updated methods and results to ALWTRT, including 2009/2010 baseline and analysis of vertical line management proposals in January 2012.
- Presented analysis of revised vertical line management proposals in April 2012.
- Submitted draft documentation for peer review in June 2012.
- Peer review reports received November 2012.

2013 – 2015. Finalization of baseline and alternatives for DEIS and FEIS associated with NMFS' vertical line rulemaking.

- Updated baseline state and Federal fishing activity and gear configuration data to 2011 (where available).
- Refined gear configuration assumptions for the other trap/pot fisheries based on interviews with state officials and NMFS gear team.
- Developed sensitivity analysis to address TRT/peer review concerns regarding uncertainty in the effort-adjusted whale sightings dataset.
- Updated documentation to reflect changes in the baseline and clarify issues raised in the peer review.
- Developed DEIS/FEIS alternatives for the 2014 rulemaking and subsequent amendments.

2016 – 2017. Updated platform and preliminary 2016 baseline.

- Transitioned the model from ArcGIS / MS Access to an open-source web-based platform, improving performance, flexibility, and scalability.
- Updated baseline state and Federal fishing activity and gear configuration data to 2016 (where available) to test the new platform.
- Updated NARWC effort-corrected and opportunistic sightings to data, as available.
- Conducted extensive testing using the new platform and preliminary data, adjusting where necessary.
- Presented preliminary 2016 baseline findings as part of NMFS discussions with the ALWTRT in October 2018.

2018 - 2020. Finalized 2017 baseline for use in the DEIS associated with NMFS's forthcoming ALWTRP rulemaking.

- Updated baseline state and Federal fishing activity and gear configuration data to 2017 (where available).
- Provided updated 2017 baseline to the Atlantic States Marine Fisheries Commission Lobster Plan Development Team (PDT) and the Northeast Fisheries Science Center (NEFSC) for review and comment.
- In response to comments from the PDT and NEFSC, updated approach to calculating vertical lines in Northeast Nearshore waters and Offshore waters.
- Updated NARWC effort-corrected and opportunistic sightings data to incorporate sightings through 2018.
- Participated in peer review conducted for NEFSC's Decision Support Tool.
- Employed the revised model to support the development of NEFSC's Decision Support Tool and the DEIS alternatives for the 2020 rulemaking.

2. SCOPE OF THE MODEL

SOFTWARE

The Vertical Line/Co-occurrence Model resides on a combined platform, utilizing free, open source options wherever possible. The current model employs PostGreSQL 9 as the primary database, Pentaho Data Integration tools for modeling, and a combination of Pentaho Community Tools, Geoserver, and Open Layers for web-based mapping and visualization. Map images can be imported into Microsoft PowerPoint or other software to create animations demonstrating changes in indicators over time.

GEOGRAPHIC AND TEMPORAL SCOPE

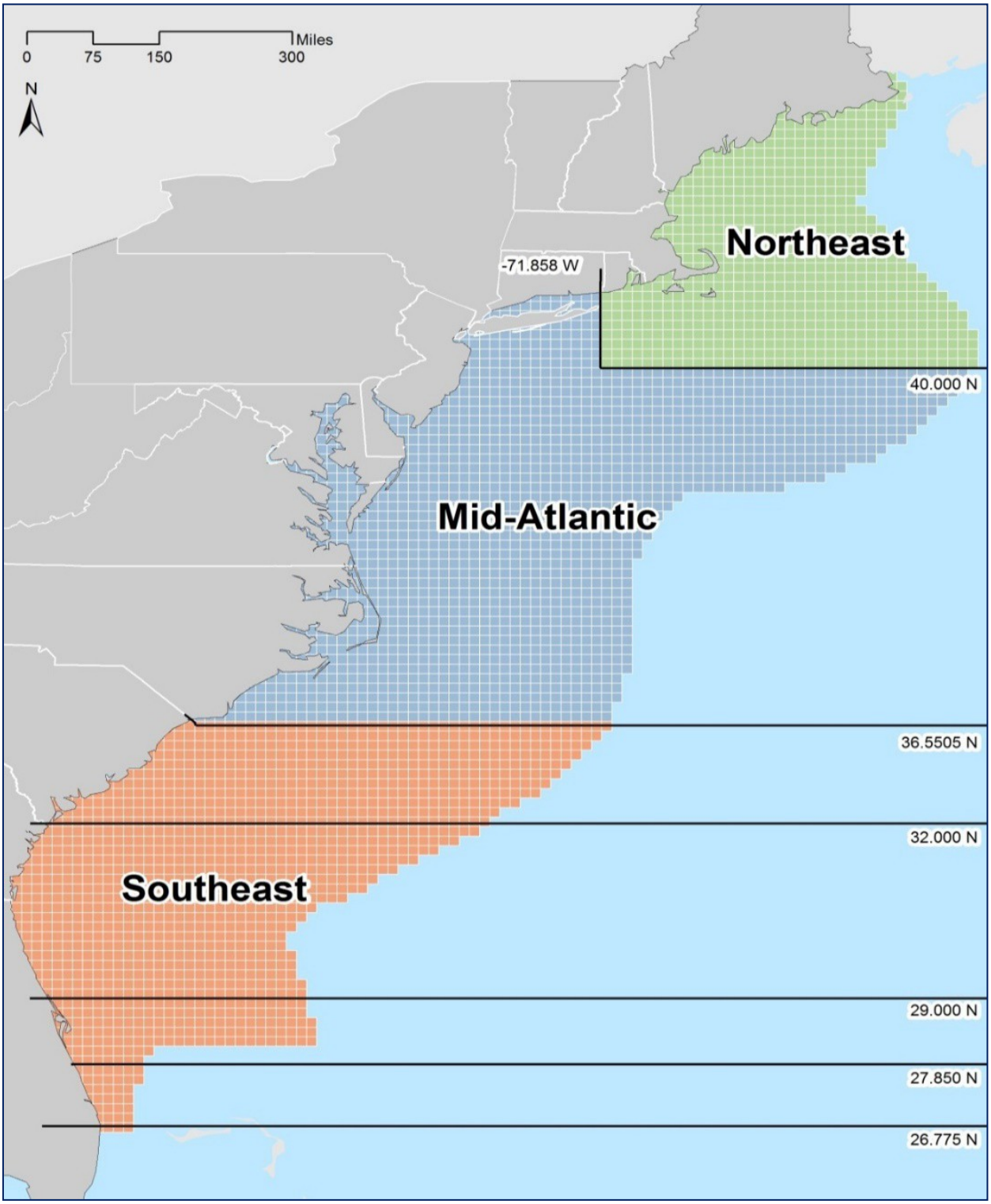
The model analyzes all the commercial fisheries subject to the ALWTRP, including those operating in the Northeast Atlantic, Mid-Atlantic, and Southeast Atlantic. The geographic range of the model mirrors that of the ALWTRP: it extends from the Canadian border to southeast Florida (at 26 degrees 46.5 minutes N latitude), and includes all Atlantic waters within the limits of the United States' Exclusive Economic Zone (EEZ). [2]

To facilitate the integration of data on fishing activity, gear configurations, and whale sightings, the model analyzes information on a common spatial grid, with consistent positioning and resolution (i.e., cell size). It employs two spatial grids for analysis. The model analyzes fishing activity and gear distribution on a one-minute grid. This allows the model to delineate activity within relatively small fishing areas, such as state fishing zones. For mapping purposes, fishing activity and gear distribution are aggregated to a standardized ten-minute grid, which matches the grid cell size used to develop the effort-adjusted whale sightings data. Likewise, the co-occurrence indicator is presented at the ten-minute grid cell level. Exhibit 1 illustrates the geographic scope of the model, displayed on a 10-minute grid.

The model baseline currently incorporates data on fishing activity in Federal waters for 2017, representing the most recent period for which IEc conducted data collection on commercial fishing activity. Because states have differing data collection programs that have evolved over time, the availability of data characterizing fishing in state waters varies by state. At minimum, the model incorporates state data that characterize vessel activity from 2015 through 2017; many states have provided data from prior years. Section 4 describes the data provided by each state in greater detail.

[2] The model's geographic range includes certain inshore waters currently exempted from some or all requirements of the ALWTRP.

EXHIBIT 1 . GEOGRAPHIC SCOPE OF THE VERTICAL LINE MODEL



COMMERCIAL FISHERIES

To account for differences in fishing practices and to allow for more detailed analysis of results, the model treats the lobster, gillnet, blue crab (south of the Delaware/New Jersey border), and other trap/pot fisheries as distinct groups. For each group, IEc collected spatially explicit data on fishing activity and the configuration of gear employed by fishing vessels. Exhibit 2 summarizes the fisheries considered in the model.

EXHIBIT 2 . FISHERIES ANALYZED IN THE VERTICAL LINE MODEL

GROUP	CORRESPONDING ALWTRP FISHERY	PERIOD OF ACTIVITY
Lobster	Northeast/Mid-Atlantic American lobster trap/pot	Year-round
Gillnet	Northeast sink and anchored float gillnet fisheries	Year-round
	Mid-Atlantic gillnet fishery	Year-round
	Southeast sink and anchored gillnet fisheries	Varies
Blue Crab	Mid-Atlantic/Southeast blue crab fishery	Varies
Other trap/pot	Atlantic other trap/pot fisheries (includes blue crab in the Northeast)	Varies

Note: The model currently excludes Northeast drift gillnet vessels.
Source: Department of Commerce, National Oceanic and Atmospheric Administration. January 2010. Guide To The Atlantic Large Whale Take Reduction Plan. Available at https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal- protection/atlantic-large-whale-take-reduction-plan.

WHALE SIGHTINGS

NARWC SPUE Data

As with other datasets used in the model, IEc worked with the ALWTRT to identify data that describe the distribution of large whales in the waters subject to the ALWTRP. Based on the recommendations of the TRT, IEc worked with the North Atlantic Right Whale Consortium (NARWC) to obtain an amalgamated dataset derived from shipboard and aerial surveys to characterize the seasonal distribution of right whales, humpback whales, and fin whales. These data are adjusted for the level of effort employed to locate whales from the air and sea, providing an indication of sightings per unit of survey effort (SPUE). The TRT identified these surveys as the best available information on the distribution of large whales in the Atlantic.

The NARWC SPUE dataset includes information obtained from surveys conducted between October 1978 and December 2018. Appendix A lists the sources of the SPUE data, which include both aerial and shipboard track surveys. To be included in the NARWC dataset, a survey must:

- Provide sufficient records of the survey platform's time and position to reconstruct its trackline;

- Have been conducted with at least one trained observer who recorded periods of dedicated observation or no observation;

- Report the whale species, group size, and position for each sighting; and
- Provide data on sightings conditions.

The records included from each survey in the dataset include only those which meet the NARWC's minimum standards for acceptable sightings conditions; i.e., visibility of at least two nautical miles, a sea state of Beaufort 4 or lower, and, for aerial surveys, a maximum altitude of no greater than 1,200 feet. The dataset includes only sightings of live whales, and excludes all records in which the identification of the species is uncertain.

The NARWC SPUE dataset aggregates the following fields by 10-minute grid cell and month:

- Effort, defined as the total kilometers surveyed;
- Sightings, defined as the total number of individuals of each species observed;
- SPUE, in units of whales (separated by species) per 1000 kilometers of valid effort (calculated as 1000*[Sightings/Effort]).

The model can further aggregate the sightings data, producing combined SPUE datasets that sum across all or a subset of the whale species within each grid cell and month. Users may employ these values in developing the Whale Sightings and Vertical Line Co-Occurrence Indicator (see below). Exhibit 3 presents maps that illustrate average monthly SPUE values for the Northeast, indexed on a scale of 0 to 1000.[3] Monthly scores can be viewed for a specific year or as the cumulative aggregation of multiple months and years, as selected by the user. Using this functionality, the model can produce monthly or seasonal maps of SPUE values for all three regions: Northeast, Mid-Atlantic, and Southeast.

Limitations of the NARWC SPUE Data

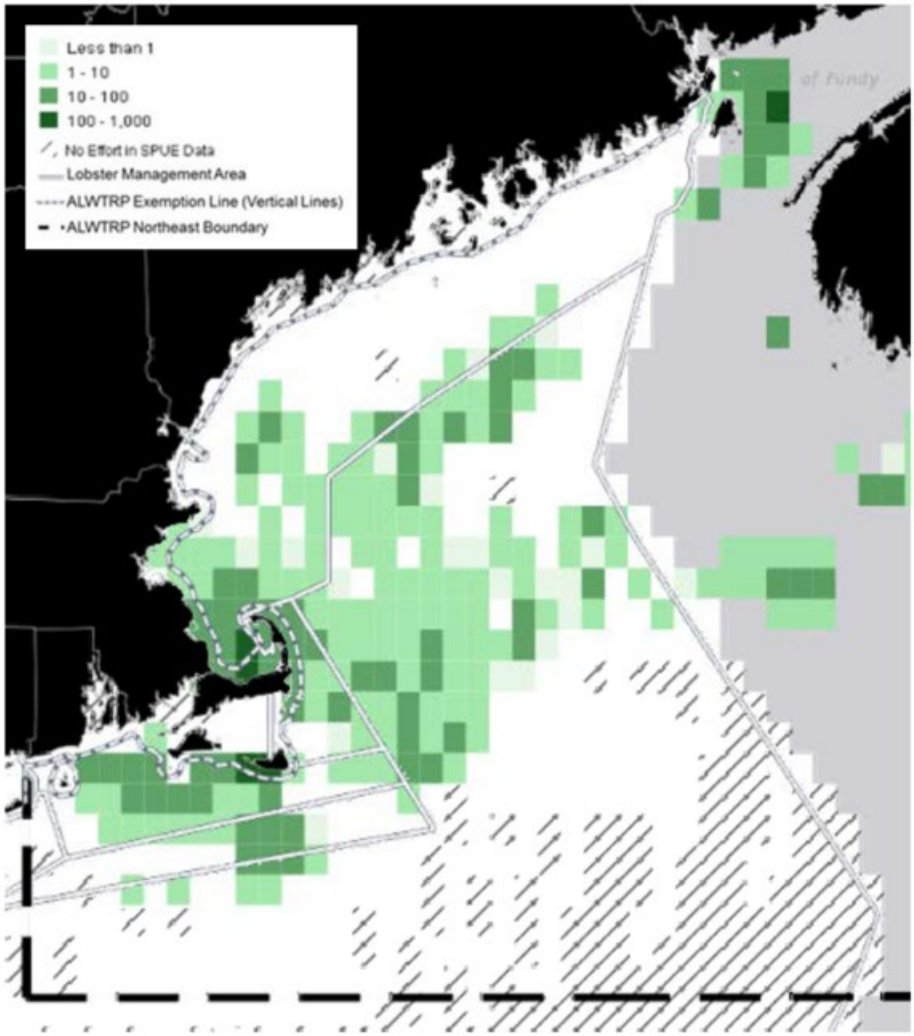
The NARWC SPUE dataset is subject to a number of limitations. For example, the dataset gives equal weight to sightings reported from survey platforms – airplanes and ships – that are known to differ with respect to search efficiency. Similarly, the dataset does not adjust SPUE values to account for variation in search efficiency across species within a platform; in the case of NEFSC aerial surveys, the estimated effective width of a survey track ranges from approximately 0.8 nautical miles for humpback whales to approximately 1.0 nautical mile for right whales and 1.4 nautical miles for fin whales. Failure to account for these differences is a source of imprecision in the model's characterization of the seasonal distribution of whales.

A potentially more significant issue is that the NARWC SPUE dataset is neither geographically nor temporally comprehensive, adding uncertainty to the analysis of co-occurrence. This uncertainty arises from the inclusion of SPUE values in areas or months with very low survey effort, as well as from the absence of SPUE values (and therefore, co-occurrence values) in areas or months for which effort-adjusted survey data are completely unavailable. In addition, other sources of information (e.g., acoustic

[3] The model also allows users to view opportunistic sightings data, as reported in the NARWC database. Raw sightings data from the NARWC database are strictly observational; they are not effort-adjusted and the management documents in which they are used are not peer-reviewed. Distributional patterns based on these data are likely to be biased by where, and when, surveys were conducted. We include the raw NARWC sightings data in the model primarily for reference purposes.

data) indicate that whales may be present in places and at times at which no sightings have been recorded. Thus, the SPUE data are both an incomplete and imprecise indicator of the distribution of whales.[4]

EXHIBIT 3 . NARWC SPUE SCORE (NORTHEAST CUMULATIVE ALL MONTHS 2010 - 2018)



INDICATORS OF FISHING ACTIVITY AND POTENTIAL RISK OF ENTANGLEMENT

The model generates four indicators to describe fishing activity and the potential for interactions between large whales and fishing gear.

- **Number of Active Vessels** – Using Federal and state data sources, the model estimates the number of commercial fishing vessels that participate in each fishery. The methods employed to estimate the number of active vessels vary by location and fishery.

[4] In developing the prior version of the model, members of the ALWTRT and peer reviewers encouraged an attempt to evaluate the sensitivity of the model's findings to the most critical limitations in the SPUE data. In response to this concern, IEc developed an analysis that examines the sensitivity of baseline co-occurrence scores to alternative assumptions about the presence of whales in areas or at times for which SPUE data are not available, or may be too limited to be reliable. Appendix C of the model's 2014 documentation presents the results of this analysis. We did not repeat this analysis for this latest model update, as we anticipate similar results. See "Draft Technical Documentation for the Vertical Line Model," Prepared for NOAA National Marine Fisheries Service, Industrial Economics, Inc., March 2014.

- **Number of Vertical Lines** – Based on the number of active vessels and data on typical gear configurations (e.g., the number of vertical lines employed per vessel), the model estimates the number of vertical lines employed by each fishery.[5]
- **Length of Groundlines** – Using similar information, the model can estimate the total length of groundline (i.e., fishing line linking traps to traps and/or traps and gillnets to anchors) in the water.[6]
- **Whale Sightings and Vertical Line Co-Occurrence Indicator** – As a relative measure of the potential for an entanglement to occur, the model combines effort-adjusted whale sightings information with estimates of the number of vertical lines in the water at a particular location and time. The co-occurrence indicator can be generated for each whale species (right, humpback, and fin) or for any combination of the three.

Section 3 provides an overview of the methods employed to produce these indicators. Section 4 provides descriptions of the specific methods and data sources used to develop estimates of the number of active vessels and vertical lines in specific areas.

[5] Since vertical lines span the entire water column, from the surface to the ocean floor, the model assumes that the frequency of whale interactions with vertical lines is not influenced by the length of the line in the water column. The length of vertical line in the water can be estimated using bathymetry data that has been aggregated into the model's grid structure.

[6] As groundline has not been the recent focus of the ALWTRT, the functionality of this aspect of the model has not been recently updated. When the model was initially developed, the TRT was briefed on the methods and data sources used to estimate the length of groundline in the water.

3. OVERVIEW OF METHODS AND BASELINE RESULTS

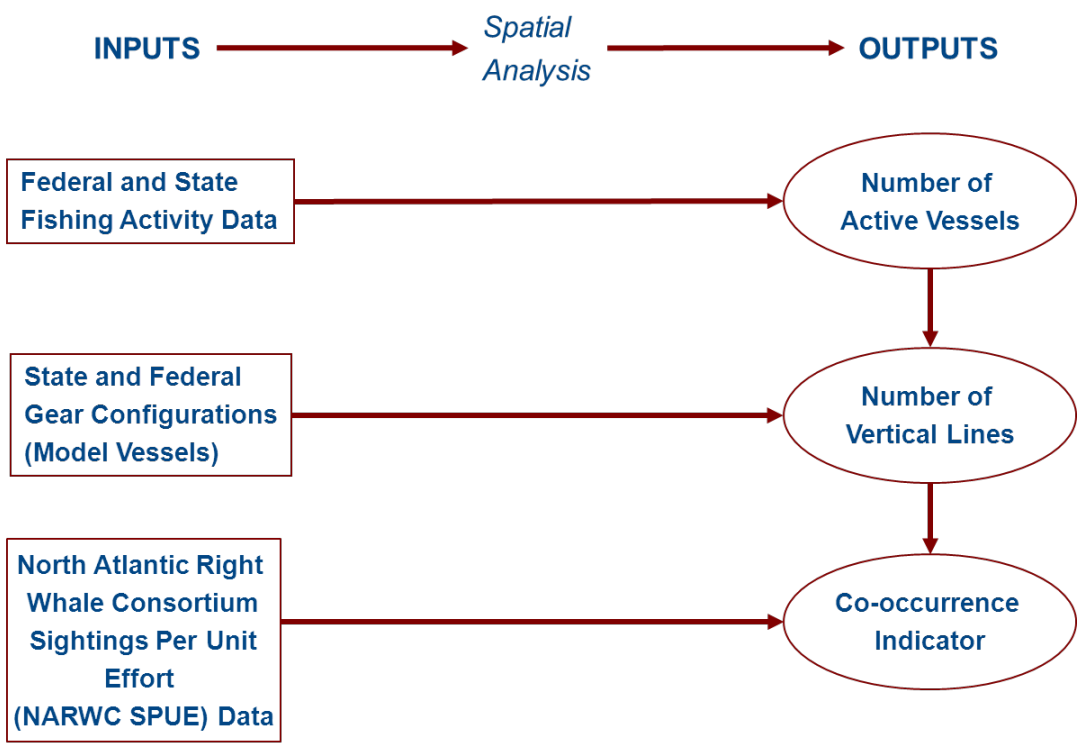
INTRODUCTION

This section presents a general overview of the Vertical Line/Co-occurrence Model and the calculations used to estimate the indicators discussed in Section 2. It also briefly describes the model's scenario building and reporting capabilities.

CONCEPTUAL OVERVIEW

Exhibit 4 presents a conceptual representation of the Vertical Line/Co-occurrence Model. The model develops spatially explicit monthly estimates of each indicator. Using Federal and state data describing fishing effort and location, the model first estimates the number of vessels operating in each grid cell each month. The model then combines the number of active fishing vessels and information on vessel gear configurations to generate monthly estimates of the number of vertical lines and the length of groundline within each cell. Finally, the model combines the vertical line estimate with the effort-adjusted NARWC whale sightings data to produce the combined whale-vertical line co-occurrence indicator. Below, we detail the general approach used to estimate each indicator.

EXHIBIT 4 . CONCEPTUAL DIAGRAM OF THE VERTICAL LINE/CO- OCCURRENCE MODEL



NUMBER OF ACTIVE VESSELS

Based on GIS layers provided by NMFS and state fisheries administrators, the model assigns each 1-minute grid cell either to a particular state's jurisdiction or to one of several Federal fishery management zones. Where data permit, grid cells in state waters are assigned to appropriate state management areas (e.g., Massachusetts Division of Marine Fisheries Statistical Reporting Areas) and are demarcated as exempt or non-exempt waters based on the ALWTRP exemption line established in the 2014/2015 rulemaking. Grid cells in Federal waters are delineated by Lobster Management Zone, NMFS Statistical Area, and/or ALWTRP trap/pot areas, including Northern Nearshore, Southern Nearshore, and Offshore waters. [7]

Using data on fishing effort from a variety of sources, including the Northeast Vessel Trip Report (VTR) system, NMFS' Northeast Permit database, the Southeast Logbook, state reporting programs, and judgments from NMFS gear experts and state fisheries administrators, IEc has developed area-specific methods to generate monthly estimates of the number of vessels that are active within Federal and state management zones. Section 4 details the management zones and approaches employed. Exhibit 5 provides the current baseline estimates of the number of active vessels by ALWTRP region, month, and fishery (includes exempt waters).

EXHIBIT 5 . 2017 BASELINE ESTIMATES - NUMBER OF ACTIVE VESSELS

FISHERY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NORTHEAST												
Lobster	1,653	1,062	1,107	1,777	2,791	3,938	5,220	5,442	5,199	4,839	4,125	2,770
Gillnet	39	33	31	69	95	157	196	168	148	120	62	48
Other Trap/Pot	6	6	3	21	81	94	138	113	123	125	91	53
Total	1,698	1,101	1,141	1,866	2,967	4,189	5,553	5,723	5,470	5,084	4,279	2,871
MID-ATLANTIC												
Lobster	56	36	49	86	152	203	197	167	131	107	106	86
Blue Crab	2	0	307	783	1,151	1,243	1,341	1,303	1,166	868	480	28
Gillnet	214	305	386	395	290	195	160	210	302	378	379	268
Other Trap/Pot	60	48	48	115	113	110	105	90	125	127	132	83
Total	332	388	790	1,379	1,706	1,751	1,803	1,770	1,725	1,480	1,097	465
SOUTHEAST												
Blue Crab	238	243	264	262	256	247	229	220	222	223	209	200
Gillnet	6	4	8	15	8	8	4	4	10	14	21	12
Other Trap/Pot	7	8	5	7	5	5	2	0	0	1	3	3
Total	251	255	277	284	269	260	235	224	232	238	233	215
Total	**2,281**	**1,745**	**2,208**	**3,530**	**4,941**	**6,199**	**7,591**	**7,716**	**7,427**	**6,802**	**5,608**	**3,551**

[7] Grid cells that overlap two or more management zones are assigned to the zone that accounts for the greatest share of the cell's total area.

NUMBER OF VERTICAL LINES AND LENGTH OF GROUNDLINE

Model Vessel Development

Given the broad scope of the ALWTRP, a vessel-by-vessel analysis of fishing gear and location is infeasible. Instead, the model is based upon the development of a set of model vessels, each of which represents a group of vessels that are likely to share similar operating characteristics. As currently configured, the model draws on nearly 220 individual model vessels to characterize gear use under baseline conditions. The model designates one or more model vessels for a suite of regions, including:

- Lobster Management Areas (LMAs);
- ALWTRP trap/pot areas;
- Federal waters off the coast of Maine delineated by distance from shore;
- Federal waters off the coast of Massachusetts and Rhode Island;
- State waters (exempt and non-exempt from the 2014/2015 Vertical Line rule); and
- State management areas (where available).

The maps in Appendix B provide the geographic location of the model vessel regions employed in the model.

Lobster, Blue Crab, and Other Trap/ Pot Model Vessel Calculations

For each lobster, blue crab, or other trap/pot model vessel, the model allows the user to specify the following gear configuration parameters for each month:

- Total traps fished;
- Number of traps per trawl;
- Number of endlines (i.e., buoy lines) per trawl;
- Length of groundline between traps (in feet);
- Number of anchors per trawl; and
- Length of anchor lines (in feet).

Using these inputs, the model employs the equations specified in Exhibit 6 to calculate the number of vertical lines and length of groundline associated with each model vessel.

EXHIBIT 6 . METHOD FOR ESTIMATING QUANTITY OF GEAR USED BY LOBSTER, BLUE CRAB, AND OTHER TRAP/ POT VESSELS

$$\text{Number of Vertical Lines} = \frac{\text{Total Traps Fished}}{\text{Traps per Trawl}} \times \text{Endlines per Trawl}$$

$$\text{Length of Groundline} = \frac{\text{Total Traps Fished}}{\text{Traps per Trawl}} \times \left[\left(\left(\text{Traps per Trawl} - 1 \right) \times \begin{matrix} \text{Length of} \\ \text{Groundline} \\ \text{between Traps} \end{matrix} \right) + \left(\begin{matrix} \text{Anchors per} \\ \text{Trawl} \end{matrix} \times \begin{matrix} \text{Length of} \\ \text{Anchor Lines} \end{matrix} \right) \right]$$

Gillnet Model Vessel Calculations

For each gillnet model vessel, the model allows the user to specify the following gear configuration parameters for each month:[8, 9]

- Total Strings Fished;
- Endlines per String;
- Number of Anchors per String; and
- Length of Anchor Lines.

Using these inputs, the model employs the equations specified in Exhibit 7 to calculate the number of vertical lines and length of groundline associated with each model vessel.

EXHIBIT 7 . METHOD FOR ESTIMATING QUANTITY OF GEAR USED BY GILLNET VESSELS

$$Number\ of\ Vertical\ Lines = Total\ Strings\ Fished \times Endlines\ Per\ String$$

$$Length\ of\ Groundline = Total\ Strings\ Fished \times Anchors\ Per\ String \times Length\ of\ Anchor\ Lines$$

Indicator Development

To estimate the total number of vertical lines in the water, the model considers each fishery group (i.e., lobster, gillnet, blue crab, other trap/pot) independently. Users have the option to view results for each group separately or as the sum of all four groups. For each group the model first estimates the average number of vertical lines per grid cell, based on the model vessels assigned to that grid cell. Where data permit (see Section 4 below for more detail), several model vessels may be assigned to the same grid cell. In these cases, each model vessel represents the percentage of vessels within the grid cell that operate with its particular configuration. This effectively allows for the development of weighted average estimates for the number of vertical lines in a given grid cell. We present example calculations below.

- Activity within a one-minute grid cell during a specific month is represented by model vessels A, B, and C.

[8] For use in potential revisions to the model, when possible, IEc also collected information on the number of net panels per string, the height and length of the net panels, and the length of the line between the net panels. Currently, these values are not used in the calculations described above.

[9] While wet storage of gear subject to the ALWTRP is prohibited, trap/pot gear generally remains in the water as long as it is being actively fished – in some cases, year-round. In contrast, gillnet gear may be fished in an area for as little as a few hours. Since the potential for whales to encounter gear depends in part on the duration of time the gear is deployed, the Vertical Line Model initially was designed to take variation in soak time into account in characterizing the concentration of vertical line in an area during a particular month. At the December 2010 meeting of the ALWTRT's Northeast Subgroup, the team raised concerns about the adequacy of the approach employed to determine and adjust for soak time. IEc received suggestions on alternative methods; however, consensus on a specific method was not reached. The team requested that IEc conduct a model run to test the impact and importance of the soak time assumption. IEc conducted the test assuming that vertical line from gillnets would remain in the water for the entire month. The test showed that this assumption resulted in a small increase in the estimate of the total number of lines deployed (0.07 to 0.4 percent, depending on the month). The results proved to be relatively insensitive to the treatment of gillnet soak time because the overall figure is driven primarily by the use of vertical line in trap/pot fisheries. Given this finding, the working group assigned to examine the issue determined that soak time was not of sufficient importance to warrant further analysis or more detailed treatment in the model.

- The number of vertical lines deployed by these model vessels in a specific month is 200, 100, and 80, respectively.
- The share of vessels fishing with each configuration is estimated as 50 percent, 30 percent, and 20 percent, respectively.
- For this grid cell and month, the model would estimate a weighted average of 146 vertical lines per vessel ([200 * 0.5] + [100*0.3] + [80*0.2]).[10]

Exhibit 8 provides the current baseline estimates of the number of vertical lines by ALWTRP region, month, and fishery (includes exempt waters).

EXHIBIT 8 . 2017 BASELINE ESTIMATES - NUMBER OF VERTICAL LINES

FISHERY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NORTHEAST												
Lobster	186,440	121,094	119,761	212,947	381,881	578,053	844,079	929,582	915,911	871,298	657,585	338,494
Gillnet	815	396	306	814	1,308	3,614	5,780	4,980	4,366	3,202	1,569	1,313
OTP	131	135	50	696	3,103	3,267	4,135	3,052	3,756	4,303	3,464	1,920
Total	187,386	121,625	120,117	214,457	386,292	584,933	853,994	937,614	924,033	878,802	662,618	341,727
MID-ATLANTIC												
Lobster	4,422	2,669	4,049	6,715	9,409	12,877	12,847	11,155	8,279	6,578	6,631	5,929
Blue Crab	342	0	66,975	170,984	251,394	275,300	297,413	287,452	257,676	197,146	113,517	7,448
Gillnet	1,499	2,091	2,858	3,008	1,924	1,214	994	1,292	2,031	2,477	2,500	1,954
OTP	4,495	3,008	3,519	11,284	11,036	8,119	7,229	6,602	9,848	10,812	14,277	7,939
Total	10,759	7,768	77,401	191,991	273,763	297,511	318,483	306,501	277,834	217,013	136,925	23,269
SOUTHEAST												
Blue Crab	22,979	23,261	25,323	26,322	25,810	25,252	23,341	22,199	22,579	22,655	21,072	20,023
Gillnet	18	12	24	49	27	24	12	12	30	42	63	36
OTP	2,460	2,833	1,674	2,435	1,497	1,624	718	0	0	298	934	934
Total	25,457	26,106	27,021	28,806	27,334	26,900	24,072	22,211	22,609	22,995	22,069	20,993
Total	223,602	155,498	224,540	435,254	687,389	909,344	1,196,548	1,266,326	1,224,476	1,118,811	821,612	385,989

To estimate the total length of groundline in the water, the model employs the same approach described above for vertical lines, but uses the length of groundline estimates developed for each model vessel.

COMBINED WHALE SIGHTINGS AND VERTICAL LINE INDICATOR (CO- OCCURRENCE)

As a relative indicator of the potential for whale entanglement in commercial fishing line, the model combines effort-adjusted whale sightings information provided by NARWC with estimates of the number

[10] In several Northeast states (see Section 4), the data allow us to delineate distributions of model vessels based on traps per trawl and traps fished. The calculations employed to estimate the number of vertical lines across these distributions are the same as those described in this example, with the primary difference being a larger number of model vessels assigned to individual areas.

of vertical lines in the water at a particular location and time. [11] To facilitate presentation and interpretation of the co-occurrence indicator, the underlying vertical line and whale sightings measures are indexed on a scale from 0 to 1,000.[12] For each grid cell, the indexed values are then multiplied to generate a combined indicator score, which may range in value from zero to 1 million.[13] Based on the grid cell size used to develop the effort-corrected whale sightings data, the co-occurrence indicator is presented at the ten-minute grid cell level.[14] Exhibit 9 maps cumulative co-occurrence in the Northeast using indexed Right whale SPUE from 2010 to 2018 and the current baseline number of vertical lines.

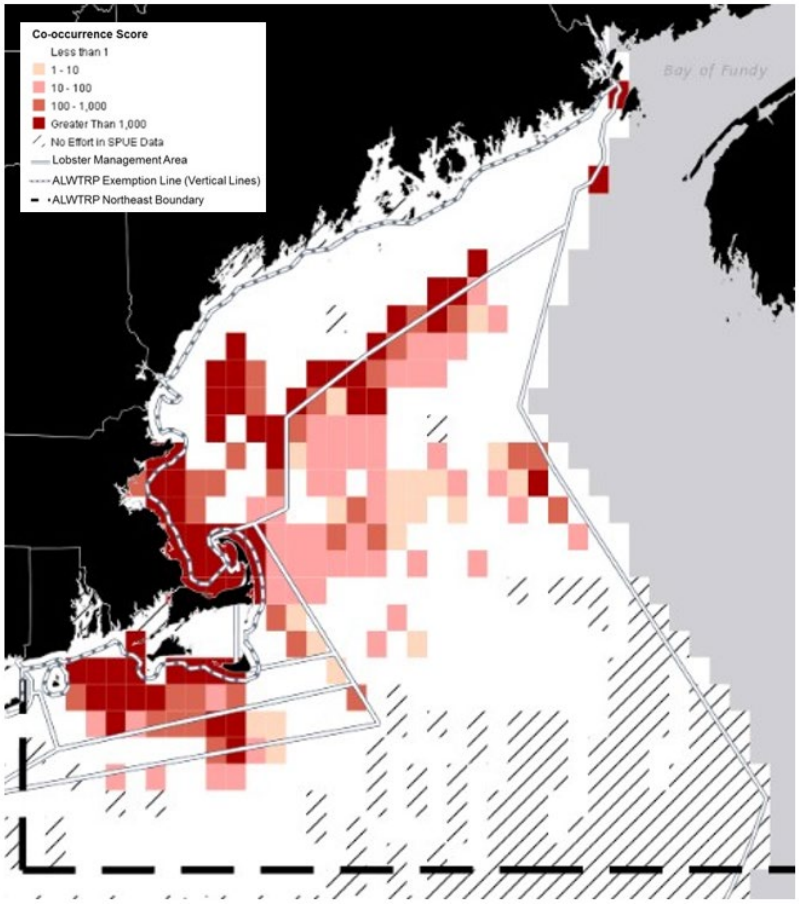
[11] The vertical line component of the combined indicator reflects the sum of the number of vertical lines estimated across the fishery groups (i.e., lobster, gillnet, blue crab, and other trap/pot).

[12] Specifically, for each measure, the highest value identified across all months and grid cells is set to 1,000. Other grid cell values are then indexed to the scale by dividing by the highest value and multiplying by 1,000. At the recommendation of the NEFSC, we updated the approach to account for outliers (extremely high values) that may occur as result of extremely low effort in a cell (defined as less than one kilometer). To account for this, the model assigns 1,000 to the grid cell with next highest value where the effort is greater than one kilometer.

[13] As stated above, users may view monthly maps of the NARWC's effort-corrected whale sightings information. This information is indexed on a 0 to 1,000 scale.

[14] It is important to note that the method described assigns a co-occurrence score of zero whenever the vertical line score or SPUE score is zero. While this is conceptually appropriate – there is no potential for whales to interact with vertical line where whales are not present or when gear is absent – it has nonetheless raised concern among some members of the ALWTRT that it provides a misleading characterization of risk. This concern stems from the understanding that to date, effort to survey the Atlantic coast for the presence of whales is in some areas inadequate to provide a reliable portrayal of their seasonal distribution. It also stems from the recognition that, absent physical barriers to entry, individual members of the species of concern could occur anywhere within the jurisdiction of the ALWTRP. Given these concerns, IEc worked with NMFS and the ALWTRT to develop methods of adjusting SPUE values to account for the potential presence of whales in areas or months for which the available SPUE are inadequate. Appendix C of the model's 2014 documentation describes these methods and presents an analysis of the impact of employing adjusted SPUE values on co-occurrence scores. See "Draft Technical Documentation for the Vertical Line Model," Prepared for NOAA National Marine Fisheries Service by Industrial Economics, Inc., March 2014.

EXHIBIT 9 . 2017 CUMULATIVE BASELINE CO- OCCURRENCE – RIGHT WHALES (2010 - 2018) / 2017 NUMBER OF VERTICAL LINES (ALL FISHERIES)



SCENARIO GENERATION

The model allows users to test for the impact of different management scenarios on the number of active vessels, the quantity of gear, and the degree of co-occurrence. Users may develop scenarios that employ one or more of the following actions:

- **Gear configuration requirements** – The user can develop scenarios that impose specific gear configuration requirements, such as establishing restrictions on the number of traps per trawl allowed in a given area. For example, in an area that currently allows fishermen to employ singles, users could develop a scenario that requires a minimum of three traps per trawl. In this case, the model would increase the number of traps per trawl for those model vessels fishing singles and doubles to three traps per trawl. This action would reduce the number of vertical lines in that area.
- **Redistribute fishing effort** – The user may wish to develop scenarios that call for an increase or decrease in fishing effort in an area. The model allows the user to specify, as a percentage of

baseline effort, the magnitude of this change. For example, the user may wish to test the impact of a closure on a specific area. In this case, the model will eliminate all fishing effort within the selected area. The user can examine the effect of displacement of effort to surrounding areas by adjusting the inputs for those areas to reflect the addition of displaced vessels.

REPORTING TOOLS

The model provides the capability to explore both baseline conditions and the implications of different management scenarios for each indicator described above. Results are available as:

- **Maps** – Users can produce a map for a specific month and indicator or the cumulative value across multiple months. In addition, users can develop maps that show the change in indicator values associated with a management measure (e.g., a reduction in co-occurrence from the baseline).
- **Spreadsheets** – Users can export results in a variety of file formats to support more complex analyses.
- **Animations** – Users can export monthly or seasonal maps to create animations in PowerPoint or other software. These animations can be used to visually display changes across months (or seasons) or between the baseline and alternative management scenarios.

ILLUSTRATIVE BASELINE RESULTS

Exhibits 10 and 11 provide maps that illustrate the monthly cumulative distribution of vessel activity and vertical line in the Northeast region, respectively. Exhibit 12 presents a map illustrating the change in cumulative co-occurrence associated with a recently considered management measure. Exhibit 13 presents a histogram illustrating the baseline distribution of vertical line, by region and month, across the Atlantic coast.

EXHIBIT 10 . CUMULATIVE 2017 BASELINE NUMBER OF ACTIVE VESSELS (ALL MONTHS / ALL FISHERIES)

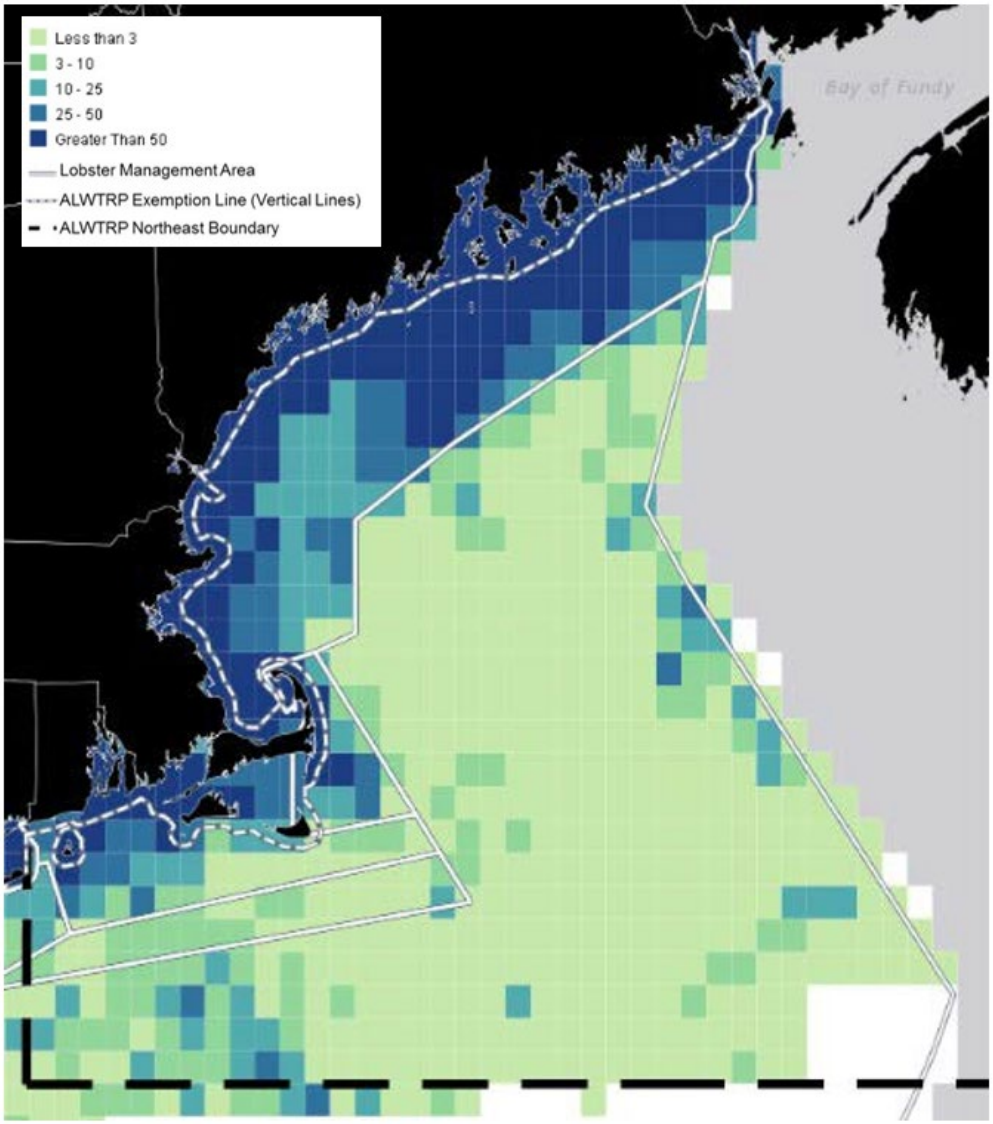


EXHIBIT 11 . CUMULATIVE 2017 BASELINE NUMBER OF VERTICAL LINES (ALL M ONTHS / ALL FISHERIES)

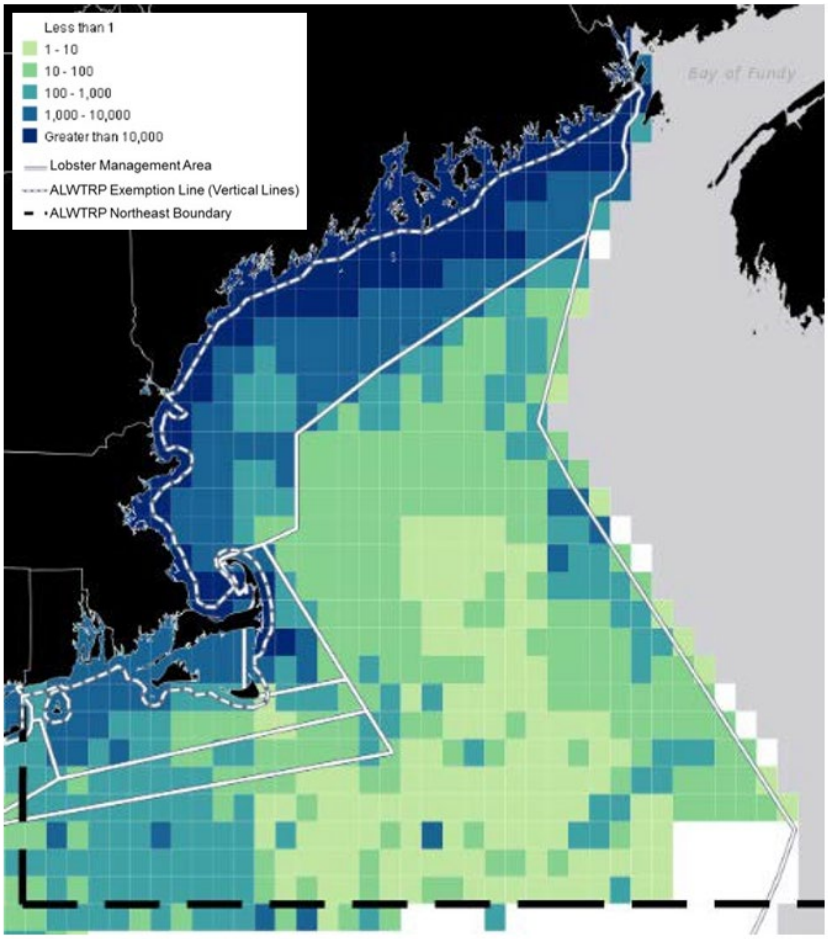


EXHIBIT 12 . CUMULATIVE CHANGE IN CO- OCCURRENCE IN RESPONSE TO A PROPOSED MANAGEMENT MEASURE (ALL MONTHS / ALL FISHERIES / RIGHT WHA LES 2010 - 2018)

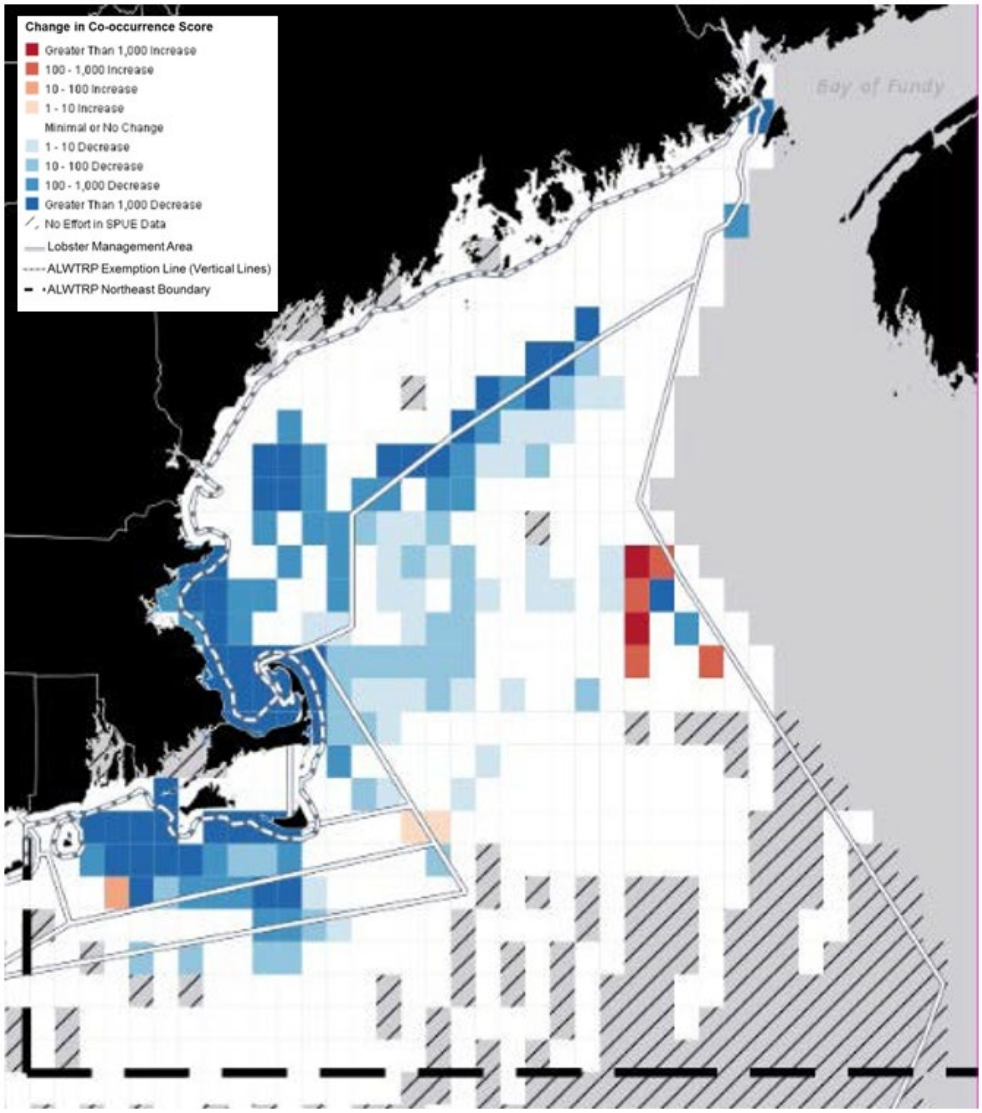
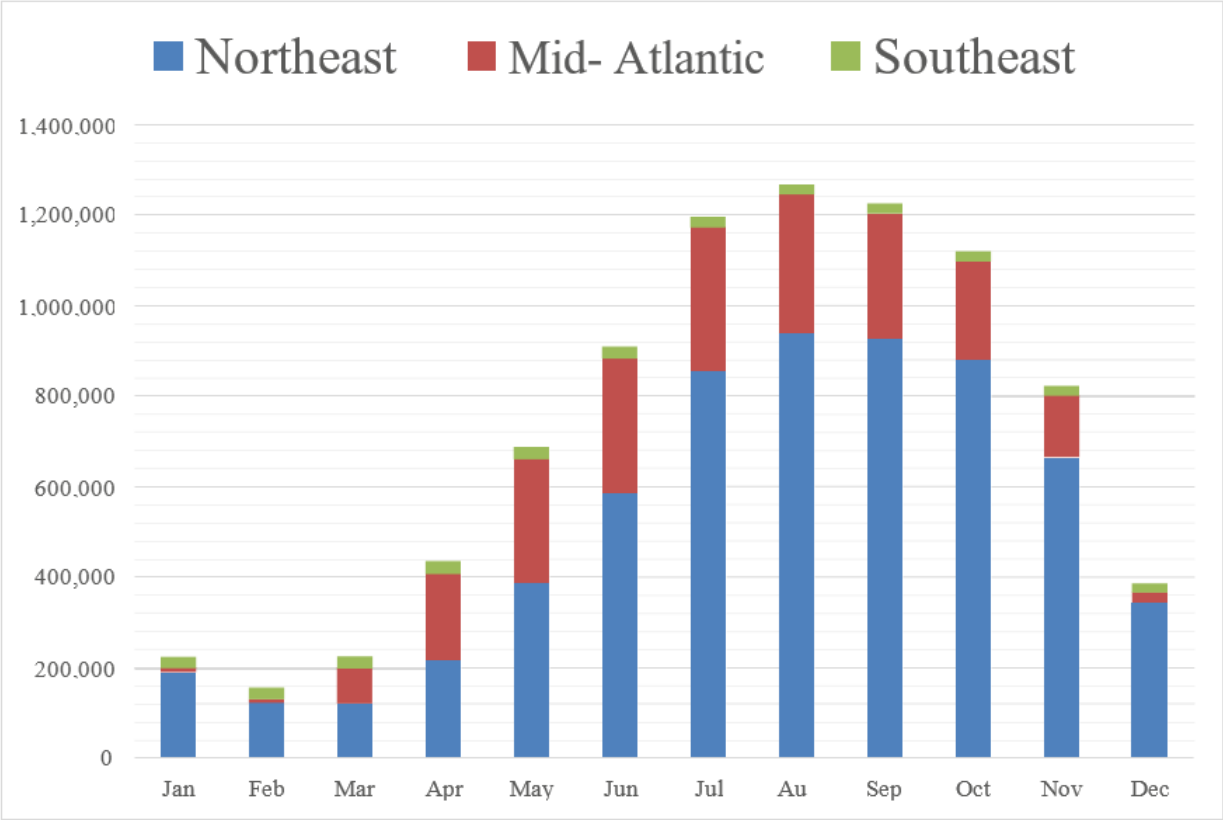


EXHIBIT 13 . 2017 BASELINE ESTIMATES – NUMBER OF VERTICAL LINES



4. LOCATION SPECIFIC METHODS AND DATA SOURCES

INTRODUCTION

The section details the location-specific methods and data sources employed in the Vertical Line/Co-occurrence Model. IEc reviewed the assumptions used to estimate vessel activity and gear use with representatives of state fisheries management agencies, NEFSC, NMFS gear experts, and fishermen on the ALWTRT. IEc shared its assumptions in writing and during multiple presentations to the ALWTRT and the Atlantic States Marine Fisheries Commission so that all participants were given the opportunity to review and comment. The documentation below incorporates this feedback, reflecting the latest 2017 baseline model assumptions. Throughout the discussion below, the documentation references numerous geographic areas used to assign gear configurations within the model. Appendix B identifies the geographic location, Region ID, and name of each region. It may be useful to refer to this appendix while reviewing the specific methods employed for each location.

USE OF VTR AND SOUTHEAST LOGBOOK DATA TO ESTIMATE VESSEL ACTIVITY

To estimate the number of active vessels that are subject to the requirements of the ALWTRP, the model employs information from both state and Federal datasets. As the primary source of information on activity in Federal waters, the model relies on two large datasets provided by NMFS:

- **Northeast Vessel Trip Report (VTR) system.** VTR covers waters north of Cape Hatteras, North Carolina. Most commercial fishing permits administered by NMFS' Greater Atlantic Regional Fisheries Office (GARFO) require fishermen to file a VTR at the conclusion of every trip.[15] VTR provides data on the gear the vessel employed and the area in which it fished, along with other information. Specifically, fishermen provide longitude and latitude coordinates that represent their average location for each fishing trip.
- **Southeast Logbook.** Similar to VTR, the Logbook requires trip-level reporting; however, fishermen are required to identify the location of their fishing effort on a 1-degree grid, as opposed to a specific location.

Through spatial analysis of the VTR and Logbook data, the model assigns trips to the spatial grid that the user specifies, creating a series of monthly datasets for each fishery (i.e., lobster, blue crab, other trap/pot, and gillnet). For each vessel, the model then apportions activity based on the ratio of trips reported within a particular grid cell to the total number of trips taken within the month. For example, consider a vessel that reports 10 trips during the course of a month, seven within Cell A and three within Cell B. The model apportions this vessel's activity for the month by assigning 0.7 active vessels to Cell A and 0.3 active

[15] Technically, the regulations require fishermen to submit separate reports for each statistical area and type of gear fished. In practice, many fishermen compile all information for a single trip on one form.

vessels to Cell B. In the final step, the model sums the apportioned activity from all vessels within each grid cell.

Although the model employs VTR and Logbook data throughout its range (i.e., in state and Federal waters), the contribution of these data to the estimates of the number active vessels depends on the fishery and geographic location:

- **Lobster.** Unlike other permits administered by GARFO, Federal lobster permits currently impose no trip report requirements. As a result, the VTR database typically does not contain information on the activity of vessels that hold a Federal lobster permit but no other Federal permit. This is of particularly concern in LMA 1 (off the coast of Maine, New Hampshire, and northeastern Massachusetts), where vessels that hold only a Federal lobster permit are common. At the recommendation of Northeast state fisheries administrators, the updated model uses state-collected data to characterize the activity of lobster vessels in Northeast Nearshore waters.[16] The model relies on VTR data, along with NMFS permit data, to characterize activity in the Northeast Offshore, Mid-Atlantic Nearshore, and Mid-Atlantic Offshore lobster fisheries.
- **Blue Crab.** While some fishing for blue crab occurs in the Northeast region, analysis of VTR and discussions with state fisheries managers indicate that most blue crab fishing occurs south of New Jersey. To reflect blue crab's importance in these waters, the model identifies blue crab as a separate fishery (based on VTR and Logbook gear and species codes) in waters south of the New Jersey/Delaware border.[17] This fishery is heavily concentrated in state waters. This is confirmed by 2017 fishing activity data, which report no blue crab fishing in Federal waters south of New Jersey. As a result, the model uses state logbook data to account for the majority of blue crab effort.
- **Other Trap/Pot.** Within the other trap/pot (OTP) fishery, commercial fishermen frequently maintain and use different types of gear to target different species. For purposes of analysis, the model assumes that each OTP vessel maintains separate sets of gear for each species it targets. To provide an accurate characterization of the amount of gear such vessels employ, the model treats multi-purpose trips as separate events. For example, a vessel that targets both black sea bass and hagfish on the same trip is treated as having taken two trips to the same location. The determination of the species targeted is based on VTR and Logbook gear and species codes. VTR and Logbook data contribute to estimates of fishing activity in both state and Federal waters, where these fisheries are permitted.
- **Gillnet.** The model identifies gillnet activity based on VTR and Logbook gear codes. VTR and Logbook data contribute to estimates of fishing activity in both state and Federal waters, where these fisheries are permitted.

ACCOUNTING FOR RECENT VERTICAL LINE RULEMAKINGS

The data the model employs to characterize gear configurations in state waters do not distinguish between areas subject to the vertical line rules and those that are exempt. Therefore, the data often show vessels fishing in a manner that would be prohibited in areas subject to minimum trawl size requirements. To

[16] The previous version of model used Federal permit data, in conjunction with VTR, to characterize the activity of lobster vessels in all Federal waters. A modified version of this approach is still in use to characterize vessel activity in the offshore lobster fishery.

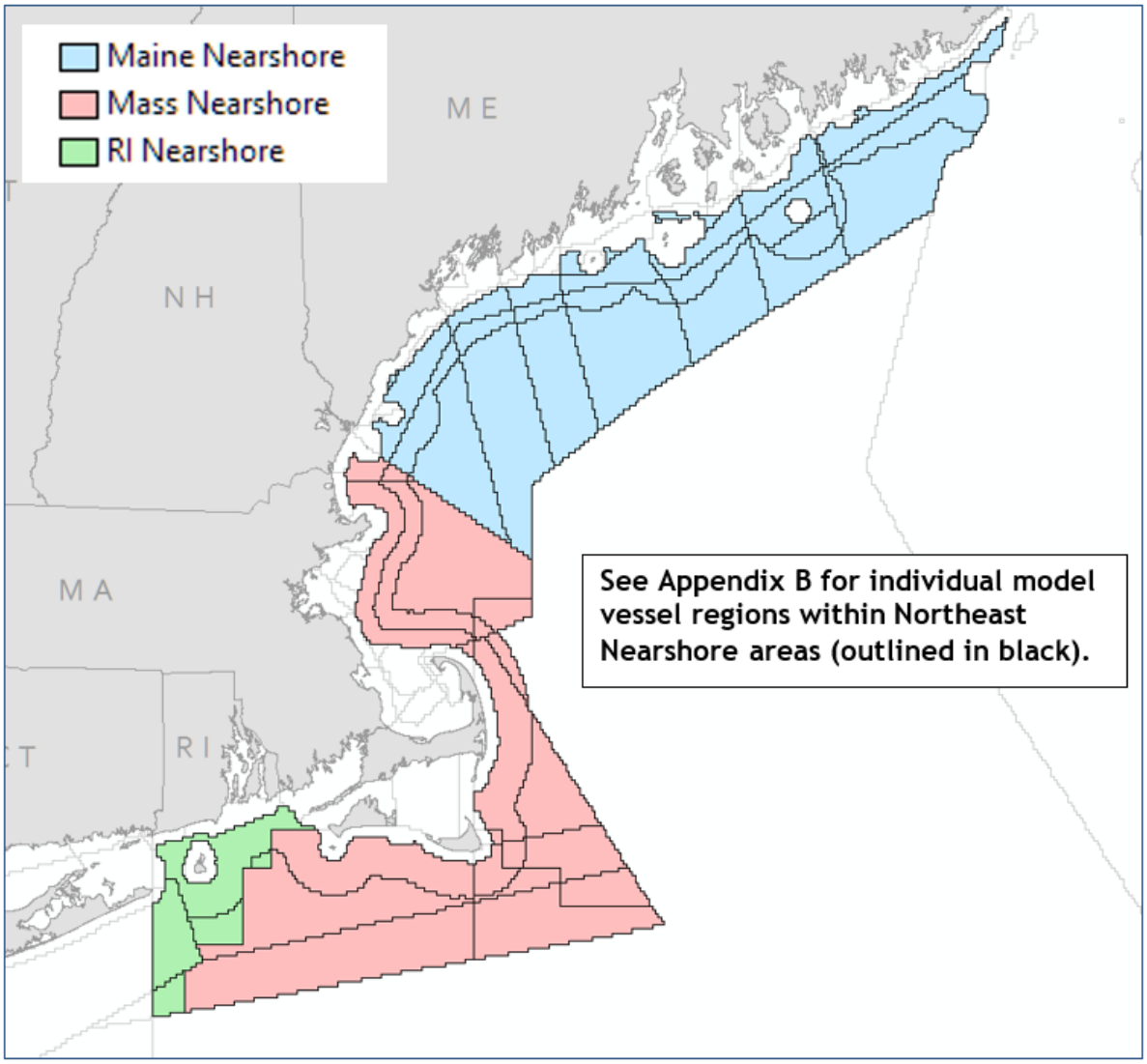
[17] Blue crab fishing activity north of this border is included as a component of the other/trap pot fishery.

characterize activity in non-exempt waters, we assume these vessels trawl up to the nearest legal gear configuration. For example, the Maine data show a proportion of vessels fishing singles in state waters, which is allowed in the exempted area, but prohibited in the non-exempt waters. In the non-exempt share of the state zones, we assume this proportion of vessels fishes doubles, as allowed by the Plan.

FEDERAL NORTHEAST NEARSHORE WATERS

In the Northeast, Nearshore waters comprise the portions of LMAs 1, 2, 4, and the Outer Cape that lie outside of state waters (see Exhibit FED-1). Because of their intermediate position, the methods for characterizing activity and gear configurations in nearshore waters are hybrid in nature, incorporating data from diverse sources, including state logbook programs. To the extent that the model incorporates state-submitted data for nearshore waters, the methods are included in each state's profile (see below). The discussion below provides an overview of these methods, highlighting the ways in which the model integrates state data and Federal data to form a more refined characterization of activity and gear. The discussion begins with a review of methods used to estimate the number of active vessels in Nearshore waters, then describes methods for characterizing gear configurations.

EXHIBIT FED- 1 . NORTHEAST NEARSHORE MODEL VESSEL REGIONS



Northeast Nearshore Lobster

Active Vessels

The principal obstacle to estimating vessel activity in nearshore waters is the fact that lobster vessels holding only a lobster permit (i.e., no permits for other species) are not required to report to the Federal VTR program. To address this extensive reporting gap, the model previously used Federal permit data to estimate the number of non-reporters. In the absence of better information, the model distributed the activity of these vessels evenly across nearshore waters. State fisheries managers reviewing the earlier model asserted that this approach misrepresented the level of effort and spatial distribution of activity.

Based on their recommendation, the current version of the model characterizes activity in nearshore waters using state data on vessels that hold Federal permits but do not report to VTR.

Specific data sources and methods for each state are as follows:

- **Maine.** The Maine Department of Marine Resources (DMR) "100% Dealer Reporting" data report the individual vessels that were active in each of the seven Maine lobster zones in each month (see Exhibit ME-1 below). Active vessels are those that landed at least 100 pounds of lobster. The vessels identified include all federally permitted vessels, regardless of whether they are subject to VTR requirements. We rely on these data to estimate the number of active vessels operating in each zone. Within each zone, the model distributes the location of vessel activity by distance from shore (i.e., 0-3, 3-12, or 12+ miles). The distribution of activity by distance from shore within each lobster zone is derived from Maine's "10% Harvester Reporting" data, which provides information on the location of activity for the vessels included in the harvester survey sample.
- **New Hampshire.** The New Hampshire Fish and Game Department (FGD) requires that fishermen who land up to 1,000 pounds of lobster in a calendar year report their activity using the Annual Lobster Harvester Report, which includes a monthly summary of fishing activity. Fishermen who land over 1,000 pounds in a calendar year must file the Lobster Fisherman and Dealer Reporting Form, which includes trip-level data. To avoid double-counting activity captured in Federal datasets, we remove from the FGD dataset all records for fishermen who also report to the Federal VTR system. The FGD data indicate that a small number of New Hampshire-based vessels fish in nearshore waters (LMA 1 or Statistical Area 513), but do not report to VTR. Nearshore activity therefore includes these vessels, plus relevant activity reported in VTR.
- **Massachusetts.** The Massachusetts Division of Marine Fisheries (MA DMF) provided detailed vessel-level data to support development of the Vertical Line Model. Merging information from the trip-level and annual reporting components of its Catch Report data, MA DMF provided a comprehensive database of activity and gear configurations for all fixed-gear fisheries in 2017. The DMF dataset allows identification and removal of vessels that are subject to Federal VTR requirements. Therefore, the model characterizes activity in Massachusetts' nearshore waters (Massachusetts Statistical Reporting Areas 15 through 20) on the basis of the VTR dataset, supplemented by information from the DMF dataset on vessels that are not subject to VTR requirements.
- **Rhode Island**. The Rhode Island DEM Division of Marine Fisheries (RI DEM) provided 2017 vessel-level data from its state logbook program. The data include information on the activity of Federal permit holders fishing in Federal portions of NMFS statistical areas 539 and 611, as well as activity in statistical areas 537, 616, and 623. The model distributes this activity evenly across the relevant statistical area. Additional nearshore effort reported to VTR is added to the activity of non-VTR reporters captured in the RI DEM data.

The model's revised approach uses state-reported active vessel data to help characterize effort in overlapping regions of Federal nearshore waters in LMAs 1, 2, 4, and the Outer Cape. Exhibit FED-2 summarizes the nature of the overlap and the approximate number of vessels that the model incorporates from overlapping input areas. The Model Vessel Region(s) column reflects the region to which the vessels are attributed in the model output. The Overlapping State Area column reflects the area of overlap

from a neighboring state. For example, depending on the month, the model evenly distributes one to four vessels from Massachusetts SRA 20 across the Federal portions of ME Zone D, E, F, and G outside 3 miles.

EXHIBIT FED- 2 . LOBSTER ACTIVITY IN OVERLAPPING FEDERAL NORTHEAST NEARSHORE REGIONS

NMFS STAT AREA	MODEL VESSEL REGION(S)	OVERLAPPING STATE AREA	APPROXIMATE NUMBER OF VESSELS FROM OVERLAPPING STATE VESSEL DATA*
513	Portions of ME Zones D, E, F, and G outside 3 miles	MA SRA 20	1 - 4 vessels in Federal waters only
		NH 513	2 - 4 vessels in Federal waters only
514	Portions of ME Zones F and G outside 12 miles	MA SRA 19	3 - 8 vessels based on area of overlap (assumes equal distribution of vessels across the overlapping areas)
537	MA SRA 12 and MA SRA 18	RI 537	0 to 2 vessels
539	RI 539	MA SRA 15	0 vessels reported in 2017

Exhibit FED-3 summarizes the number of active vessels in northeast nearshore waters, by model vessel area and month.

Gear Configurations

State logbook data also provide the detailed information needed to characterize gear configurations in Northeast Nearshore waters. The specification of each model vessel includes the total number of traps that the vessel fishes and the number of traps fished per trawl. As with northeast state waters, the model applies a distributional approach to characterize gear configurations in nearshore waters. Rather than estimate the concentration of vertical line based on a single model vessel designed to represent the average or typical configuration of gear, the model specifies multiple model vessels – representing the mix of gear configurations currently in use – and specifies the percentage of active lobster vessels to which each configuration applies. Appendix C presents the distribution of gear configurations for Northeast Nearshore waters. The table shows each model vessel area and month combination, and the percentage distribution of vessels to each gear configuration bin (i.e., the combination of traps fished and traps per trawl).

The data and methods for relevant northeast states are presented in the sections below. Note that where appropriate, the model adjusts the trap-per-trawl figures to conform to the requirements enacted in 2014/2015. These minimum trap-per-trawl requirements apply in a large share of Northeast Nearshore waters.

EXHIBIT FED- 3 . ACTIVE LOBSTER VESSELS IN NORTHEAST NEARSHORE WATERS (2017)

NEARSHORE AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Maine State Zone A 3-12 Miles	46	27	35	54	85	93	112	112	116	113	104	87
Maine State Zone B 12+	14	12	9	11	12	10	10	3	2	7	4	4
Maine State Zone B 3-12 Miles	38	8	20	30	36	44	48	45	56	58	63	50
Maine State Zone C 12+	15	16	21	18	16	17	15	12	12	11	14	16
Maine State Zone C 3-12 Miles	66	39	38	52	47	49	41	35	44	58	64	67
Maine State Zone D 12+	55	35	39	55	46	42	37	35	37	42	44	44
Maine State Zone D 3-12 Miles	43	28	40	41	55	43	40	49	52	50	58	52
Maine State Zone E 12+	23	25	24	23	14	12	13	13	9	9	9	16
Maine State Zone E 3-12 Miles	34	21	32	26	28	21	12	17	29	29	30	28
Maine State Zone F 12+	15	23	22	16	6	8	8	10	11	17	12	18
Maine State Zone F 3-12 Miles	60	44	34	36	25	29	19	20	20	20	24	25
Maine State Zone G 12+	11	11	9	8	6	5	5	5	6	5	5	6
Maine State Zone G 3-12 Miles	35	21	23	39	41	36	35	34	39	40	44	44
NH 513	2	2	2	2	2	2	2	3	3	4	4	3
Mass SRA 15	-	-	-	-	-	-	-	-	-	-	-	-
Mass SRA 16	4	3	2	3	4	7	8	8	10	9	7	7
Mass SRA 17	-	-	-	-	1	1	1	1	1	1	1	-
Mass SRA 18	-	-	-	-	2	3	4	5	5	5	4	4
Mass SRA 19	28	12	11	15	23	16	15	22	28	37	40	33
Mass SRA 20	4	4	4	3	3	4	1	1	1	2	2	2
RI 537	2	-	2	2	2	2	2	1	1	1	1	2
RI 539	8	5	6	12	18	19	24	22	20	18	14	12
RI 611	-	-	-	-	-	1	1	1	1	-	-	-
RI 616	2	-	2	2	2	2	2	2	2	2	2	2
RI 623	-	-	-	-	1	1	1	1	1	1	1	1

Maine Nearshore Waters

To characterize gear configurations in Maine's nearshore waters, the model relies on DMR's 10% Harvester Reporting data. These trip-level data provide essential information on the total quantity of gear that a vessel fishes in a given area, as well as information that enables us to infer trawl configurations (see below). The data are reported by mile sub-area of each lobster zone, allowing a more detailed characterization of gear configurations in the region. Furthermore, Maine DMR provided Harvester data compiled across several years. Where appropriate, we pool data from 2015 to 2017 to characterize variations in gear configuration across areas and months. The model applies the following procedures to estimate vertical lines based on gear configuration:

- **Gear Quantity.** The Harvester data indicate the total number of traps that a vessel fished at the time of the trip recorded. The model calculates the average quantity of gear for each vessel in each month/area combination. To specify a distribution for these parameters, we create several categories or bins for classifying data records. For traps fished per vessel, we use the following

categories for the specification of model vessels: 1-100, 101-300, 301-500, 501-700, and 701 or more traps.

- **Traps per Trawl.** Fishermen report the total number of traps hauled in a given trip, as well as the number of hauls performed. Dividing the number of traps hauled in a month by the total number of hauls provides an estimate of average traps per trawl for the month. The model assumes that if the traps-per-haul figure is five or less, the vessel fishes with one endline per trawl. If the traps per haul figure is greater than five, we assume two endlines are used. For traps per trawl, the model uses the following categories for the specification of model vessels: 1, 2, 3-4, 5-9, 10-14, 15-19, 20-39, and 40+ traps per trawl.
- **Gear Distributions.** The model cross-tabulates traps per vessel and traps per trawl, estimating the percentage of vessels that fish different configurations. We develop a separate gear distribution for each month for each of Maine's 21 nearshore model vessel areas.
- **Point Estimates.** To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. For example, for the traps per trawl variable, we need to assign numerical values to the "10 to 14" range, etc. To do so, we calculate the average traps per trawl for all responses in the range, across all months. We do the same for the number of traps fished, calculating an average number of traps for each of the ranges. The point estimates are calculated collectively for all Maine nearshore waters. Exhibit FED-4 summarizes the point estimates.

EXHIBIT FED- 4. POINT ESTIMATES APPLIED FOR LOBSTER GEAR CONFIGURATION RANGES IN MAINE NEARSHORE WATERS

VARIABLE	RANGE	POINT ESTIMATE
Traps per Trawl	3-4	3.5
	5-9	6.8
	10-14	11.5
	15-19	16.3
	20-39	20.9
	40+	NA
Number of Traps Fished	1-100 Traps	54.2
	101-300 Traps	213.5
	301-500 Traps	409.5
	501-700 Traps	604.9
	701+ Traps	789.8

Note: Over the last few years, Maine implemented regulations limiting trawl length and traps fished in several geographic areas. In these areas, the distribution of model vessels is modified to comport to these regulatory limits.

Massachusetts Nearshore Waters

The MA DMF Catch Report data provide a foundation for characterizing gear configurations in Massachusetts nearshore waters (SRAs 15 through 20). For lobster vessels, the model applies the following methods:

- **Gear Quantity.** The Catch Report data indicate the total number of traps that a vessel fished during the month. To specify a distribution for these parameters, we create several categories or bins for classifying data records. For traps fished per vessel, we use the following categories for the specification of model vessels: 0-99, 100-299, 300-499, 500-799, and 800+.
- **Traps per Trawl.** Massachusetts lobstermen do not explicitly report traps per trawl; they do, however, report the number of traps they fished and the number of vertical lines they employed. We combine this information to estimate traps per trawl. We first divide the number of pots fished by the number of lines fished to calculate the number of traps per line. Consistent with DMF guidance, we then assume that if traps per trawl is less than or equal to three, the vessel fishes with one endline per trawl. If traps per trawl is four or greater, we assume two endlines are used. The traps per trawl estimates are derived by multiplying the number of traps per line by the assumed lines per trawl. To define model vessels, the model uses the following categories or bins for traps per trawl: 1, 2, 3, 4-5, 6-9, 10-14, 15-19, and 20+ traps per trawl.
- **Gear Distributions.** The model cross-tabulates traps per vessel and traps per trawl, estimating the percentage of vessels that fish different configurations. We develop a separate gear distribution for each month for each of the five nearshore model vessel areas (SRAs 16 through 20) where vessels were active in 2017.
- **Point Estimates.** To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. The model calculates the average traps per trawl for all responses in the range, across all months. For traps fished, the model calculates an average number of traps for each of the ranges. We develop separate gear configuration parameters for three partially consolidated nearshore areas (SRAs 15/16, 17/18, and 19/20). Exhibit FED-5 summarizes the resulting values.

EXHIBIT FED- 5. POINT ESTIMATES APPLIED FOR LOBSTER GEAR CONFIGURATION RANGES IN MASSACHUSETTS NEARSHORE WATERS

PARAMETER	RANGE	NEARSHORE SRA 15/16	NEARSHORE SRA 17/18	NEARSHORE SRA 19/20
Traps per Trawl	6 to 9	NA	NA	NA
	10 to 14	10.8	11.2	10.5
	15 to 19	16.5	17.1	16.5
	20+	44.6	39.1	35.8
Number of Traps Fished	0-99	54.6	NA	45.0
	100-299	185.0	172.9	187.9
	300-499	372.1	389.2	366.8
	500-799	617.2	690.1	639.4
	800+	1,314.8	1,386.5	800.2

Rhode Island Nearshore Waters

Rhode Island DEM's logbook data provide a foundation for characterizing lobster gear configurations in nearshore waters:

- **Gear Quantity.** The RI logbook data allow us to characterize the average number of traps that each lobster vessel fishes in a given month. Each vessel fishing in nearshore waters is assigned to one of the following traps-per-vessel categories: 1-100, 101-500, 501-800, and 801+.
- **Traps per Trawl.** On the advice of RI fisheries experts, the model uses trap allocation as a proxy for trawl configuration, applying the following assumptions: vessels allocated 50 or fewer traps are likely to fish singles; vessels allocated 51 to 100 traps are likely to fish five-trap trawls; vessels allocated 101 to 200 traps are likely to fish 10-trap trawls; and vessels allocated 201 or more traps are likely to fish 15-trap trawls.
- **Gear Distributions.** We cross-tabulate traps per vessel and traps per trawl, estimating the percentage of vessels that fish different configurations. We develop a gear distribution for each month for all nearshore water areas as a group.
- **Point Estimates.** To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. Exhibit FED-6 summarizes the point estimate figures estimated for Rhode Island nearshore waters. These point estimates are combined with the percentage gear distributions to estimate the number of endlines for each month/area combination.
- **Endlines per Trawl.** Vessels fishing five-trap trawls are assumed to use one endline, while longer trawls are fished with two endlines.

EXHIBIT FED- 6 . POINT ESTIMATES APPLIED FOR LOBSTER TRAPS FISHED RANGES IN RHODE ISLAND NEARSHORE WATERS

TRAPS FISHED CATEGORY	1 TRAP PER TRAWL	5 TRAPS PER TRAWL	10 TRAPS PER TRAWL	15 TRAPS PER TRAWL	20 TRAPS PER TRAWL
1 to 100	NA	NA	38.0	71.4	NA
101 to 500	NA	NA	145.2	267.2	267.2
501 to 800	NA	NA	NA	700.7	NA
801+	NA	NA	NA	1,372.7	1,372.7

Northeast Nearshore Gillnet and Other Trap/ pot Vessels

The model uses the VTR-based approach discussed above to estimate the number of active vessels in the Northeast Nearshore gillnet and fisheries. The VTR dataset identified no trips in Nearshore waters off the coast of Maine and New Hampshire. Exhibit FED-7 summarizes the number of active gillnet and OTP vessels in Northeast Nearshore waters by month, respectively.

The specification of model vessels for the Northeast Nearshore gillnet and other trap/pot vessels was developed using the same data sources as those used to produce the model vessels assigned to Massachusetts and Rhode Island state waters. The in-depth discussions for these states (below) provide details on the gear configurations assigned to Northeast Nearshore gillnet and other trap/pot vessels.

EXHIBIT FED- 7 . ACTIVE GILLNET AND OTP VESSELS IN NORTHEAST NEARSHORE WATERS (2017)

NEARSHORE AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Gillnet Mass Nearshore Areas (includes LMAs 1,2, Outer Cape)	16	4	2	7	14	73	136	118	103	71	33	30
Gillnet RI Nearshore Areas (includes Areas 539 and 613)	1	1	0	3	11	12	10	2	4	7	10	9
OTP Mass Nearshore Areas (includes LMAs 1,2, Outer Cape)	1	2	0	1	0	0	3	4	5	7	3	4
OTP RI Nearshore Areas (includes Areas 539 and 613)	0	0	0	0	3	3	3	1	6	5	6	3

NORTHEAST OFFSHORE WATERS

State data do not cover activity or gear configurations for vessels operating in the offshore waters of LMA 3. The methodologies for offshore waters rely on VTR data, supplementary Federal data sets, and other expert input, as discussed below. These approaches are similar to those applied in earlier versions of the model.

Active Vessels

A Federal lobster permit gives a vessel the right to fish in the LMA the permit specifies. The VTR database typically does not contain information on the activity of vessels that hold a Federal lobster permit but no other Federal permit. Information on the location of trips taken by vessels that hold Federal lobster permits is limited to those that also hold permits for other fisheries that impose VTR requirements; these vessels must report all fishing activity to GARFO.

To identify vessels that hold only a lobster permit and are not required to submit VTRs, the model relies on NMFS' Northeast Permit Database. For LMA 3, the model compares VTR and permit data to identify vessels that are permitted only for the lobster fishery and thus not subject to VTR requirements. Because some fishermen maintain a Federal lobster permit but do not actively fish, the model estimates the number of such vessels that are active within the LMA by scaling the total number vessels permitted to fish LMA 3 by the proportion of other permitted lobster trap/pot vessels (i.e., those vessels required to report to VTR) that actively fished in a given month.

In the absence of more detailed information on the location of fishing activity, the model distributes non-reporters based on the location of VTR reporters. Specifically, at the recommendation of the NEFSC, the proportional distribution of VTR reporters to each NMFS statistical area within LMA 3 is used to apportion non-reporters. The model assumes that the activity of these vessels within each statistical area is evenly distributed. Finally, to estimate the total number of vessels active in each grid cell for each month, the model adds the number of active vessels estimated from the permit data to the number obtained from VTR. The VTR reporters include not only lobster vessels, but gillnetters and OTP vessels.[18] Exhibit FED-8 summarizes the model's estimate of the number of active vessels in offshore waters.

[18] Within the OTP fishery, commercial fishermen often maintain and use different types of gear to target different species. Thus, the model assumes that each OTP vessel maintains separate sets of gear for each species it targets. To provide an accurate characterization of the amount of gear such vessels employ, the model treats multi-purpose trips as separate events. For example, a vessel that targets both black sea bass and

EXHIBIT FED- 8 . ACTIVE VESSELS IN NORTHEAST OFFSHORE WATERS (2017)

NEARSHORE AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lobster	66	64	58	58	50	68	79	70	70	75	77	80
Gillnet	18	27	29	38	32	27	11	12	8	8	4	6
Other Trap/Pot	2	2	2	4	4	4	4	3	1	1	3	5

Gear Configurations

The model uses simplified assumptions to characterize gear configurations used in Northeast Offshore waters. These assumptions come from a variety of sources, as described below:

- **Lobster.** Model inputs for lobster vessels in offshore waters are based on data developed for the NEFSC's Decision Support Tool (DST). We average across all the traps per trawl observations provided by NEFSC to obtain an estimate for each month. NEFSC also provided the total traps fished in each month; we divide this figure by the number of active lobster vessels in LMA 3 to obtain the average number of traps fished per vessel, and use that figure to specify a model vessel for each month.
- **Gillnet and other trap/pot.** The specification of model vessels for the offshore gillnet fishery relies on data collected through the Northeast Domestic Fisheries Observer Program, which is operated by NEFSC. The Northeast Observer Program maintains and distributes data on fishing activity off the Northeastern and Mid-Atlantic U.S. for scientific and management purposes. Under the program, trained scientific observers travel aboard commercial fishing vessels to obtain data that are not readily obtainable by other means, focusing on detailed observations of gear rigging and deployment. Using records from the Observer dataset for 2015 through 2018, model vessels were developed for the Northeast offshore sink gillnet and Northeast offshore other trap/pot fisheries. To characterize the gillnet fishery, the model assigns four strings per vessel and two endlines per string for all months. For the other trap/pot fishery, the model assigns 518 traps, 148 traps per trawl, and two endlines per string for all months based on the offshore red crab fishery, which fishes in long trawls.

MID- ATLANTIC AND SOUTHEAST FEDERAL WATERS

Active Vessels

To estimate the number of active vessels in Mid-Atlantic and Southeast Federal waters the model relies on VTR and Southeast Logbook data, respectively, using the approaches previously described for these data sources. Exhibit FED-9 summarizes, by fishery and month, the model's estimate of the number of active vessels in Mid-Atlantic and Southeast Federal waters.

hagfish on the same trip is treated as having taken two trips to the same location. The determination of the species targeted is based on VTR and Logbook gear and species codes.

EXHIBIT FED- 9. ACTIVE VESSELS IN MID- ATLANTIC AND SOUTHEAST FEDERAL WATERS (2017)

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mid-Atlantic Nearshore Lobster	9	6	8	8	5	19	21	1	18	20	17	15
Mid-Atlantic Offshore Lobster	12	7	12	12	14	16	19	17	18	16	15	13
Mid-Atlantic Nearshore Gillnet	65	50	38	44	33	28	8	8	15	20	34	49
Mid-Atlantic Offshore Gillnet	10	8	13	16	17	4	1	3	5	4	4	6
Mid-Atlantic Nearshore Other Trap/pot	19	11	4	13	15	17	14	13	16	18	23	25
Mid-Atlantic Offshore Other Trap/Pot	4	5	1	2	3	3	4	4	4	5	2	1
Southern Nearshore Gillnet	4	3	5	8	5	5	3	3	6	9	14	8
Southern Offshore Gillnet	0	0	0	0	0	0	0	0	1	1	1	1
Southern Nearshore Other Trap/Pot	5	6	3	3	3	3	1	1	0	1	2	2
Southern Offshore Other Trap/Pot	2	3	1	4	1	2	1	0	0	0	0	0

Gear Configurations

The model uses simplified assumptions to characterize gear configurations used in Mid-Atlantic and Southeast Offshore waters. These assumptions come from a variety of sources as described below and are summarized in Exhibit FED-10:

- **Mid-Atlantic Nearshore and Offshore lobster, gillnet, and other trap/pot.** The specification of model vessels for the offshore gillnet fishery relies on data collected through the Observer Program. Using these data, separate model vessels were developed for the Mid-Atlantic Nearshore and Offshore lobster, gillnet, and other trap/pot fisheries based on the average Observer values for these regions using records for 2015 through 2018. The model assigns these values for all months.[19]
- **Southeast Nearshore and Offshore gillnet.** The specification of model vessels for the Southeast Nearshore and Offshore gillnet fishery relies on data collected through the Southeast Domestic Fisheries Observer Program, which is operated by Southeast Fisheries Science Center (SEFSC). The Southeast Observer Program maintains and distributes data on fishing activity off the Southeast U.S. for scientific and management purposes. Using average values from the Observer dataset for 2015 through 2018, model vessels were developed for the Southeast Nearshore and Offshore gillnet fisheries. The model assigns these values for all months.
- **Southeast Nearshore and Offshore other trap/pot.** The Southeast Logbook provides basic information on the number of traps hauled per trip. The model uses the average number of traps hauled for trips using trap/pot gear for 2017. Based on discussion with NMFS gear experts, the model assumes all Federal Southeast other trap/pot vessels employ singles with one endline per trawl. The model assigns these values for all months.

[19] In addition to those specified in Exhibit FED-10, the model also assigns model vessels to the portion of the LMA 2/3 overlap that intersects with NMFS Statistical Area 613, based on information available from RI DEM. The model specifies two model vessels, both fishing 15 traps per trawl, with 267 and 1,373 traps fished, respectively.

EXHIBIT FED- 10 . MID- ATLANTIC AND SOUTHEAST FEDERAL MODEL VESSEL CONFIGURATIONS

MODEL VESSEL	TRAPS OR STRINGS FISHED	TRAPS PER TRAWL	ENDLINES PER TRAWL OR STRING
Mid-Atlantic Nearshore Lobster	736	21	2
Mid-Atlantic Offshore Lobster	1460	46	2
Mid-Atlantic Nearshore Gillnet	3.8	-	2
Mid-Atlantic Offshore Gillnet	5.1	-	2
Mid-Atlantic Nearshore Other Trap/Pot	444	26	2
Mid-Atlantic Offshore Other Trap/Pot	432	128	2
Southern Nearshore Gillnet	1.5	-	2
Southern Offshore Gillnet	1.5	-	2
Southern Nearshore Other Trap/Pot	346	1	1
Southern Offshore Other Trap/Pot	346	1	1

GENERAL APPROACH TO STATE WATERS

NMFS and IEc have worked directly with state marine resource officials to develop baseline modeling assumptions for vessels fishing exclusively in state waters. Key modeling parameters for lobster, blue crab, and other trap/pot vessels include: (1) the number of vessels active in different months of the year; (2) the total number of traps fished in different areas; and (3) the typical number of traps per trawl. For gillnet vessels, key parameters include: (1) the number of vessels active in different months of the year; and (2) the total number of strings typically fished.

The model development effort focused on obtaining the most recent and highest quality data available from each state to characterize fishing effort in state waters. Exhibit ST-1 provides a brief overview of the data sources. As shown, the model relies primarily on data for 2017; the data for Connecticut are from 2016, while the data for Georgia include information characterizing activity in both 2017 and 2018. The exhibit also characterizes information obtained on gear configurations. As shown, gear information sources are of similar vintage and vary from state to state:

- For some states, key gear configuration parameters are estimated based on reporting data (e.g., logbook data) furnished by fishermen in accordance with state requirements.
- For other states, surveys are the primary source of gear configuration information. In some cases, these surveys are one-time efforts, while others are administered annually (e.g., recall surveys).
- For other states, gear configurations are largely based on the best professional judgment of state fisheries experts.

In some cases, the gear data are taken from a mix of sources (e.g., surveys and best professional judgment).

The individual state profiles in this section provide detailed descriptions of the data and analysis used to characterize vessels fishing in state waters.

EXHIBIT ST- 1 . OVERVIEW OF STATE DATA SOURCES

STATE	YEAR COVERED BY MOST RECENT ACTIVITY DATA	GEAR CONFIGURATION DATA	
		DATA SOURCE	YEAR
ME	2017	Reporting	2017
NH	2017	Reporting	2017
MA	2017	Reporting/Survey	2017
RI	2017	Reporting	2017
CT	2016	Reporting	2016
NY	2017	Reporting	2017
NJ	2017	BPJ	2017
DE	2017	Reporting	2017
MD	2017	Reporting/BPJ	2017
VA	2017	Reporting	2017
NC	2017	BPJ	2017
SC	2017	Reporting	2017
GA	2017/2018[1]	Survey	2017/2018[1]
FL	2017	Reporting	2017

Notes: Georgia DNR conducted its survey with blue crab fishermen in March of 2018, with the responses reflecting a mix of 2017 experience and anticipated 2018 activity

MAINE

The discussion below explains the model's characterization of the activity and gear associated with lobster vessels fishing in Maine waters.

Number of Active Vessels

To estimate the number of lobster vessels operating in state and nearshore waters off the Maine coast, the model incorporates two categories of data provided by the Maine Department of Marine Resources:

- First, DMR provided an extract of its "100% Dealer Reporting" data for 2017. These data report the individual vessels that were active in each of the seven Maine lobster zones in each month (see Exhibit ME-1). Active vessels are those that landed at least 100 pounds of lobster. The data also designate whether each vessel holds a Federal permit. The number of active vessels in each zone incorporates both state-permitted vessels as well as all federally permitted vessels.[20]
- Vessels in each zone are distributed to sub-areas defined by distance from shore, e.g., Zone G, 0-3 miles. Maine's "10% Harvester Reporting" data provide trip-level information on a variety of parameters, including more precise information on fishing location. Specifically, in the Harvester form, fishermen report whether they fished 0-3, 3-12, or 12+ miles from shore. These data allow the model to distribute effort in a given Zone proportionately to the distance sub-areas.[21] In doing so, we implicitly assume that the selection of reporters for the Harvester data is representative of overall effort and spatial distribution.

Exhibit ME-2 summarizes the estimated activity in each fishing area.[22]

Gear Configurations For Model Vessels

In many state waters, the model estimates the concentration of vertical line based on average gear configuration parameters for a given area. The size and complexity of the lobster fishery in Maine call for a more detailed approach. Rather than estimate the concentration of vertical line based on a single model vessel designed to represent the average or typical configuration of gear within a particular area, the chosen approach incorporates multiple model vessels for each area – representing the full range of gear configurations currently in use – and specifies the percentage of active vessels within the area to which each configuration applies.

To characterize gear configurations in Maine's state and nearshore waters, the model relies on DMR's 10% Harvester Reporting data. These trip-level data provide essential information on the total quantity of gear that a vessel fishes in a given area, as well as information allowing us to infer gear configurations (see below). As noted, the data are reported by distance from shore within each lobster zone, allowing a more detailed characterization of gear configurations in the region. Furthermore, the DMR provided Harvester data compiled across several years (2014-2017). Where appropriate, we pool data from 2015 to 2017 to characterize variations in gear configuration across areas and months. These years are selected to

[20] Unlike other Northeast states, the model relies exclusively on the Maine Dealer data for estimating active vessels, both state- and federally-permitted. VTR data are not incorporated into the active vessel count in Maine state and nearshore waters.

[21] Harvester data from 2015 through 2017 are used for this apportionment process.

[22] In addition to the lobster fishery, DMR also regulates the gillnet fishery and issues permits to gillnet vessels. However, DMR notes that very few gillnet vessels have been active in recent years. To the extent that gillnet vessels fish exclusively with state permits (and are therefore not reflected in the VTR data), the model may understate the use of vertical line in Maine waters.

reflect fishing practices prevailing after passage of the 2014 ALWTRP trawling requirements. Model vessels assigned in Maine consider the demarcations established by recent rulemakings, including the ALWTRP exemption line, “6-mile” line, “12-mile” line, and recent state regulations that limit traps and/or restrict trawl length in specific geographic areas.

EXHIBIT ME- 1. MAINE LOBSTER ZONES

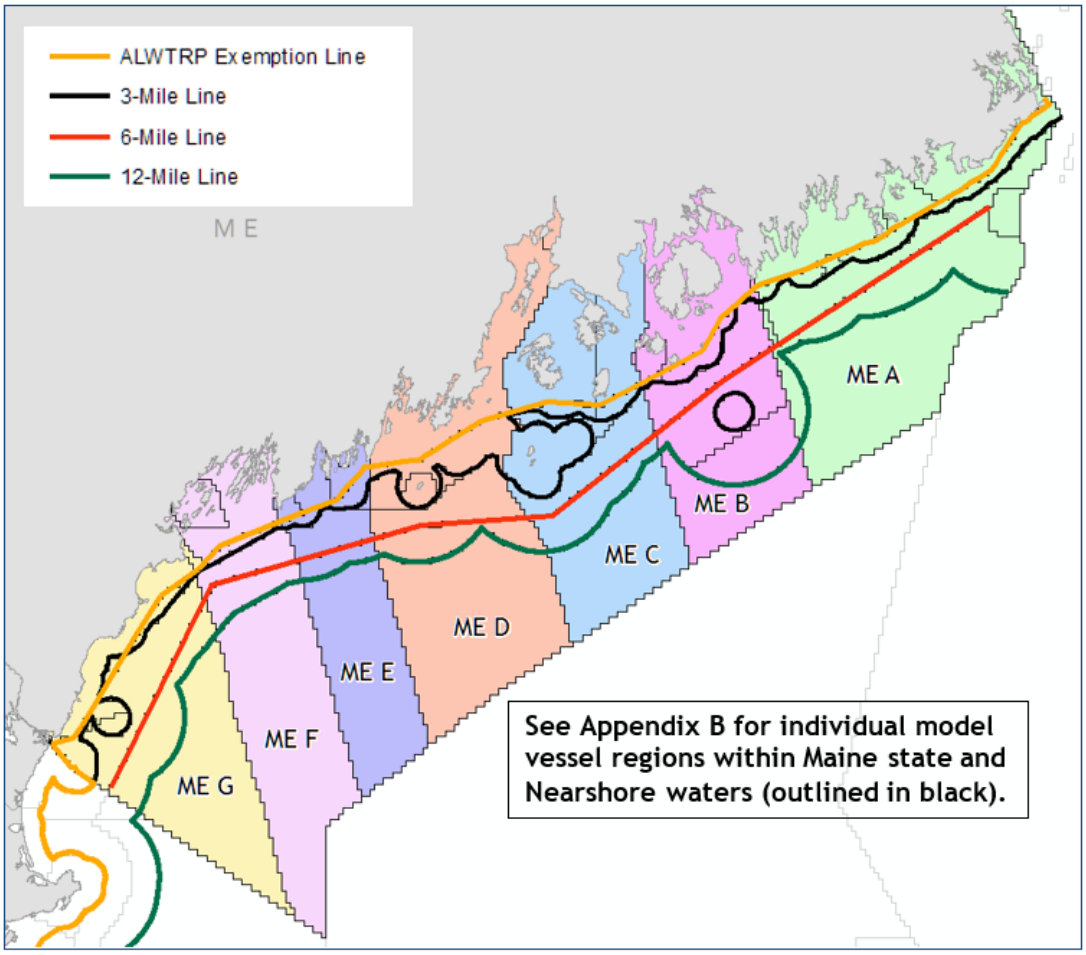


EXHIBIT ME- 2. ESTIMATED NUMBER OF ACTIVE LOBSTER VESSELS IN MAINE STATE AND NEARSHORE WATERS (2017)

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Maine State Zone A 0-3 Miles	86	34	52	180	337	492	786	828	786	714	550	235
Maine State Zone B 0-3 Miles	86	60	68	140	232	310	483	537	496	430	329	215
Maine State Zone C 0-3 Miles	146	111	114	223	346	472	652	709	693	626	547	309
Maine State Zone D 0-3 Miles	161	92	91	180	318	511	721	754	718	697	587	362
Maine State Zone E 0-3 Miles	125	83	65	87	149	233	311	327	285	282	250	185
Maine State Zone F 0-3 Miles	142	89	101	117	178	347	498	507	482	457	403	274
Maine State Zone G 0-3 Miles	47	35	32	59	103	135	153	165	151	140	107	81
Maine State Zone A 3-12 Miles	46	27	35	54	85	93	112	112	116	113	104	87
Maine State Zone B 3-12 Miles	38	8	20	30	36	44	48	45	56	58	63	50
Maine State Zone C 3-12 Miles	66	39	38	52	47	49	41	35	44	58	64	67
Maine State Zone D 3-12 Miles	43	28	40	41	55	43	40	49	52	50	58	52
Maine State Zone E 3-12 Miles	34	21	32	26	28	21	12	17	29	29	30	28
Maine State Zone F 3-12 Miles	60	44	34	36	25	29	19	20	20	20	24	25
Maine State Zone G 3-12 Miles	35	21	23	39	41	36	35	34	39	40	44	44
Maine State Zone A 12+ Miles	46	31	27	37	31	34	24	22	21	25	38	36
Maine State Zone B 12+ Miles	14	12	9	11	12	10	10	3	2	7	4	4
Maine State Zone C 12+ Miles	15	16	21	18	16	17	15	12	12	11	14	16
Maine State Zone D 12+ Miles	55	35	39	55	46	42	37	35	37	42	44	44
Maine State Zone E 12+ Miles	23	25	24	23	14	12	13	13	9	9	9	16
Maine State Zone F 12+ Miles	15	23	22	16	6	8	8	10	11	17	12	18
Maine State Zone G 12+ Miles	11	11	9	8	6	5	5	5	6	5	5	6

Distributional Approach

The two parameters of primary interest in specifying model vessels for the Maine lobster fishery are the number of traps fished per vessel and the number of traps fished per trawl. The Harvester data indicate the total number of traps that a vessel fished at the time of the trip recorded.[23] The model calculates the average number of traps fished for each vessel in each month/area combination. To specify a distribution for these parameters, we create several categories or bins for classifying data records. For traps fished per vessel, we use the following categories for the specification of model vessels: 1-100, 101-300, 301-500, 501-700, and 701 or more traps.

The Harvester survey does not require lobstermen to explicitly report traps per trawl; however, traps per trawl can be reasonably inferred from reported information. Fishermen report the total number of traps hauled in a given trip, as well as the number of hauls performed. Dividing a vessel's total traps hauled in a month by the total number of hauls provides an estimate of average traps per trawl. The model assumes, based on ALWTRP requirements, that if the traps-per-haul figure is five or less, the vessel fishes with one endline per trawl. If the traps per haul figure is greater than five, we assume two endlines are used.

Over the last several years, Maine has instituted trap and trawl-length maximums in specific locations along the coast. The model incorporates these regions and applies the maximums that Maine has specified

[23] Note that the total gear figure is distinct from the quantity of gear hauled in a given trip, which is also reported.

in characterizing activity within them. These exception areas override any gear configuration information based on the Harvester data.

For traps per trawl, the model uses the following categories for the specification of model vessels: 1, 2, 3-4, 5-9, 10-14, 15-19, 20-39, and 40+ traps per trawl.

Table ME-3 incorporates the categories specified above to illustrate the application of the approach to characterizing gear use. The table shows, for a hypothetical area and month, the percentage of vessels that fish a given combination of traps and traps per trawl. In this case, for instance, 20 percent of vessels fish 101 to 300 traps, configured in trawls of 10 to 14 traps. The model employs matrices like this to characterize the baseline distribution of gear use in specified areas off the Maine coast. The distribution for each area varies on a monthly basis, reflecting the monthly variation in gear configurations reported in the Harvester data.

EXHIBIT ME- 3. DISTRIBUTION OF VESSELS FISHING A GIVEN CONFIGURATION OF GEAR FOR A HYPOTHETICAL AREA AND MONTH

TRAPS PER TRAWL	TRAPS PER VESSEL					
	1-100 TRAPS	101-300 TRAPS	301-500 TRAPS	501-700 TRAPS	MORE THAN 700 TRAPS	TOTAL
1						
2						
3-4	10%	15%	15%	10%		50%
5-9			5%			5%
10-14	10%	20%	10%			40%
15-19						
20-39						
40+					5%	5%
Total	20%	35%	30%	10%	5%	100%

Appendix C presents the distribution of gear configurations for all states where the distributional approach is applied (including Maine). The table shows each model vessel area and month combination, and the percentage distribution of vessels to each gear configuration bin (i.e., the combination of traps fished and traps per trawl).

Model Vessel Parameters

To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. For example, for the traps per trawl variable, we need to assign numerical values to the “10 to 14” range, etc. To do so, we calculate the average traps per trawl for all responses in the range, across all months. We do the same for the number of traps fished, calculating an average number of traps for each of the ranges. The model applies separate sets of point estimates for state waters (0-3 miles from shore) and for nearshore waters (beyond three miles). Exhibit ME-4 summarizes the resulting values. It is essential to keep in mind that these are averages *within* each range. The model recognizes that gear configurations vary seasonally and by area, incorporating this variation

through the distribution of active vessels to different model vessels (i.e., different combinations of traps and traps-per-trawl).

EXHIBIT ME- 4. POINT ESTIMATES APPLIED FOR GEAR CONFIGURATION RANGES

VARIABLE	RANGE	STATE WATERS (0-3 MILES)	NEARSHORE WATERS (BEYOND 3 MILES)
Traps per Trawl	3-4	3.6	3.5
	5-9	6.9	6.8
	10-14	10.9	11.5
	15-19	16.8	16.3
	20-39	21.0	20.9
	40+	NA	NA
Number of Traps Fished	1-100 Traps	31.4	54.2
	101-300 Traps	200.3	213.5
	301-500 Traps	410.9	409.5
	501-700 Traps	602.7	604.9
	701+ Traps	782.8	789.8

Note: Over the last few years, Maine implemented regulations limiting trawl length and traps fished in several geographic areas. In these areas, the distribution of model vessels is modified to comport to these regulatory limits.

NEW HAMPSHIRE

The discussion below explains the model's characterization of the activity and gear associated with lobster vessels fishing in New Hampshire state waters.[24]

Number of Active Lobster Vessels

The New Hampshire Fish and Game Department (FGD) requires that fishermen who land no more than 1,000 pounds of lobster in a calendar year file an Annual Lobster Harvester Report, which includes a monthly summary of fishing activity. Fishermen who land over 1,000 pounds must file a Lobster Fisherman and Dealer Reporting Form, which includes trip-level data. To avoid double-counting activity captured in Federal datasets, we remove records for fishermen who also report to the Federal Vessel Trip Reporting (VTR) system.

The model assigns the activity of state-licensed vessels based on the location of activity reported by each vessel. The state reporting areas subject to the ALWTRP include the Isle of Shoals, Seabrook, Gulf of Maine, Rye, and Hampton; all other fishing areas are located landward of the ALWTRP exemption line. Vessels that fish more than one sub-area are counted only once to provide a more accurate count of vessels that are active in each of the two major areas: the state's inland bays and its Atlantic waters. Exhibit NH-1 presents the resulting data on the number of vessels active in NH waters in each month of 2017.

EXHIBIT NH- 1. ESTIMATED NUMBER OF VESSELS ACTIVE IN NE W HAMPSHIRE STATE WATERS (2017)

WATERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Inland Bays	3	4	5	8	28	53	60	57	57	46	23	10
Atlantic Waters	13	8	8	20	57	109	137	136	120	78	44	27

Gear Configurations For Model Vessels

Lobster

As with other northeast states, the vertical line model applies a distributional approach to characterize gear configurations used by New Hampshire lobster vessels. Rather than estimate the concentration of vertical line based on a single model vessel designed to represent the average or typical configuration of gear, the model specifies multiple model vessels – representing the full range of gear configurations currently in use – and specifies the percentage of active vessels to which each configuration applies. We develop separate distributions for the Inland Bays and Atlantic waters areas, all of which were exempted from the ALWTRP plan trawl requirements during the last rulemaking.

The specification of each model vessel includes the total number of traps that the vessel fishes and the number of traps fished per trawl. To assist with development of gear configurations, NH FGD provided

[24] The NH Fish and Game Department (NH FGD) indicates that OTP activity within NH waters is relatively minor. NH FGD does not maintain a separate reporting system for the OTP fishery. Instead, OTP fishermen use the forms developed for the lobster fishery. The NH data do not differentiate between lobster and OTP activity; therefore, any OTP activity is subsumed within estimates of activity for the lobster fishery. Furthermore, in past years, a small number of gillnet vessels were also active in New Hampshire state waters. Recently, activity has been minimal and FGD provided no gillnet information for 2017.

an additional data set reflecting supplementary monthly data gathering in 2017. In these supplementary reports, fishermen provided an average of total traps and total buoy lines fished per month. Linking by ID number, we appended these data to the 2017 Harvester and Dealer reporting data. We used the resulting data set to calculate model vessel gear configuration parameters. Specifically, the trip-level data are used to estimate the traps-per-trawl configuration that each vessel fishes in each month, while the supplementary data provide the number of traps that the vessel fishes in the month.

The merged data allow us to cross-tabulate traps per vessel and traps per trawl, estimating the percentage of vessels that fish different configurations. To define model vessels, the model uses the following categories or bins for traps per trawl: 1, 2, 3, 4-5, 6-9, 10-15, and 16+ traps per trawl. The model assumes that if the traps-per-haul figure is five or less, the vessel fishes with one endline per trawl. If the traps per haul figure is greater than five, we assume two endlines are used.

Likewise, the model establishes ranges for the traps fished per vessel: 1-100, 101-300, 301-500, 501-800, and 801+. We develop a separate gear distribution for each month and area. As a result, for example, the data suggest that about 13 percent of all vessels fishing in the Inland Bays area in May fish 1 to 100 traps configured as doubles.

To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. For example, for the traps per trawl variable, we need to assign numerical values to the “4-5” range, the “6-9” range, etc. To do so, we calculate the average traps per trawl for all responses in the range, across all months. We do the same for the number of traps fished, calculating an average number of traps for each of the ranges. Exhibit NH-2 summarizes the resulting values.

EXHIBIT NH- 2. POINT ESTIMATES APPLIED FOR GEAR CONFIGURATION RANGES

PARAMETER	RANGE	INLAND BAYS	ATLANTIC WATERS
Traps per Trawl	4 to 5	4.3	4.8
	6 to 9	6.2	7.8
	10 to 15	10	10.2
	16+	NA	18.3
Number of Traps Fished	0-100	35.7	37.6
	101-300	202.7	206.0
	301-500	436.3	414.2
	501-800	674.2	625.1
	801+	1,065.4	1,057.1

As noted, New Hampshire fishermen explicitly report the number of buoy lines per vessel. While the vertical line estimation methodology is needed to allow testing of alternative gear configuration scenarios, it yields estimates that differ slightly from the actual buoy line counts in the FGD data. To address this discrepancy, the model employs a simple calibration process to scale the endline estimates to the reported values. To accomplish this, we employed the ratio of reported endline counts to the modeled results to create a set of monthly calibration scalers. The model uses the scalers to adjust the baseline up or down to equal the reported endline counts for each area.

Appendix C presents the distribution of gear configurations for all states where the distributional approach is applied (including New Hampshire). The table shows each model vessel area and month combination, and the percentage distribution of vessels to each gear configuration bin (i.e., the combination of traps fished and traps per trawl).

MASSACHUSETTS

The discussion below explains the model's characterization of the activity and gear associated with lobster, gillnet, and other trap/pot vessels fishing in Massachusetts waters.

Data Overv iew

The Massachusetts Division of Marine Fisheries (DMF) provided detailed vessel-level data to support development of the vertical line model. Merging information from the trip-level and annual reporting components of its Catch Report data, DMF provided a comprehensive database of activity and gear configurations for all fixed-gear fisheries (lobster, gillnet, and other trap/pot).[25] The data provide monthly, vessel-level information on quantity of gear fished, number of endlines, and fishing location as indicated by Massachusetts statistical reporting area (SRA). Exhibit MA-1 provides a map of the Massachusetts SRAs. The model incorporates the data reflecting fishing activity and gear in 2017.

Number of Active Vessels

The model uses the 2017 DMF data to calculate the number of vessels active in state waters (i.e., inshore SRAs 1 through 14). To avoid double-counting federally permitted vessels, we remove all vessels that report to the Northeast Vessel Trip Report (VTR) system. In addition, the DMF data incorporate Federal vessels operating in SRAs outside of state waters. For several nearshore SRAs – 16 through 20 – the DMF data provide a preferred source for developing a count of active lobster vessels (many of which do not report to VTR). For all areas, the model assumes that the activity of each of the remaining vessels is evenly distributed throughout the area(s) is which the activity is reported. Exhibit MA-2 presents the number of active vessels in 2017 by month and area for each of the three major fisheries (lobster, gillnet, other trap/pot).[26]

[25] DMF removed all confidential information on vessel identity and assigned each vessel a generic identification number.

[26] The table excludes SRAs in which the vessels of interest reported no activity.

EXHIBIT MA- 1 . MASSACHUSETTS STATISTICAL REPORTING AREAS

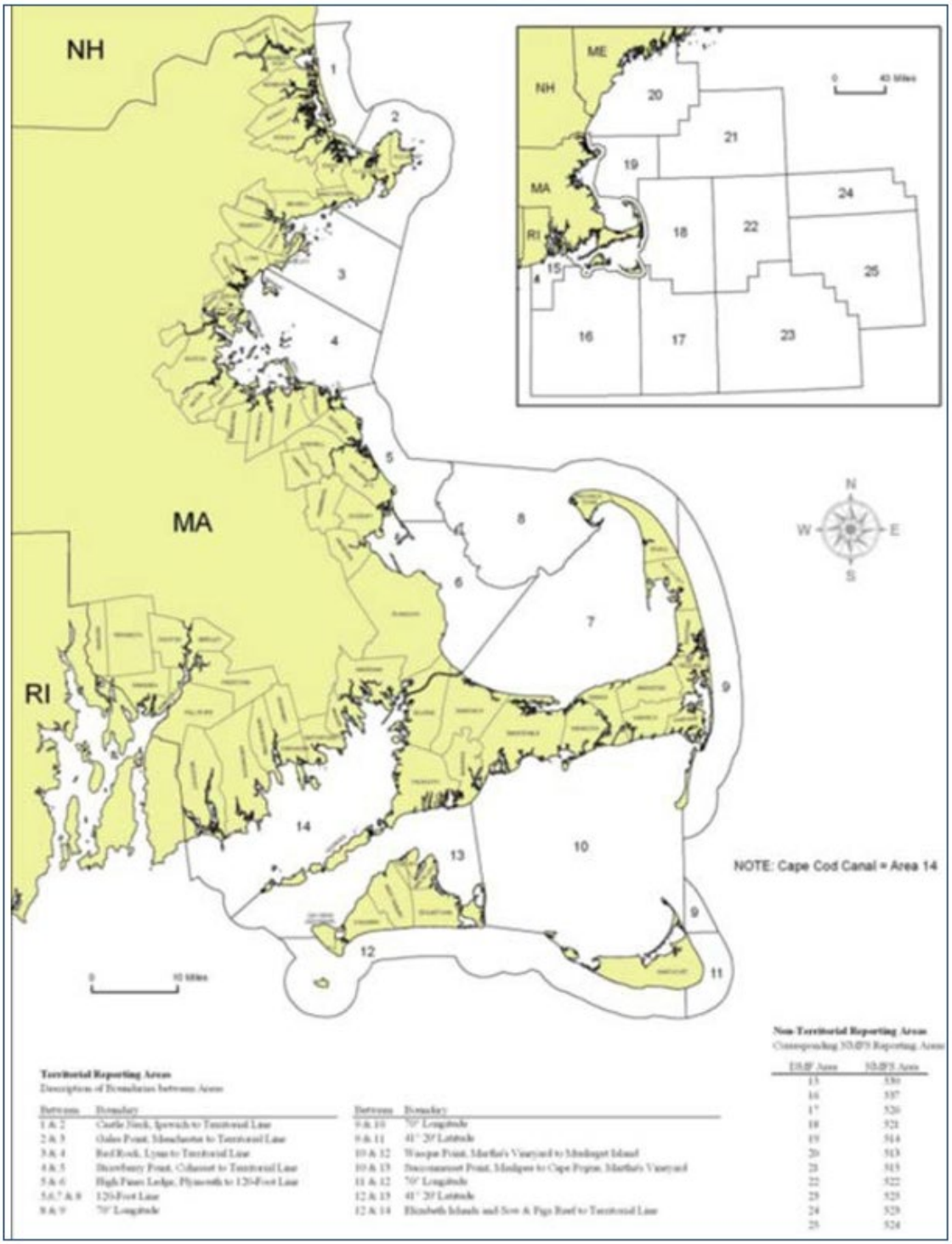


EXHIBIT MA- 2. ESTIMATED NUMBER OF ACTIVE VESSELS (2017)

FISHERY	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lobster Trap	SRA 1	1	2	1	5	11	16	31	32	26	23	12	7
	SRA 2	34	20	15	32	54	85	108	113	112	101	77	60
	SRA 3	20	7	5	18	45	74	86	88	82	74	68	42
	SRA 4	18	5	6	28	48	77	99	106	102	99	84	53
	SRA 5	10	2	5	10	44	49	59	59	58	54	50	32
	SRA 6	5	0	0	0	40	53	63	60	59	53	44	26
	SRA 7	1	1	0	0	23	40	54	61	57	53	39	17
	SRA 8	7	1	0	0	9	19	26	28	25	21	20	10
	SRA 9	0	0	0	0	11	29	33	33	29	27	21	3
	SRA 10	0	0	0	0	1	1	1	0	1	0	0	0
	SRA 11	0	0	0	0	0	0	0	0	0	0	0	0
	SRA 12	5	4	4	6	6	7	9	7	5	3	2	3
	SRA 13	3	4	6	8	10	14	18	15	9	6	3	5
	SRA 14	4	4	5	10	12	15	16	12	7	4	3	6
	SRA 16	4	3	2	3	4	7	8	8	10	9	7	7
	SRA 17	0	0	0	0	1	1	1	1	1	1	1	0
	SRA 18	0	0	0	0	2	3	4	5	5	5	4	4
	SRA 19	28	12	11	15	23	16	15	22	28	37	40	33
	SRA 20	4	4	4	3	3	4	1	1	1	2	2	2
Gillnet	SRA 2	1	1	0	0	0	0	0	0	3	2	1	1
	SRA 3	0	0	0	3	2	5	3	3	4	2	0	0
	SRA 4	0	0	0	5	7	7	7	7	2	0	0	0
	SRA 5	0	0	0	1	2	3	2	2	0	0	0	0
	SRA 9	0	0	0	0	1	1	1	0	0	0	0	0
OTP	SRA 7	0	0	0	0	2	2	3	5	7	4	3	0
	SRA 9	0	0	0	0	0	0	1	0	0	0	0	0
	SRA 10	0	0	0	4	12	10	20	20	25	25	21	9
	SRA 12	0	0	0	1	2	3	5	5	6	1	0	0
	SRA 13	0	0	0	0	5	10	17	14	15	13	8	2
	SRA 14	0	0	0	5	13	19	24	20	20	28	20	16

Gear Configurations for Model Vessels

To properly reflect the size and complexity of the Massachusetts lobster fishery, the model defines multiple model vessels for each area – representing the full range of gear configurations currently in use – and specifies the percentage of active vessels within the area to which each configuration applies. The discussion below describes the analysis in greater detail.

Lobster Vessel Gear Configurations

The two parameters of primary interest in specifying model vessels for the Massachusetts lobster fishery are the number of traps fished per vessel and the number of traps fished per trawl. Massachusetts lobstermen do not explicitly report traps per trawl; they do, however, report the number of traps they fished and the number of vertical lines they employed. We combine this information to estimate traps per trawl. We first divide the number of pots fished by the number of lines fished to calculate the number of

traps per line. Consistent with DMF guidance and the current ALWTRP, we assume that if the traps-per-line figure is less than or equal to three, the vessel fishes with one endline per trawl. If the traps per line figure is four or greater, we assume two endlines are used. The traps per trawl estimates are derived by multiplying the number of traps per line by the assumed lines per trawl. We calculate traps per trawl individually for each record in the database.[27] To define model vessels, the model uses the following categories or bins for traps per trawl: 1, 2, 3, 4-5, 6-9, 10-14, 15-19, and 20+ traps per trawl.

The second dimension in defining model vessels is the number of traps per vessel. Based on a review of the distribution of the average traps fished per vessel during the year, we define the following bins: 0-99, 100-299, 300-499, 500-799, and 800+.

Exhibit MA-3 incorporates the categories specified above to illustrate the application of the gear characterization approach. The table shows, for a hypothetical area and month, the percentage of vessels that fish a given combination of traps and traps per trawl. In this case, for instance, 20 percent of vessels fish 100 to 299 traps, configured as singles. The model employs matrices like this to characterize the baseline distribution of gear use in Massachusetts inshore lobster areas. The distribution for each area varies on a monthly basis, reflecting the monthly variation in gear configurations reported in the data.

EXHIBIT MA- 3. DISTRIBUTION OF LOBSTER VESSELS FISHING A GIVEN CONFIGURATION OF GEAR FOR A HYPOTHETICAL AREA AND MONTH

0	TRAPS PER VESSEL					
	0-99 TRAPS	100-299 TRAPS	300-499 TRAPS	500-799 TRAPS	MORE THAN 800 TRAPS	TOTAL
1		20%	10%	10%		40%
2			5%	10%		15%
3				5%		5%
5-Apr						
6 to 9				5%		5%
10 to 14				10%	5%	15%
15 to 19				10%	5%	15%
20+					5%	5%
Total		20%	15%	50%	15%	100%

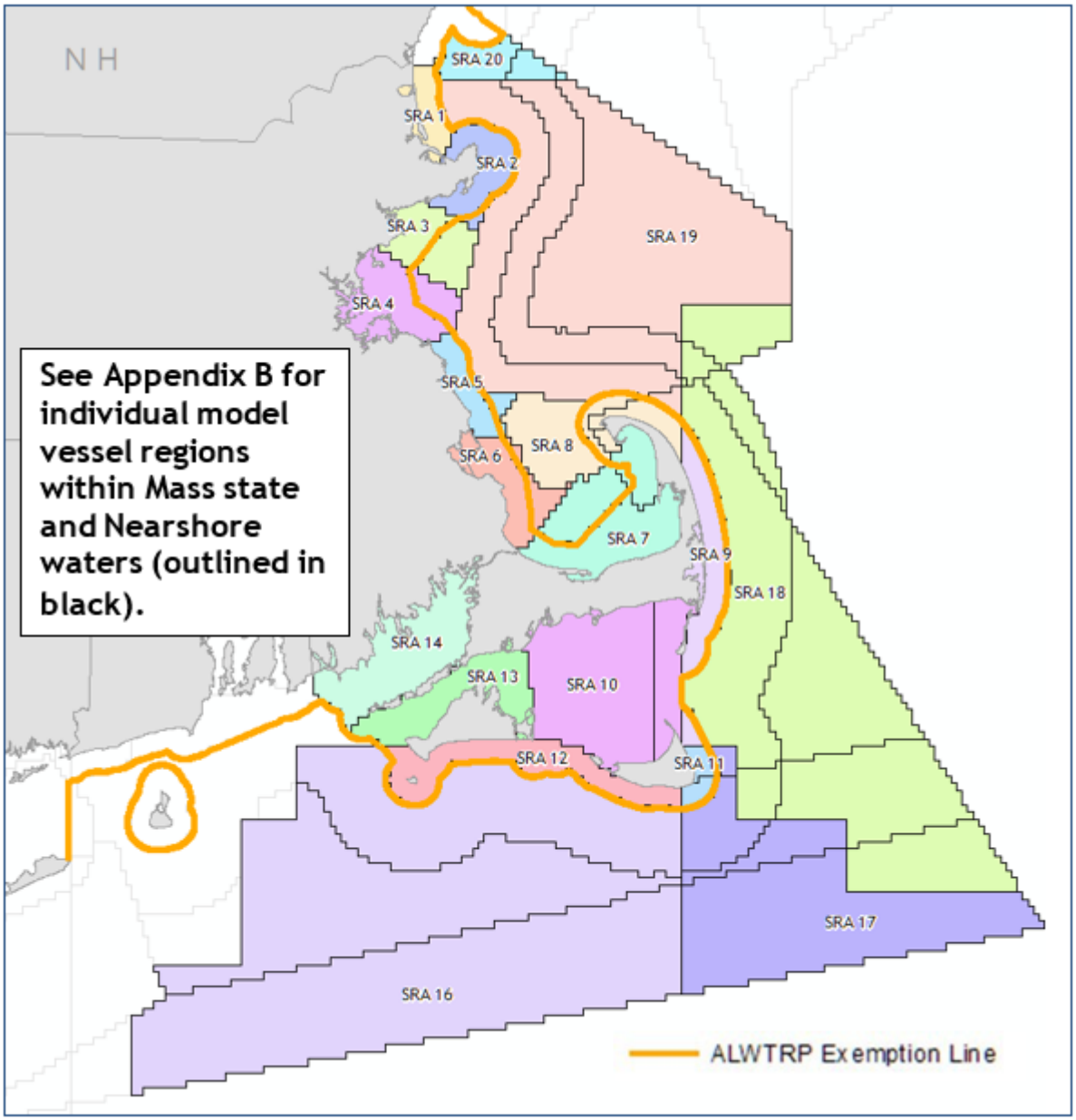
Appendix C presents the distribution of gear configurations for all states where the distributional approach is applied (including Massachusetts). The table shows each model vessel area and month combination, and the percentage distribution of vessels to each gear configuration bin (i.e., the combination of traps fished and traps per trawl). In calculating the distributions, the model consolidates SRA 10 through 13, as activity is relatively light.

[27] Note that this method necessarily leads to a "gap" in the estimate of traps per trawl; specifically, it yields no individual records where a vessel fishes four to five traps per trawl. Limited instances of four to five traps per trawl occur in the frequency distribution because of averaging performed across months for each vessel.

Model Vessel Areas

The model must specify the areas to which a given distribution of gear configurations apply. Model vessels assigned in Massachusetts consider the LMAs and ALWTRP regulations, which as of the most recent rulemaking, exempted most Massachusetts waters from minimum trap-per-trawl requirements. The model also takes advantage of the Massachusetts data to develop distributions that characterize the current configuration of lobster gear in several areas beyond state waters: SRAs 16, 18, 19, and 20. The state dataset covers vessel activity in these nearshore waters. In the absence of similarly detailed information from Federal sources or from other states, the Massachusetts data provide the best available source of information on the configuration of lobster gear in these areas. Exhibit MA-4 demonstrates the model vessel regions assigned in Massachusetts waters.

EXHIBIT MA- 4. MASSACHUSETTS MODEL VESSEL AREAS IN STATE AND NEARSHORE WATERS



Estimation of Vertical Lines

To estimate vertical line use in a given area and month, the model applies the specified distribution of gear configurations to the number of vessels reported to be active at that place and time. For instance, if the estimate of active vessels fishing in SRA 2 in September is 122, the model applies the mix of gear configurations calculated for September Area 2 to these 122 active vessels.

To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. For example, for the traps-per-trawl variable, we need to assign a numerical value to the "6 to 9" range. Based on a review of the data and recommendations from MA DMF, we calculate the average traps per trawl across all months for three inshore areas: SRAs 1 through 8; SRA 9; and SRAs 10 through 14. We do the same for the number of traps fished, calculating an average number of traps for each of the ranges for each inshore area. In addition to the inshore figures, we develop separate gear configuration parameters for the three nearshore areas (SRAs 15/16, 17/18, and 19/20). Exhibit MA-5 summarizes the resulting values. We compared the variation in averages between areas and months, and found the variation to be limited. Hence, we apply these values to all months and all areas. It is essential to keep in mind that these are averages within each range. The model recognizes that gear configurations vary seasonally and by area, and captures this variation by employing a different distribution of gear configurations (i.e., different combinations of traps and traps-per-trawl) for each area and month.

EXHIBIT MA- 5 . POINT ESTIMATES APPLIED FOR GEAR CONFIGURATION RANGES

PARAMETER	RANGE	INSHORE SRA 1-8	INSHORE SRA 9	INSHORE SRA 10-14	NEARSHORE SRA 15/16	NEARSHORE SRA 17/18	NEARSHORE SRA 19/20
Traps per Trawl	6 to 9	7.7	8.3	7.7	NA	NA	NA
	10 to 14	10.5	11.8	12.6	10.8	11.2	10.5
	15 to 19	15.9	16.0	16.2	16.5	17.1	16.5
	20+	31.9	32.2	35.0	44.6	39.1	35.8
Number of Traps Fished	0-99	47.4	59.4	54.6	54.6	NA	45.0
	100-299	184.7	204.2	169.1	185.0	172.9	187.9
	300-499	372.6	386.2	371.6	372.1	389.2	366.8
	500-799	629.8	618.4	665.9	617.2	690.1	639.4
	800+	800.0	800.0	800	1,314.8	1,386.5	800.2

Buoy Line Scalar

As noted, Massachusetts lobstermen explicitly report the number of buoy lines per vessel. While the vertical line estimation methodology is needed to test alternative gear configuration scenarios, it yields estimates that differ slightly from the actual buoy line counts in the DMF data. To address this discrepancy, the model employs a simple calibration process to scale the endline estimates to the reported values. We estimate the ratio of reported endline counts to the modeled results to create a set of monthly calibration scalers. The model uses the scalers to adjust the baseline up or down to equal the reported endline counts for each area. These scalars are applied only in state waters, where the endline counts provided are largely complete and self-contained.

Model Vessels for Gillnet And OTP Fisheries

In addition to the lobster fishery, the ALWTRP also covers two other fisheries active in Massachusetts waters: the gillnet fishery and the other trap/pot (OTP) fishery. We characterize model vessel gear configurations for these fisheries as described below.

Gillnet

Relatively few gillnet vessels operate in Massachusetts state waters, so the model applies simplified gear configuration assumptions. The key gear configuration parameter for gillnet vessels is the number of strings per vessel. Since the vessel-level data include the number of buoy lines per vessel, we can use the 2017 DMF data to estimate the number of strings per vessel by dividing the buoy line figure by two (i.e., by assuming two vertical lines per string). The model applies an average strings per vessel of five for all inshore waters in all months. For nearshore SRAs, the average number of strings per vessel is 19.

Other Trap/ Pot

The model characterizes gear use in the OTP sector based on data for the two major OTP fisheries in Massachusetts: fish pots and conch pots. Using 2017 data, we calculate the number of traps per vessel and traps per trawl for these fisheries.[28] Seeing limited seasonal variation in these figures, the model applies simple year-round averages for the key gear parameters. Geographic variation is captured by developing separate values for three sets of waters: state waters in SRAs 1 through 8; state waters for SRAs 9-14; and nearshore waters (SRAs 16 through 20). These estimates are presented in Exhibit MA-6.

EXHIBIT MA- 6 . GEAR CONFIGURATION PARAMETERS FOR OTP FISHERIES

WATERS	FISHERY	NUMBER OF TRAPS PER VESSEL	TRAPS PER TRAWL	NUMBER OF ENDLINES PER TRAWL
Inshore SRAs 1-8 Exempt waters	Fish Pots	104	1	1
	Conch Pots	118	2.5	1
Inshore SRAs 1-8	Fish Pots	104	2	1
	Conch Pots	118	2.5	1
Inshore SRAs 9-14	Fish Pots	121	18.5	2
	Conch Pots	150	3.7	2
Nearshore	Fish Pots	213	44.2	2
	Conch Pots	166	10	2

The model applies these gear configuration parameters to all vessels that report some form of OTP activity, based on an estimate of the seasonal distribution of activity between the two fisheries. This distribution is shown in Exhibit MA-7. For instance, in October in SRAs 1 through 8, the model assumes that 40 percent of all OTP vessels use the fish pot configuration, while the other 60 percent use the conch pot configuration.

[28] We calculate traps per trawl using the method described above for the lobster fishery.

EXHIBIT MA- 7 . DISTRIBUTION OF OTP GEAR CONFIGURATIONS, BY MONTH

WATERS	FISHERY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Inshore SRAs 1-8	Fish Pots	0	0	0	0	0	0	0.5	0.5	0.5	0.4	0.4	0.4
	Conch Pots	1	1	1	1	1	1	0.5	0.5	0.5	0.6	0.6	0.6
Inshore SRAs 9-14	Fish Pots	0	0	0	0	0.12	0.19	0.56	0.69	0.51	0.27	0.02	0
	Conch Pots	1	1	1	1	0.88	0.81	0.44	0.31	0.49	0.73	0.98	1
Nearshor	Fish Pots	0	0	0	0	0	0	0.67	0.7	0.67	0.36	0	0
	Conch Pots	1	1	1	1	1	1	0.33	0.3	0.33	0.64	1	1

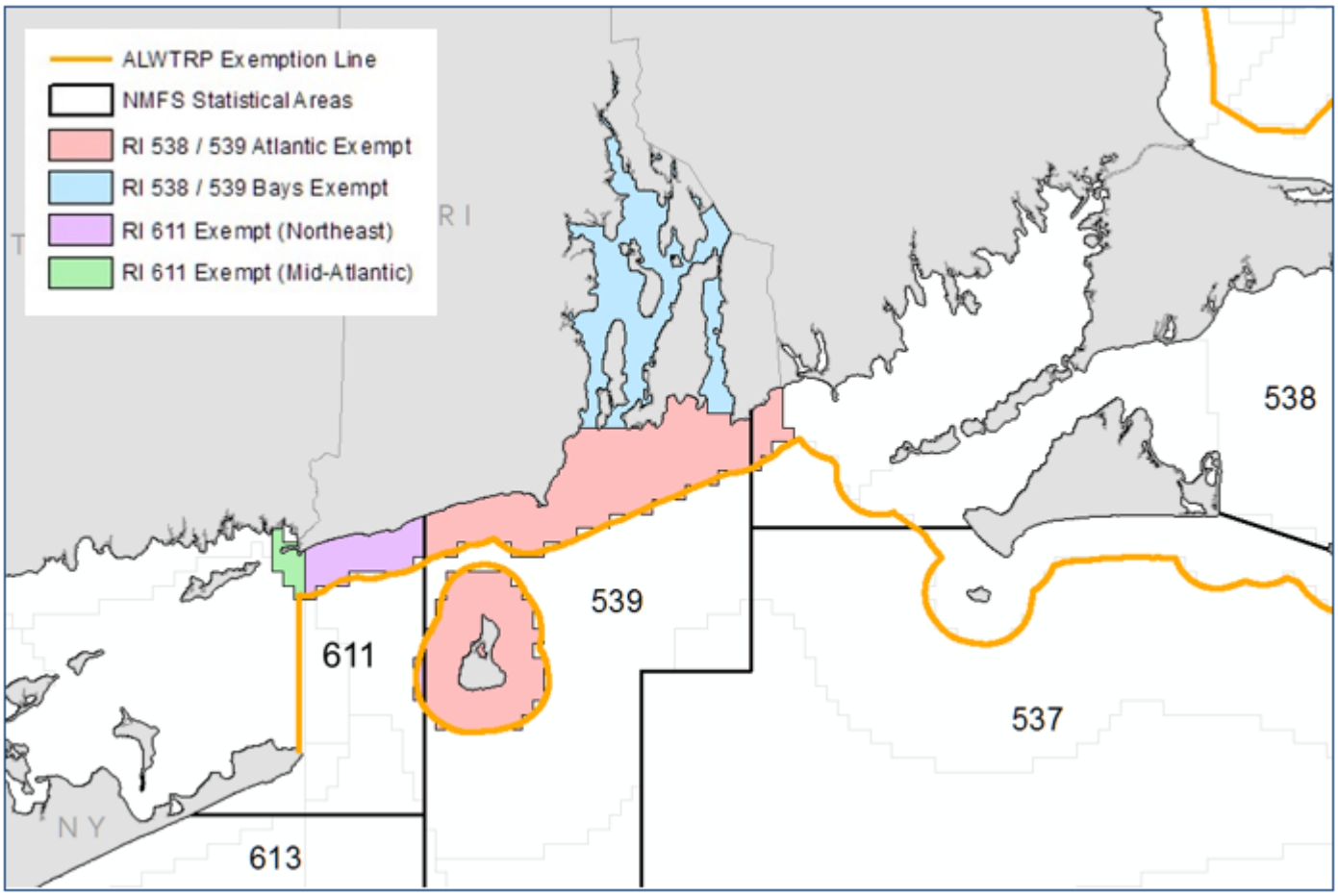
RHODE ISLAND

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in Rhode Island state waters.

Number of Active Vessels

The Rhode Island DEM Division of Marine Fisheries provided 2017 vessel-level data from its state logbook program. Fishermen submitting these trip-level logbook reports hold state permits, although the data include Federal lobster permit holders fishing in RI state waters. We use these data to calculate the number of lobster, gillnet, and other trap/pot (OTP) vessels fishing in the state-waters portion of NMFS statistical areas 538/539 (Narragansett Bay, RI coastal waters, and the southern Cape Cod area) and 611 (RI coastal waters adjacent to Long Island Sound). Exhibit RI-1 shows the location of these areas.

EXHIBIT RI – 1. RI STATE MODEL VESSEL AREAS AND NEARBY NMFS STATISTICAL AREAS



The vessel activity recorded in these areas includes all vessels holding only a state permit, as well as a portion of Federal permit holders who report fishing in the overall NMFS statistical area. The latter are evenly distributed to the statistical area, with a subset assigned to the state-waters portion of the overall statistical area. Exhibit RI-2 summarizes the activity data for 2017.

The OTP fishery includes vessels harvesting black sea bass, scup, eel, and conch. A single OTP fisherman may harvest multiple species; therefore, the logbook data do not allow disaggregation of these segments of the OTP fishery. However, DEM Marine Fisheries staff indicate that the scup fishery is open year-

round and has a large quota; therefore, fishermen primarily target scup. Black sea bass are also harvested, but this activity is limited by a small quota and frequent closures.

EXHIBIT RI- 2 . VESSELS ACTIVE IN RHODE ISLAND STATE WATERS, BY MONTH (2017)

FISHERY	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lobster	RI 538/539 State Waters	10	6	9	17	34	57	67	54	32	20	19	17
	RI 611 State Waters	0	0	0	1	2	4	6	5	4	0	0	0
Gillnet	RI 539 State Waters	2	0	0	9	18	19	15	12	10	11	8	2
OTP	RI 539 State Waters	1	1	1	2	19	20	24	13	13	13	6	1
	RI 611 State Waters	0	0	0	0	0	1	1	0	2	2	1	0

Gear Configurations For Model Vessels

Lobster

As with other northeast states, the vertical line model applies a distributional approach to characterize gear configurations used by RI lobster vessels. Rather than estimate the concentration of vertical line based on a single model vessel designed to represent the average or typical configuration of gear, the model specifies multiple model vessels – representing the full range of gear configurations currently in use – and specifies the percentage of active lobster vessels to which each configuration applies.

- **Gear Configuration Parameters.** The specification of each model vessel includes the total number of traps that the vessel fishes and the number of traps fished per trawl. The RI logbook data allow us to characterize the average number of traps that each lobster vessel fishes in a given month. Each vessel fishing in nearshore waters is assigned to one of the following traps-per-vessel categories: 1-100, 101-500, 501-800, or 801+. While the logbook data do not explicitly report traps per trawl, RI fisheries experts suggest that vessels with a large trap allocation tend to fish longer trawls, while vessels with small allocations fish singles. We use trap allocation as a proxy for trawl configuration, applying the following assumptions recommended by RI DEM: vessels allocated 50 or fewer traps are likely to fish singles; vessels allocated 51 to 100 traps are likely to fish five-trap trawls; vessels allocated 101 to 200 traps are likely to fish 10-trap trawls; and vessels allocated 201 or more traps are likely to fish 15-trap trawls.
- **Gear Distributions.** We cross-tabulate traps per vessel and traps per trawl, estimating the percentage of vessels that fish different configurations. We develop a separate gear distribution for each month for each of the two areas (538/539 and 611). As a result, for example, the data

suggest that in Area 538/539, about six percent of all vessels active in May fish 1 to 100 traps in 10-trap trawls.

- **Point Estimates.** To calculate the number of vertical lines deployed, the model must apply specific numerical values to parameters specified with ranges. Exhibit RI-3 summarizes the point estimate figures estimated in Rhode Island, with data pooled for both model vessel areas. These point estimates are combined with the percentage gear distributions to estimate the number of endlines for each month/area combination.
- **Endlines per Trawl.** Vessels fishing five-trap trawls are assumed to use one endline, while longer trawls are fished with two endlines.
- **Anchor Lines.** Consistent with findings for surrounding states, we assume that anchor lines are not used.
- Appendix C presents the distribution of gear configurations for all states where the distributional approach is applied (including Rhode Island). The table shows each model vessel area and month combination, and the percentage distribution of vessels to each gear configuration bin (i.e., the combination of traps fished and traps per trawl).

EXHIBIT RI- 3 . POINT ESTIMATES FOR LOBSTER GEAR QUANTITY FISHED (2017)

TRAPS FISHED CATEGORY	1 TRAP PER TRAWL	5 TRAPS PER TRAWL	10 TRAPS PER TRAWL	15 TRAPS PER TRAWL
1 to 100	22.4	34.0	48.3	50.2
101 to 500	NA	104.0	209.5	297.1
501 to 800	NA	NA	NA	728.7
801+	NA	NA	NA	1,525.0

Gillnet

- **Total Strings Fished.** The characterization of the Rhode Island gillnet fishery is based on a single model vessel that represents gillnet operations in area 539. The specifications for this vessel include the number of gillnet strings fished. Based on analysis of the 2017 logbook data, the model incorporates the assumption that each vessel in state waters fishes an average of 5.7 strings.
- **Other.** The model assumes two surface lines and two 10-foot anchor lines for each gillnet string.

Other Trap/ Pot

- **Total Traps Fished.** The model specifies a single model vessel to characterize OTP activity in Rhode Island state waters. The specification of each model vessel includes the total number of traps that the vessel fishes. On averaged over all months, OTP vessels in the region fish 36 pots each.

- **Traps per Trawl.** No Rhode Island-specific data are currently available to characterize the number of pots fished per trawl in the OTP fishery. However, RI DEM indicates that the fishery primarily targets scup, which typically are harvested using single traps. Therefore, we assume single traps for all vessels active in the OTP fishery. As noted, fishermen also use trap gear to harvest black sea bass in limited quantities. These traps are typically fished in trawls; as a result, the model may slightly overstate the number of vertical lines associated with the Rhode Island OTP fishery.

CONNECTICUT

The discussion below explains the model's characterization of the activity and gear associated with lobster, gillnet, and other trap/pot vessels fishing exclusively in Connecticut state waters. All data included in the model reflect 2016 fishing activity. The Connecticut Department of Environmental Protection (CT DEP) was unable to provide data for more recent years.

Number of Active Vessels

Lobster

- Exhibit CT-1 provides a map of the three major fishing areas in Connecticut state waters.[29] CT DEP analyzed catch report data to identify the number of lobster vessels active in Connecticut waters, organizing the data by month and fishing area. Exhibit CT-2 summarizes the data for 2016.

Other Trap/ Pot

- A small fish pot fishery operates in Long Island Sound, focusing on scup, tautog, and black sea bass. Exhibit CT-2 summarizes activity in this fishery in 2016. When only one or two vessels report activity, the data are withheld. The model assumes 1.5 active vessels in these instances.

Gillnet

- Historically, a small staked gillnet fishery has operated in Connecticut state waters. Because of limited participation, all data in 2016 were withheld. Therefore, the model assumes no gillnetting activity in Connecticut state waters, possibly understating vertical lines to a small degree.

GEAR CONFIGURATIONS FOR MODEL VESSELS

Lobster

- **Total Traps Fished**: The specification of each model vessel includes the total number of traps that the vessel fishes. CT DEP analyzed catch report data from 2016 to calculate the total number of lobster pots fished each month in each of the three areas that comprise the state's waters. To estimate the mean number of traps per vessel, we divide the total number of traps in each month/area by the number of active vessels in each month/area. The model vessels for Connecticut incorporate the resulting figures, as shown in Exhibit CT-3.[30]
- **Traps per Trawl**: Each model vessel incorporates an estimate of the number of traps per trawl. CT DEP reports that lobster vessels in state waters may fish singles or trawls of up to 12 traps.

[29] CT DEP typically uses the terms Western LIS, Central Basin, and Eastern Basin, respectively, for these same areas. For simplicity, as shown in Exhibit CT-1, the model uses the terms Long Island Sound West, Central, and East.

[30] In several instances, data on number of traps fished are withheld. In these cases, the model incorporates an average number of traps per vessel based on the adjacent months for which data are available. For instance, if no data are available for November, the model uses an average of the number of traps per vessel in October and December.

Consistent with CT DEP recommendations, the model vessels for all three state water areas assume the use of six-trap trawls.

- **Endlines per Trawl**: Based on input from CT DEP, we assume two endlines per trawl.
- **Anchor Lines**: Consistent with CT DEP recommendations, we assume that anchor lines are not used.

Other Trap/ Pot

- **Pots Fished per Vessel**: CT DEP analyzed catch report data to calculate the total number of fish pots fished by month and geographic area. To estimate the typical number of traps per model vessel, we divide this total by the number of active vessels in each month/area. The data suggest that fish pot vessels fished an average of 25 pots per vessel in 2016.
- **Other**: Consistent with CT DEP guidance, we assume that all pots are fished as singles, with one endline.

EXHIBIT CT- 1. MODEL VESSEL AREAS IN CONNECTICUT STATE WATERS

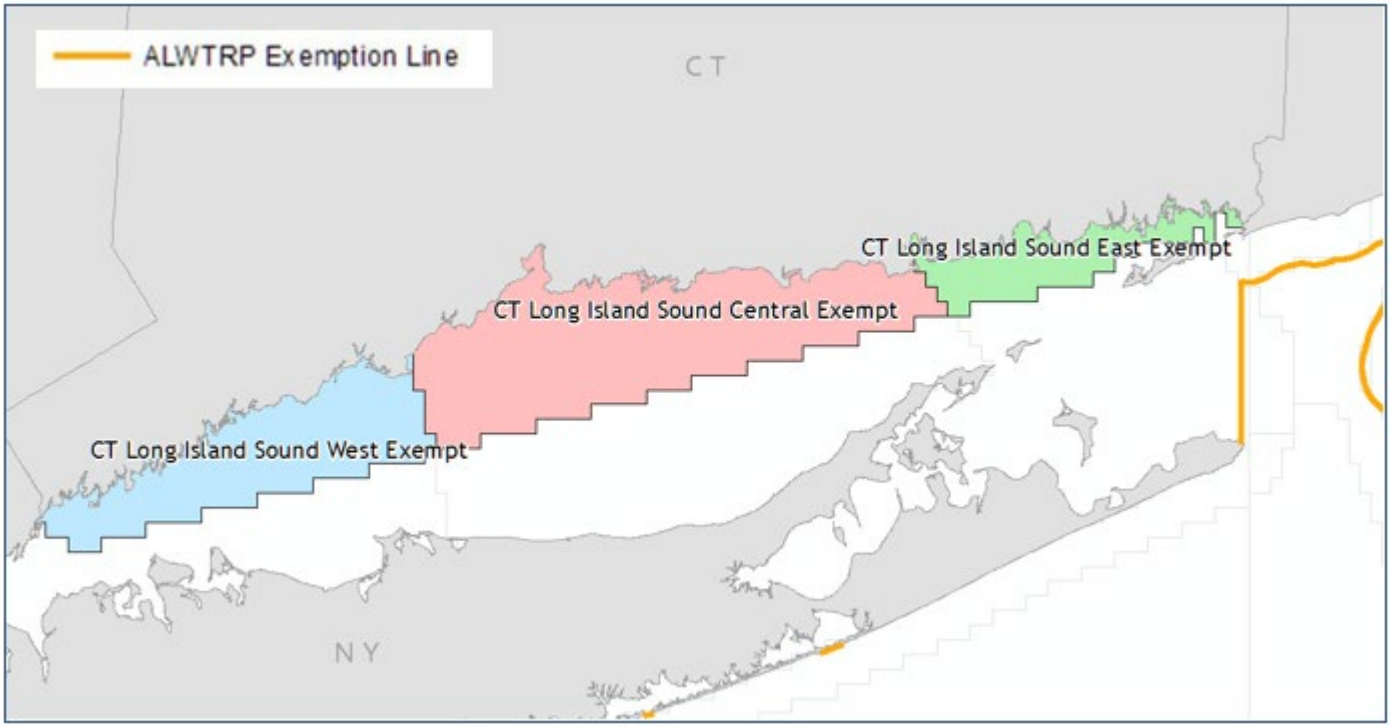


EXHIBIT CT- 2 . NUMBER OF ACTIVE VESSELS FISHING IN CONNECTICUT STATE WATERS (2016)

FISHERY	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lobster	Long Island Sound East	7	4	4	5	11	19	19	19	2	0	2	9
	Long Island Sound Central	3	4	8	11	15	22	25	25	2	0	4	8
	Long Island Sound West	6	4	6	8	8	12	12	10	4	0	5	8
Fish Pot	Long Island Sound East	0	0	0	0	0	2	5	7	6	3	0	2
	Long Island Sound Central	0	0	0	0	3	5	7	5	3	2	0	0
	Long Island Sound West	0	0	0	0	0	0	0	0	0	2	2	0

TABLE CT- 3 . NUMBER OF TRAPS FISHED PER LOBSTER VESSEL IN CONNECTICUT STATE WATERS (2016)

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Long Island Sound East	272	288	539	285	216	156	159	184	236	236	236	288
Long Island Sound Central	250	121	156	192	148	243	256	149	124.5	124.5	100	201
Long Island Sound West	364	274	354	329	293	302	298	351	111	111	132	153

NEW YORK

The discussion below explains the model's characterization of the activity and gear associated with lobster and gillnet vessels fishing exclusively in New York state waters.[31]

Number of Active Vessels

Lobster

- The New York Department of Environmental Conservation (NY DEC) provided detailed, trip-level logbook data on the activity of lobster vessels permitted in New York State. The reporting shows vessel activity in 34 detailed geographic areas. With help from NY DEC, we consolidated these areas into the four major segments of state waters – Long Island Sound (LIS) West, LIS Central, LIS East, and/or the South of Long Island – with the remaining areas being outside of NY state waters. Exhibit NY-1 shows the location of these areas, including the demarcation of exempt waters.
- To estimate the number of vessels active in each of the four areas, we collapse the trip-level data into a monthly dataset that can be used to compile the number of active vessels in each area and month. Exhibit NY-2 summarizes the estimated number of active trap/pot vessels in 2017.

Gillnet

- NY DEC provided similar trip-level logbook data for gillnet vessels permitted in New York State. As with trap/pot vessels, we collapse these data to a monthly dataset and compile the number of active gillnet vessels by month and area in 2017 (see Exhibit NY-2).

Gear Configurations For Model Vessels

Lobster

- **Total Traps Fished.** The specification of each model vessel includes the total number of traps that the vessel fishes. We use information from the NY DEC logbook data to estimate the average number of traps fished by vessels in each of the four areas of state waters. The estimate for each area is an average over the year, i.e., the model assumes that all traps are fished year-round, making no seasonal adjustment to the number of traps fished. Exhibit NY-3 summarizes the assumptions.
- **Traps per Trawl.** Each model vessel incorporates an estimate of the number of traps per trawl. Traps per trawl are reported with the logbook data, so averages over the year are calculated for each fishing area (Exhibit NY-3).
- **Endlines per Trawl.** Based on input from NY DEC, we assume two endlines per trawl.
- **Anchor Lines.** We assume that anchor lines are not used.

[31] Information on the activity of other trap/pot vessels licensed to fish exclusively in New York waters is not currently available. NY DEC indicates that while other species (e.g., tautog, black sea bass, scup) are harvested with traps, these species are essentially by-catch harvested by lobster vessels.

Gillnet

- For gillnets, the model incorporates an estimate of the number of strings fished per vessel. The NY DEC logbook data include information on this parameter; therefore, the model incorporates an estimate of the average number of strings per vessel in each area of state waters. Exhibit NY-4 presents the estimates.
- The gillnet model vessels also include a parameter reflecting the number of net panels per string. Exhibit NY-4 includes an estimate for each area, as calculated from the NY DEC logbook data.

EXHIBIT NY- 1 . NEW YORK STATE MODEL VESSEL AREAS

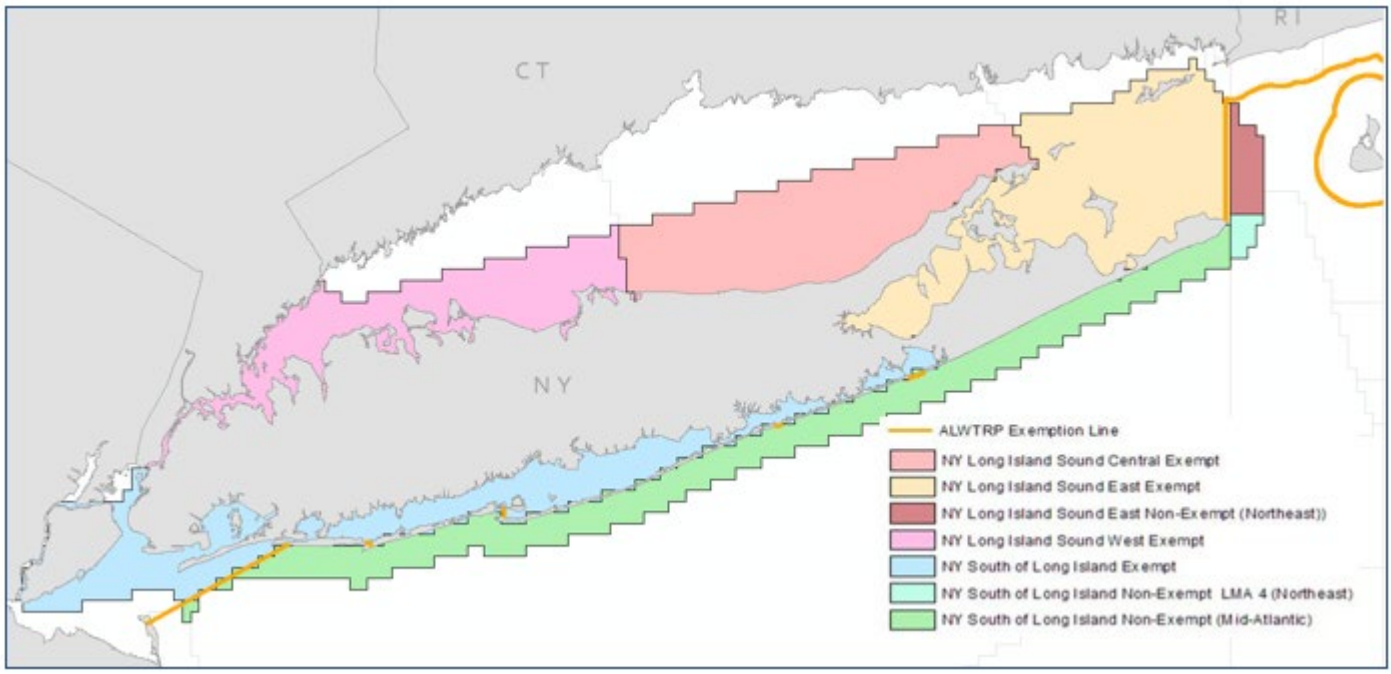


TABLE NY- 2. LOBSTER AND GILLNET VESSELS ACTIVE IN NEW YORK STATE WATERS (2017)

FISHERY	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Lobster	Long Island Sound East	2	1	3	12	43	46	32	16	21	19	16	5
	Long Island Sound Central	4		1	6	19	22	20	13	16	13	15	10
	South of Long Island Sound	4	2	1	8	15	19	23	20	24	24	19	9
	Long Island Sound West	4	3	3	13	19	19	17	17	17	12	12	6
Gillnet	Long Island Sound East				4	16	14	10	12	12	18	9	2
	Long Island Sound Central						1	1		1	3	3	
	South of Long Island Sound	1			6	12	12	6	8	6	39	46	3
	Long Island Sound West						3	2	2	1	1		

EXHIBIT NY- 3. GEAR ASSUMPTIONS FOR LOBSTER VESSELS IN NEW YORK STATE WATERS (2017)

AREA	AVERAGE POTS FISHED	AVERAGE TRAPS PER TRAWL
Long Island Sound East	108	12
Long Island Sound Central	397	12
Long Island Sound West	615	7
South of Long Island Sound	151	13

EXHIBIT NY- 4. GEAR ASSUMPTIONS FOR GILLNET VESSELS IN NEW YORK STATE WATERS (2017)

AREA	STRINGS PER VESSEL	NETS PER STRING
Long Island Sound East	1.2	2.2
Long Island Sound Central	1.7	1.7
Long Island Sound West	1.5	1.0
South of Long Island Sound	1.4	3.0

NEW JERSEY

The discussion below explains the model's characterization of the activity and gear associated with New Jersey-permitted lobster vessels.[32]

Number of Active Vessels

- Fishery managers with the New Jersey Department of Environmental Protection (NJDEP) indicate that approximately 21 vessels with New Jersey permits actively harvested lobster in 2017.[33] Exhibit NJ-1 reports the number of active vessels by month.
- NJDEP indicates that these vessels fish primarily in Federal waters, with a few vessels operating in both Federal and state waters. Officials indicate that because no vessels fish exclusively in state waters, no data on activity, landings, or gear use by these vessels are collected.[34] The vertical line model characterizes activity in Federal waters using data from NMFS' Vessel Trip Report (VTR) database. Therefore, the NJDEP data on active vessels will be used only for comparative purposes.
- While an active gillnet fishery exists in New Jersey, fishery experts believe that the majority of the activity occurs in Federal waters.[35]

Gear Configurations For Model Vessels

- **Total Traps Fished.** The specification of each model vessel includes the total number of traps that the vessel fishes. Officials with NJDEP estimate that vessels each fish an average of approximately 925 traps. We assume that this average is constant year-round, making no seasonal adjustment to the number of traps that active vessels fish.
- **Traps per Trawl.** Officials with NJDEP suggest that lobster vessels fish approximately 20 traps per trawl, on average. This figure is consistent with a NJDEP report examining fish/lobster potters' use of constructed ocean reef sites.[36] This gear survey reported that the number of traps per trawl used in the study areas ranged from four to 70, with an average of 22 traps per trawl.
- **Endlines per Trawl.** The NJDEP reef study found that 97 percent of all surveyed lobstermen used a high flyer at each end of their trawls; therefore, we assume two endlines per trawl.
- **Anchor Lines.** Consistent with findings for neighboring states, we assume that anchor lines are not used.

[32] Information on the activity of gillnet or other trap/pot vessels licensed to fish exclusively in New Jersey waters is not currently available.

[33] Updated activity and gear configuration information for lobster vessels obtained through personal communication with Chad Power, NJDEP, February 22, 2019.

[34] Personal communication with Peter Clark, NJDEP, NJ ACCSP State Coordinator, September 30, 2011.

[35] Personal communication with Greg DiDomenico, Garden State Seafood Association, February 12, 2010.

[36] Carlson, Jeff, et al., Pot Fishing Effort on Eight New Jersey Ocean Reef Sites, October 2005.

EXHIBIT NJ- 1. NUMBER OF ACTIVE NEW JERSEY- PERMITTED LOBSTER VESSELS (2017)

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5	5	3	4	2	19	18	20	20	18	14	17

EXHIBIT NJ- 2. GEAR CONFIGURATION ASSUMPTIONS FOR NEW JERSEY LOBSTER VESSELS (2017)

AVERAGE TRAPS FISHED PER VESSEL	TRAPS PER TRAWL	ENDLINES PER TRAWL
925	20	2

DELAWARE

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in Delaware state waters.

Number of Active Vessels

Blue Crab and Other Trap/ Pot

- **Fisheries.** Data provided by the Delaware Division of Fish and Wildlife (DFW) identify several trap/pot fisheries, including the blue crab fishery, the eel pot fishery, the fish pot (black sea bass) fishery, and the conch fishery. While lobster landings occur, they are largely by-catch from the black sea bass fishery.
- **Number of Active Participants.** DFW compiled logbook data on 2017 activity in each of the trap/pot fisheries. Exhibit DE-1 summarizes the number of active participants in each month. In the case of the blue crab fishery, multiple licenses can be fished from one vessel; therefore, the figures likely overstate the total number of active blue crab vessels, although the degree of overestimation is unknown. For other fisheries, the number of participants is equivalent to the number of active vessels. The data are subdivided by area (Delaware Bay, Inland Bays, Inshore Atlantic Ocean). These areas are labeled in the map presented in Exhibit DE-2. Note that all activity in Delaware Bay occurs on the Delaware side of the shipping channel. The model assumes that the activity reported for each of the three areas is evenly distributed throughout that area.

Gillnet

- **Number of Active Vessels.** DFW provided similar logbook data for gillnet vessels (see Exhibit DE-1). As with trap/pot fisheries, all activity in Delaware Bay occurs on the Delaware side of the shipping channel. Again, the model assumes that the activity reported for each of the areas is evenly distributed throughout that area.

Gear Configurations For Model Vessels

Blue Crab and Other Trap/ Pot

- **Total Traps/Pots Fished.** The specification of each model vessel includes the total number of traps/pots that the vessel typically fishes. DFW provided an analysis of 2017 logbook data estimating the average number of traps/pots fished, by fishery, month, and area. These data showed limited seasonal variation in the number of traps/pots; this is particularly true for the blue crab fishery, which accounts for the majority of fishing activity. Exhibit DE-3 shows the model vessel assumptions for the average number of traps/pots.
- **Traps per Trawl.** Logbook data suggest that most trap/pot vessels in Delaware waters fish singles. The model applies this assumption.
- **Endlines per Trawl.** The model assumes that traps/pots fished as singles have one endline.
- **Anchor Lines.** We assume that anchor lines are not used.

Gillnet

- **Nets per Vessel.** Using state logbook data, DFW provided an analysis of the average net feet fished by gillnet vessels, organized by month and area. Using DFW's estimate of a net's typical length (150 feet), we calculate the approximate number of nets fished per vessel, based on 2017 data. This parameter shows limited variation between areas or seasons; therefore, the model employs the mean of the values reported, nine nets per vessel (see Exhibit DE-4).
- **Total Strings Fished.** DFW does not collect data on the typical number of nets fished per string. The model assumes that gillnets are fished singly, as is the case in Virginia waters, further south along the Delmarva Peninsula.
- **Panel Dimensions.** As noted, DFW staff estimate that net panels are roughly 150 feet long; other information on panel dimensions is unavailable.
- **Other.** The model assumes two surface lines and two 10-foot anchor lines for each gillnet string.

EXHIBIT DE- 1. NUMBER OF ACTIVE PARTICIPANTS IN DELAWARE FISHERIES (2017)

FISHERY	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Blue Crab	Delaware Bay	2		2	31	38	43	62	70	63	44	10	
Eel Pot	Delaware Bay				1				1	2	3	2	1
	Inland Bays										2	2	
Fish Pot	N/A[1]												
Conch	Atlantic Ocean, Inshore (<3 miles)										1	2	1
	Delaware Bay										2	5	1
Gillnet	Delaware Bay		1	20	29								

Notes:
1. DFW provided data on fish pot activity in ocean waters beyond three miles; however, the model uses Vessel Trip Report (VTR) data to characterize activity in these waters. No fish pot activity was recorded in state waters in 2017.

EXHIBIT DE- 2. AREAS FOR DELAWARE FISHERIES

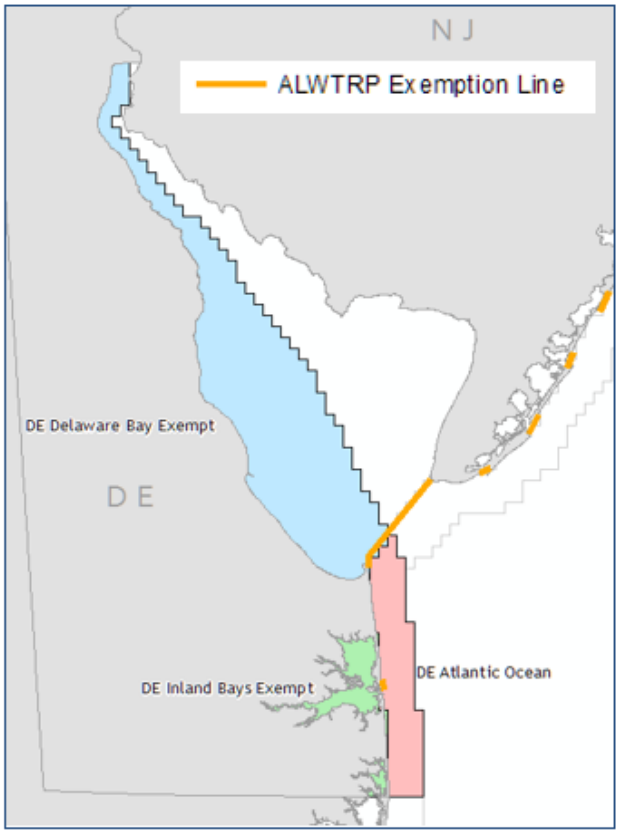


EXHIBIT DE- 3 . GEAR CONFIGURATION ASSUMPTIONS FOR TRAP/ POT FISHERIES IN DELAWARE STATE WATERS

FISHERY	AVERAGE POTS/TRAPS FISHED PER VESSEL	POTS PER TRAWL	NUMBER OF ENDLINES
Blue Crab	117	Singles	1
Eel Pot	110	Singles	1
Conch Pot/Trap	283	Singles	1

EXHIBIT DE- 4 . GILLNET GEAR CONFIGURATION ASSUMPTIONS FOR DELAWARE STATE WATERS

AVERAGE NUMBER OF STRINGS FISHED	NET PANELS PER STRING	NET PANEL LENGTH (FEET)	NET PANEL HEIGHT (FEET)	ENDLINES PER STRING	ANCHOR LINES
9	1	150	N.A.	2	2 (10 feet each)

MARYLAND

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in Maryland state waters.

Number of Active Vessels

Blue Crab and Other Trap/ Pot

- **Fisheries.** The Maryland Department of Natural Resources (MDNR) identified several trap/pot fisheries operating in state waters. Significant fisheries include the blue crab fishery, the eel pot fishery, and the fish pot fishery (catfish, black sea bass, tautog, scup). Additional trap/pot fisheries exist, but are not included in the vertical line model. For example, a conch fishery and a trap-based snapping turtle fishery exist, but are small and poorly tracked.
- **Number of Active Vessels.** MDNR used internal resources to develop estimates of the number of active vessels in each fishery, segmenting the estimates by month and fishing area.[37] Exhibit MD-1 provides a map of the fishing areas while Exhibit MD-2 presents the estimated activity. The data are representative of fishing activity in 2017. To develop the estimates, MDNR used a mix of professional judgment and estimates of fishing activity originally developed for purposes of evaluating potential risks to sea turtles.

Gillnet

- **Number of Active Vessels.** MDNR's estimates indicate that anchored gillnet vessels operate in Maryland's Coastal Bays and the state waters portion of the Atlantic.[38] These vessels generally target striped bass, croaker, spot, and spiny dogfish. Exhibit MD-2 summarizes the number of active vessels and the distribution of vessel activity by area.

Gear Configurations For Model Vessels

Blue Crab

- **Total Pots Fished per Blue Crab Vessel.** Based on fishing activity reports, MDNR estimated the number traps that each blue crab vessel fishes in Chesapeake Bay. For the months that the fishery is active (April through December), vessels fish an average of 336 pots. Vessels fishing in Coastal Bays are required to fish fewer traps; MDNR indicates that these vessels fished an average of 164 traps per vessel in 2017. These estimates are summarized in Exhibit MD-3.
- **Traps per Trawl.** MDNR representatives indicate that most blue crab potting occurs south of the Chesapeake Bay Bridge, and that in this area, 75 percent of fishermen fish single pots. The remaining 25 percent of the vessels fish pots connected on long lines. The model assumes that vessels fish 12 pots per long line, using two endlines. All vessels fishing in Coastal Bays are assumed to fish singles.

[37] The assessment of fishing activity has been updated based on personal communication with Brian Richardson, Director of the Fish Health & Hatcheries Program, February 28, 2019.

[38] Maryland prohibits anchored gillnets in Chesapeake Bay.

Other Pot Fisheries

- **Total Pots Fished.** MDNR provided estimates of the number of pots fished per eel pot and fish pot vessel in 2017. As shown in Exhibit MD-3, eel pot vessels fish an average of 267 pots in Chesapeake Bay and 147 pots in the Coastal Bays. Fish pot vessels fish an average of 47 pots.
- **Traps per Trawl.** We assume that fish and conch pots are fished as singles.
- **Endlines per Trawl.** The model assumes that traps/pots fished as singles have one vertical line.
- **Anchor Lines.** We assume that anchor lines are not used.

Gillnet

- **Strings Fished per Vessel.** MDNR representatives indicate that a licensee typically fishes two strings, each with a 900-foot net. Total net length is restricted to 1,800 feet per licensee. Consistent with MDNR recommendations, we assume that two licensees fish from each vessel; hence, the model assigns four strings to each vessel (see Exhibit MD-4).
- **Panel Dimensions.** Based on information from MDNR, nets are assumed to be approximately 900 feet long and 6 to 10 feet high.
- **Other.** The model assumes two surface lines and two 10-foot anchor lines for each gillnet string.

EXHIBIT MD- 1. MARYLAND FISHING AREAS

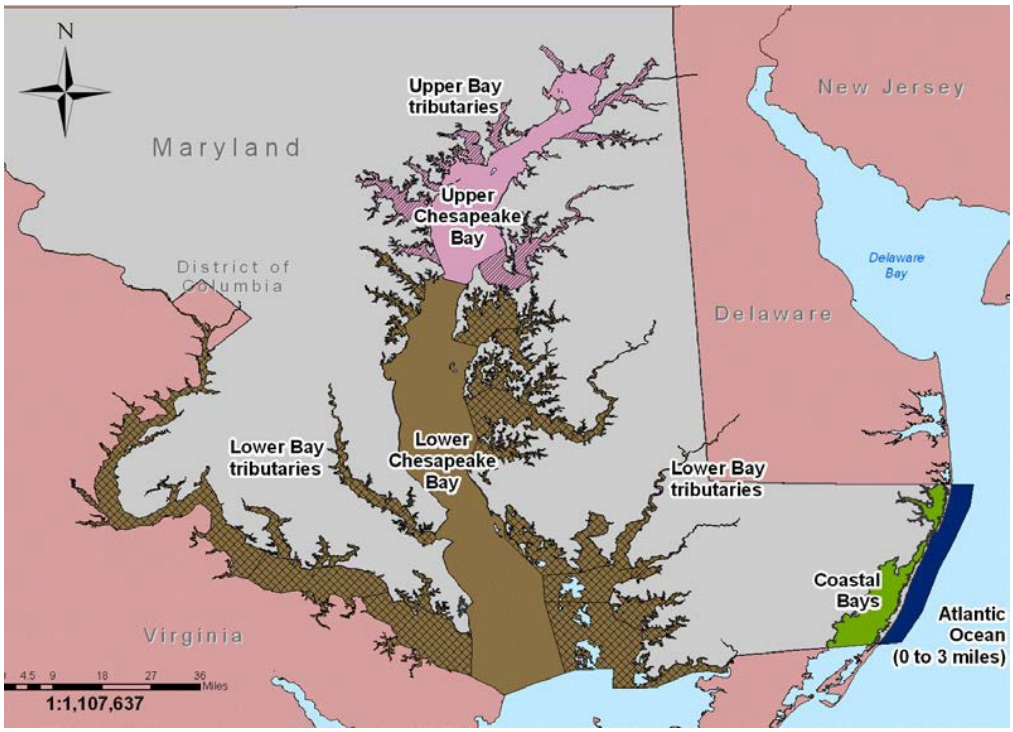


EXHIBIT MD- 2 . NUMBER OF ACTIVE VESSELS IN MARYLAND STATE WATERS (2017)

FISHERY	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Blue Crab	Chesapeake Bay	0	0	0	154	326	449	503	483	434	362	211	28
	Coastal Bays	0	0	0	49	66	81	82	74	57	36	0	0
Eel Pot	Chesapeake Bay	0	2	7	22	22	15	12	11	18	15	14	2
	Coastal Bays	0	0	1	3	1	1	1	0	0	0	0	0
	Atlantic Ocean (0-3 miles)	0	0	0	1	0	0	0	0	0	0	0	0
Fish Pot	Atlantic Ocean (0-3 miles)	1	0	0	0	0	0	0	0	0	0	1	0
	Chesapeake Bay	11	13	18	25	14	12	8	5	14	9	12	10
Gillnet	Coastal Bays	2	3	16	15	8	3	2	3	2	5	3	2
	Atlantic Ocean (0-3 miles)	7	5	8	13	23	2	2	1	5	3	2	6

EXHIBIT MD- 3 . GEAR CONFIGURATION ASSUMPTIONS FOR TRAP/ POT FISHERIES IN MARYLAND STATE WATERS

FISHERY	AREA	PERCENT OF VESSELS	POTS PER LONG LINE	AVERAGE POTS/TRAPS FISHED PER VESSEL	NUMBER OF ENDLINES
Blue Crab	Chesapeake Bay	75%	Singles	336	1
	Chesapeake Bay	25%	12 pots per long line	336	2
	Coastal Bays	100%	Singles	164	1
Eel Pot	Chesapeake Bay	100%	Singles	267	1
	Coastal Bays	100%	Singles	147	1
Fish Pot	All	100%	10	47	2

EXHIBIT MD- 4 . GILLNET GEAR CONFIGURATION ASSUMPTIONS FOR MARYLAND STATE WATERS

AVERAGE NUMBER OF STRINGS FISHED	NET PANELS PER STRING	NET PANEL LENGTH (FEET)	NET PANEL HEIGHT (FEET)	ENDLINES PER STRING	ANCHOR LINES
4	1	900	6 to 10	2	2 (10 feet each)

VIRGINIA

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in Virginia state waters.

Number of Active Vessels

Other Trap/ Pot

- **Fisheries.** The Virginia Marine Resources Commission (MRC) compiles commercial fishing data via its harvest reporting system. MRC identifies several trap/pot fisheries operating in state waters. Significant fisheries include the hard crab fishery, the peeler (soft) crab fishery, the conch pot fishery, the eel pot fishery, and the fish pot fishery.[39]
- **Number of Active Vessels.** Using harvest data, MRC identified individual active vessels in each fishery, organizing the data by month and fishing location. The fishing locations consist of nine "systems" and are defined in Exhibit VA-1. The data incorporated into the model reflect activity in 2017; Exhibit VA-2 presents the data on vessel activity for each fishery.

Gillnet

- **Number of Active Vessels.** MRC also provided data on activity in 2017 for anchored and staked gillnet vessels. Exhibit VA-2 summarizes these data by month and fishing location.

Gear Configurations For Model Vessels

Hard Crab

- **Total Pots Fished per Hard Crab Vessel**. The specification of each model vessel includes the total number of pots that the vessel typically fishes. MRC analyzed harvest data to estimate the average pots fished per hard crab vessel, by month and area, for 2017. These data showed limited seasonal variation in the number of pots fished; however, the number of pots fished varies according to fishing area. Therefore, the model specifies separate gear configurations for each fishing area (see Exhibit VA-3).
- **Pots per Trawl**. MRC representatives indicate that hard crab vessels typically fish single pots.
- **Endlines per Trawl**. The model assumes that pots fished as singles have one endline.

Other Pot Fisheries

- **Total Pots Fished.** Other pot fisheries show limited seasonal variation in the number of pots fished. Therefore, the model vessels for the peeler, conch, eel, and fish pot fisheries each incorporate a single estimate of pots fished for each relevant fishing area in 2017 (see Exhibit VA-3).
- **Traps per Trawl**. MRC representatives indicate that vessels in these fisheries typically fish single pots.

[39] A small minnow pot fishery also exists; this fishery is not included in the model.

Gillnet

- **Strings Fished per Vessel**. MRC provided data on the number of strings fished per gillnet vessel, by month and area. This figure varies little by month, but varies significantly by fishing area. Therefore, the model specifies separate gear configurations for each fishing area (see Exhibit VA-4). The model incorporates separate estimates of strings fished for anchored gillnet gear and staked gillnet gear.
- **Nets per String**. MRC experts indicate that gillnet vessels typically fish one net per string.
- **Other**. The model assumes two surface lines and two 10-foot anchor lines for each gillnet string.

EXHIBIT VA- 1 . VIRGINIA FISHING AREAS

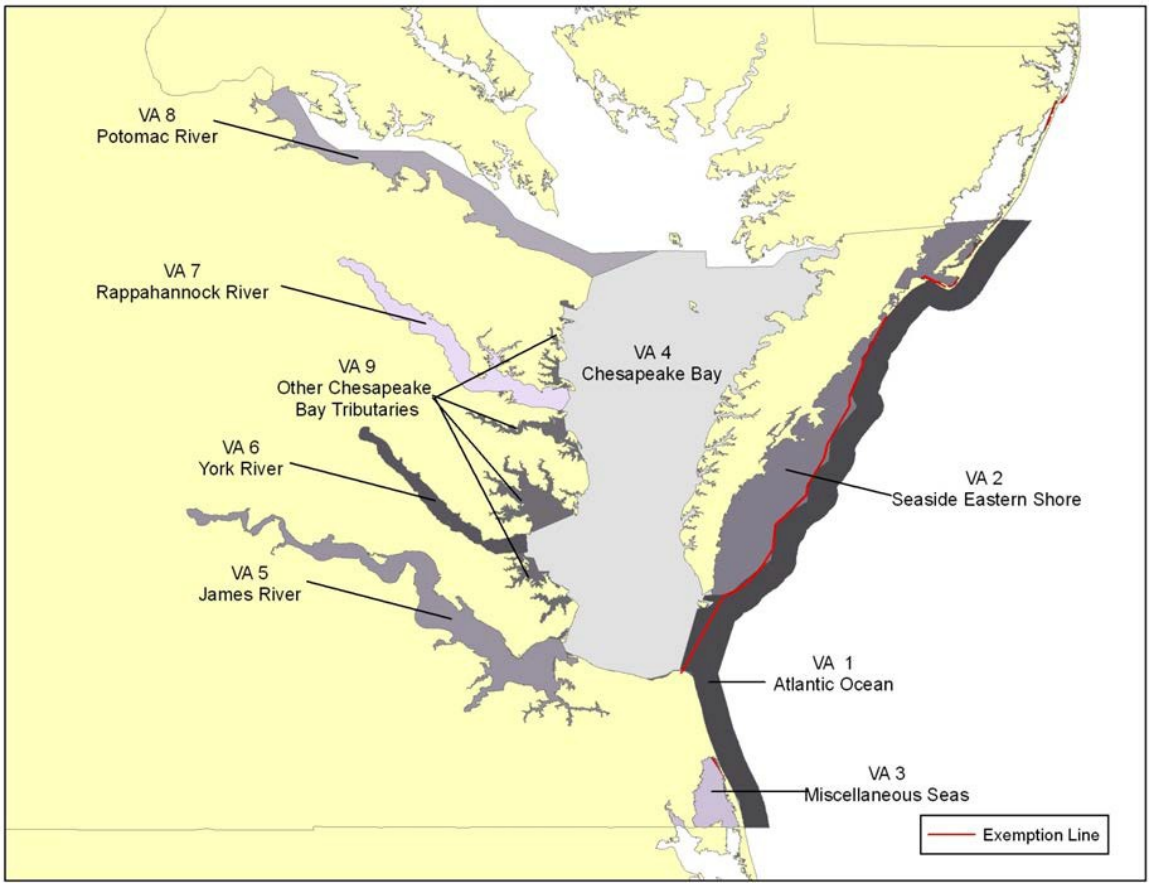


EXHIBIT VA- 2. NUMBER OF ACTIVE VESSELS IN VIRGINIA STATE WATERS (2017)

FISHERY		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Hard Crab (pot)	1			1									
	2			50	46	33	31	31	33	35	32	29	
	3			2	6	8	12	12	13	11	6	4	
	4			136	209	196	169	169	157	142	124	96	
	5			40	43	54	59	66	62	62	53	41	
	6			14	34	50	52	55	60	53	42	24	
	7			26	69	74	74	82	80	75	50	26	
	8			7	18	55	80	96	105	92	47	9	
	9			27	38	57	68	65	52	52	42	29	
Peeler (pot)	1					1							
	2				1	17							
	3					1							
	4			1	33	72	56	54	49	37	6		
	5				12	17	12	11	11	10	4		
	6				12	20	9	12	10	8	2		
	7				13	36	30	31	33	25	14		
	8				1	4	4	4	4	2			
	9				12	25	13	5	5	6	2	1	
Conch Pot	1	8	6	2	1	1						9	12
	2	1		2	2	1					2	5	3
	3												
	4	2			2	1					1	4	3
	5												
	6												
	7												
	8												
	9												
Eel Pot	1												
	2												
	3												
	4				5	4				3	4	3	
	5				3	2	3	2	3	3	2	2	
	6				1	2	2	2		1	3	3	
	7				6	6	7	4	5	5	5	3	

FISHERY		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Eel Pot	8					3	3	2	2	2	3	1	
	9				1	2	1	2	2	5	5	2	
Fish Pot	1	1	1		1	1	1	1	1	1	1	1	1
	2			1	1	1	1	1	1	1	1	1	
	3												
	4					2	5	9	13	13	10	1	
	5	4	3	5	4	3	4	3	3	3	3	4	2
	6				3	2	3	3	1	3	1	1	1
	7	4	5	5	8	6	6	6	5	6	8	8	7
	8	1		1	2	1	1	2		2	1	1	1
	9						1	3	1	4	3		
Anchored and Staked Gillnet	1	3	4	6	16	5		2	5	3	5	9	7
	2			3	9	6	2	3	3	3	3	1	
	3												
	4	13	49	66	44	36	26	27	47	78	74	51	43
	5	17	28	24	18	9	3	1	1	6	11	15	19
	6	2	11	26	19	13	12	5	6	13	7	7	5
	7	19	33	27	25	15	11	9	10	14	10	9	15
	8	4	27	32	22	7	6	3	4	4	4	7	14
	9	3	8	14	12	8	10	15	21	29	26	11	3

EXHIBIT VA- 3. GEAR CONFIGURATION ASSUMPTIONS FOR TRAP/ POT FISHERIES IN VIRGINIA STATE WATERS (2017)

FISHERY	AREA/SYSTEM	POTS PER LONG LINE	AVERAGE POTS/TRAPS FISHED PER VESSEL	NUMBER OF ENDLINES
Hard Crab	1	Singles	300	1
	2	Singles	191	1
	3	Singles	214	1
	4	Singles	247	1
	5	Singles	216	1
	6	Singles	229	1
	7	Singles	168	1
	8	Singles	135	1
	9	Singles	190	1
Peeler Crab	1	Singles	100	1
	2	Singles	188	1
	3	Singles	100	1
	4	Singles	223	1
	5	Singles	168	1
	6	Singles	223	1
	7	Singles	184	1
	8	Singles	88	1
	9	Singles	129	1
Conch Pot	1	Singles	285	1
	2	Singles	185	1
	4	Singles	262	1
Eel Pot	4	Singles	78	1
	5	Singles	78	1
	6	Singles	80	1
	7	Singles	72	1
	8	Singles	49	1
	9	Singles	58	1
Fish Pot	1	Singles	33	1
	2	Singles	34	1
	4	Singles	95	1
	5	Singles	16	1
	6	Singles	18	1
	7	Singles	20	1
	8	Singles	13	1
	9	Singles	26	1

EXHIBIT VA- 4. GILLNET GEAR CONFIGURATION ASSUMPTIONS FOR VIRGINIA STATE WATERS

GILLNET TYPE	AREA/SYSTEM	AVERAGE NUMBER OF STRINGS FISHED	NET PANELS PER STRING	ENDLINES PER STRING	ANCHOR LINES PER STRING
Anchored	1	3.02	1	2	2 (10 feet each)
	2	1.59	1	2	2 (10 feet each)
	4	4.78	1	2	2 (10 feet each)
	5	3.11	1	2	2 (10 feet each)
	6	2.31	1	2	2 (10 feet each)
	7	2.8	1	2	2 (10 feet each)
	8	1.72	1	2	2 (10 feet each)
	9	2.14	1	2	2 (10 feet each)
Staked	4	5.74	1	2	2 (10 feet each)
	6	1.68	1	2	2 (10 feet each)
	7	1	1	2	2 (10 feet each)
	8	1.19	1	2	2 (10 feet each)

NORTH CAROLINA

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in North Carolina state waters.

Number of Active Vessels

Other Trap/ Pot

- **Number of Active Vessels and Trips.** The North Carolina Division of Marine Fisheries (NCDMF) provided compiled trip ticket data on the activity of vessels in the state's black sea bass pot fishery in 2017 and 2018, specifying the number of vessels that were active in each year by month and area. Exhibit NC-1 presents the data for 2017. As shown, the data characterize activity in four areas, including two in state waters (north and south of Cape Hatteras) and two in Federal waters (i.e., more than three miles off the coast, north and south of Cape Hatteras).
- The model directly incorporates the state data on fishing activity for the two areas within three miles of shore (i.e., state waters). In the absence of more precise data, the model assumes that the activity reported within each of these areas is evenly distributed throughout it. Fishing in Federal waters is handled separately in the model through analysis of Southeast logbook data; the data provided by NCDMF will be used to validate the NMFS logbook data.
- Past data analyses provided by NCDMF suggest a minor level of effort targeting blue crab in North Carolina state waters. The model does not explicitly account for this effort, but the degree of error is likely de minimis.

Gillnet

- **Number of Active Vessels.** NCDMF also provided trip ticket data for gillnet vessels. As with pot vessels, the data indicate the number of vessels that were active in each year by month and area of activity, using the same four geographic areas specified above (see Exhibit NC-2). The model directly incorporates the data on fishing activity for the two areas within three miles of shore (i.e., state waters). As above, the model assumes that the activity reported within each of these areas is evenly distributed throughout it. Fishing in Federal waters is characterized separately in the model through analysis of Southeast logbook data; the data provided by NCDMF will be used to validate the NMFS logbook data.

Gear Configurations For Model Vessels

Other Trap/ Pot

- **Pots Fished per Vessel.** Exhibit NC-3 summarizes the gear configuration assumptions for other trap/pot fisheries in North Carolina waters. These assumptions are based in part a 2009 article in *Marine Policy*, which analyzed data suggesting that black sea bass fishermen in northern North Carolina fish an average of 41 pots; the model adopts this estimate.[40] South of Cape Hatteras, the South Atlantic Fishery Management Council (SAFMC) instituted a limit of 35 sea

[40] Levesque, Juan C., "Characterization of the southeastern US black sea bass (*Centropristis striata*) pot commercial fishery and implications for western North Atlantic right whale (*Eubalaena glacialis*) management and policy," *Marine Policy*, 33 (2009) 40-48.

bass pots per vessel, beginning in July 2012. To establish a baseline for analysis of the impacts of future management actions, the model adopts this limit as the default parameter for vessels fishing south of Cape Hatteras. The model employs these assumptions in all months; i.e., it makes no seasonal adjustment to the number of traps fished per vessel.

- **Traps per Trawl.** Each model vessel incorporates an estimate of the number of traps per trawl. The 2009 Marine Policy article estimated that vessels in northern North Carolina typically fish five pots per trawl, while those in southern North Carolina fish singles or two pots per trawl. Our model vessels assume five pots per trawl in the north and 1.5 pots per trawl in the south.
- **Endlines per Trawl.** For vessels fishing five-pot trawls (northern NC), the model assumes two endlines. For vessels fishing one to two pots per trawl, the model assumes one endline.

Gillnet

- Exhibit NC-4 summarizes the gillnet gear configuration assumptions applied in the model. These parameters were originally developed in 2011 in consultation with the Fishery Liaison in NMFS' Southeast Regional Office (SERO). The parameters were updated and refined in consultation with NCDMF staff.[41] The parameters are applied to vessels fishing within three miles from shore (see above); vessels fishing in Federal waters are handled separately in the model.
- **Gear Configuration by Segment.** As shown in Exhibit NC-4, the model incorporates assumptions for several different gillnet segments that operate in various seasons:
    - Vessels in the spring Spanish mackerel fishery, prosecuted in May, are assumed to fish 2.5 strings with one panel per string. Nets are each 300 yards in length.
    - Summer Spanish mackerel vessels, active in June through August, also fish 2.5 strings with one panel per string. Nets are each 300 yards in length.
    - Vessels in the large mesh spiny dogfish fishery, active in January through March, fish three strings with five panels per string. Nets are each 100 yards in length.
    - Vessels in the small-mesh fishery, active in June through October, are assumed to fish 3.5 strings per vessel and four panels per string, with each panel 100 yards in length.

  In months where more than one gillnet segment is active, the model averages the relevant configurations and applies the average to the active gillnet vessels. Exhibit NC-5 presents the resulting averages.
- **Buoy Lines.** The model assumes that all gillnet vessels fish strings with two buoy lines.
- **Anchor Lines.** Gillnet vessels do not use anchor lines in North Carolina state waters.

[41] Personal communication with Chris Batsavage, North Carolina Division of Marine Fisheries, December 21, 2017.

EXHIBIT NC- 1. NUMBER OF ACTIVE VESSELS IN NORTH CAROLI NA FISH POT (BLACK SEA BASS) FISHERY (2017)

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Ocean >3 mi, N of Cape Hatteras	1	1										1
Ocean >3 mi, S of Cape Hatteras	6	6	5	9	6	9	6	4	4	3	5	3
Ocean 0-3 mi, N of Cape Hatteras	-	-	-	-	-	-	-	-	-	-	-	-
Ocean 0-3 mi, S of Cape Hatteras	-	-	-	-	-	-	-	-	-	-	-	-

EXHIBIT NC- 2. NUMBER OF ACTIVE VESSELS IN NORTH CAROLI NA GILLNET FISHERY (2017)

AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Ocean >3 mi, N of Cape Hatteras	18	32	27	19	3	2	2	1	-	1	4	17
Ocean >3 mi, S of Cape Hatteras	4	4	3	6	2	1	-	2	2	3	11	6
Ocean 0-3 mi, N of Cape Hatteras	26	32	28	19	8	4	6	5	7	20	17	21
Ocean 0-3 mi, S of Cape Hatteras	33	31	47	61	48	36	35	48	65	87	116	57

EXHIBIT NC- 3 . BLACK SEA BASS GEAR CONFIGURATION ASSUMPTIONS

MODEL VESSEL AREA	POTS FISHED PER VESSEL	POTS PER TRAWL	NUMBER OF ENDLINES
Ocean >3 mi, N of Cape Hatteras	41	5	2
Ocean >3 mi, S of Cape Hatteras	35	1.5	1
Ocean 0-3 mi, N of Cape Hatteras	41	5	2
Ocean 0-3 mi, S of Cape Hatteras	35	1.5	1

EXHIBIT NC- 4. GILLNET GEAR CONFIGURATION ASSUMPTIONS

FISHERY	PRIMARY SEASON	ESTIMATED STRINGS PER VESSEL	ESTIMATED PANELS PER STRING	LENGTH OF EACH NET PANEL (YARDS)	NUMBER OF ANCHOR LINES
Spring Spanish Mackerel	May	2 to 3	1	300	0
Summer Spanish Mackerel	June-Aug	2 to 3	1	300	0
Large Mesh Spiny Dogfish	Jan-Mar	3	5	100	0
Fall/Winter/Spring Small Mesh (primarily sea mullet)	Oct-May	3 to 4	4	100	0

EXHIBIT NC- 5. AVERAGE NUMBER OF STRINGS PER GILLNET VESSEL IN EACH MONTH

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3.3	3.3	3.3	3.5	3.0	2.5	2.5	2.5	3.0*	3.5	3.5	3.5

* Configuration data not available for September. Figure represents the average of adjacent months.

SOUTH CAROLINA

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in South Carolina.

Number of Active Vessels

- **Number of Active Blue Crab Vessels.** The South Carolina Department of Natural Resources (SCDNR) provided 2017 data on the number of active vessels in South Carolina's blue crab fishery. The fishery operates almost exclusively inshore, in rivers and estuarine waters landward of the COLREGS line that are exempt from the requirements of the ALWTRP. Exhibit SC-1 shows the number of active blue crab vessels by month and area (exempt and non-exempt waters). The model spreads the inshore activity evenly throughout South Carolina inshore waters.[42]
- **Other Fisheries.** Pot vessels also land black sea bass in South Carolina. SCDNR indicates, however, that all black sea bass pots are fished in Federal waters. The vertical line model characterizes activity in Federal waters using data from NMFS' Southeast Logbook database. Gillnet vessels may target spot in state waters in isolated months, but SCDNR experts indicate that trips and landings are minimal.

Gear Configurations For Model Vessels

- **Pots Fished per Vessel.** SCDNR data indicate that blue crab vessels fish an average of 103 pots per vessel. The data show little seasonal variation, and only limited variation between specific areas.
- **Traps per Trawl.** SCDNR requires that blue crab vessels fish pots as singles (not in trawls).

EXHIBIT SC- 1. NUMBER OF ACTIVE BLUE CRAB VESSELS IN SOUTH CAROLINA STATE WATERS (2017)

WATERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Inshore (Exempt) Waters	96	87	98	105	97	96	91	90	100	96	94	90
Non-Exempt State Waters	3	6	5	1	1	1	2	2	1	1	3	3

[42] Note that DNR/OFM collects inshore crabbing data at a finer geographic resolution, recording effort in 21 individual inshore areas. Given that inshore waters are exempt from the requirements of the ALWTRP, the model does not segment vessel activity at this level of geographic precision.

GEORGIA

This profile provides an overview of the data and assumptions used to characterize commercial fishing activity in Georgia state waters.

Number of Active Vessels

- **Data Sources.** The Georgia Department of Natural Resources Wildlife Resources Division (DNR/WRD) provided data on fixed-gear fisheries – primarily blue crab operations – operating in Georgia state waters. Originally, DNR/WRD provided data based on information gathered via mail and phone surveys conducted between December 2009 and February 2010.[43] As a follow-up to this survey, DNR/WRD interviewed fisherman at the Georgia Blue Crab Advisory Panel meeting in March 2018. The interviews addressed anticipated effort in 2018 as well as likely gear configurations. DNR/WRD summarized the findings in a letter dated March 18, 2018. The results suggest little change in crabbing activity relative to the original survey; therefore, the effort is broadly reflective of fishing in recent years.
- **Number of Active Vessels.** The interviews DNR/WRD conducted indicate that approximately 25 blue crab vessels operate in ocean waters within three miles of Georgian's shore (i.e., in state waters). The vessels are active in the first quarter of the year, with a subset of vessels initiating fishing in December. Exhibit GA-1 summarizes these estimates. DNR/WRD indicates that no crabbing effort occurs in Federal waters.

Gear Configurations For Model Vessels

- **Pots Fished per Blue Crab Vessel.** DNR/WRD's interviews indicate that each blue crab vessel fishes an average of 55 pots, with no variation across months (see Exhibit GA-1).
- **Traps per Trawl.** Pot trawls are prohibited in Georgia state waters; all pots are fished as singles.
- **Other.** The model assumes one endline per pot with no anchor lines.

EXHIBIT GA- 1. NUMBER OF ACTIVE BLUE CRAB VESSELS IN GEORGIA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Estimated Number of Active Vessels	25	25	25	-	-	-	-	-	-	-	-	7
Number of Pots Fished per Vessel	55	55	55	-	-	-	-	-	-	-	-	55
Total Number of Pots Fished	1,375	1,375	1,375	-	-	-	-	-	-	-	-	385

[43] George, Clay, "Commercial Trap and Pot Fishing Effort in Georgia Ocean Waters: A Report to the Atlantic Large Whale Take Reduction Team," March 1, 2010.

FLORIDA

The discussion below explains the model's characterization of the activity and gear associated with vessels fishing in Florida state waters.

NUMBER OF ACTIVE VESSELS

Trap Fishery

- **Fisheries.** Representatives of Florida's Fish and Wildlife Conservation Commission (FWC) indicate that the trap fishery operating in state waters subject to the ALWTRP is primarily associated with the harvest of blue crab (over 90 percent). Some additional effort focuses on the harvest of stone crab.
- **Number of Active Fishers.** FWC provided detailed trip ticket data on the number of fishers operating in Florida state waters, organizing the data by fishery, month, and area.[44] Five general areas – 722, 728, 732, 736, and 741 – are located in ALWTRP waters; Exhibit FL-1 shows the boundaries of these areas.[45] FWC provided general area data from which we estimate the number of active fishers in each month/area combination.
- **Activity in Inshore and Offshore Areas.** Much of the trap fishery is prosecuted in inshore waters (rivers, estuaries, etc.). These areas are located landward of the COLREGS line and are therefore exempt from the ALWTRP. Detailed area data provided by FWC record the number of trips to subareas within each major area. For example, area 722 is divided into five subareas; two represent offshore waters while the remaining areas (the St. Marys River, Nassau River, and St. Johns River) represent inshore waters. We calculate the percent of trips in offshore and inshore areas for each area/month combination, then apply this percentage to the total number of fishers active in the area/month.[46] Exhibit FL-2 summarizes these calculations.

Other Fisheries

- Florida does not allow anchored gillnets in state waters.

GEAR CONFIGURATIONS FOR MODEL VESSELS

- **Total Traps Fished.** The specification of each model vessel includes the total number of traps that the vessel typically fishes. Lacking specific data on the number of traps fished per vessel, FWC provided trip ticket data characterizing the number of traps hauled per licensee, organized by month and area. Translating the number of trap hauls to an estimate of the number of traps fished requires assumptions regarding the frequency with which traps are hauled. FWC suggests that it is reasonable to assume that each trap is hauled 10 times per month (i.e., every three days). Using this assumption, we estimate the average number of traps per licensee by area (see Exhibit FL-3).

[44] The FWC data characterize activity according to the number of "fishers". The model appropriately equates fishers with vessels, although a given fisher may operate more than one vessel under a given permit.

[45] FWC also provided data for area 717, Georgia state waters. In most months and years, however, no Florida vessels are active in this area.

[46] FWC also provided the number of active vessels (fishers) by subarea and month. However, these data appear to double-count vessels active in more than one subarea, and would likely lead to an overestimate of the total number of active vessels.

- **Traps per Trawl.** FWC indicates that vessels fish traps singly, not in multi-trap trawls.
- **Endlines per Trawl.** The model assumes one endline per trap.

EXHIBIT FL- 1. FLORIDA FISHING AREAS

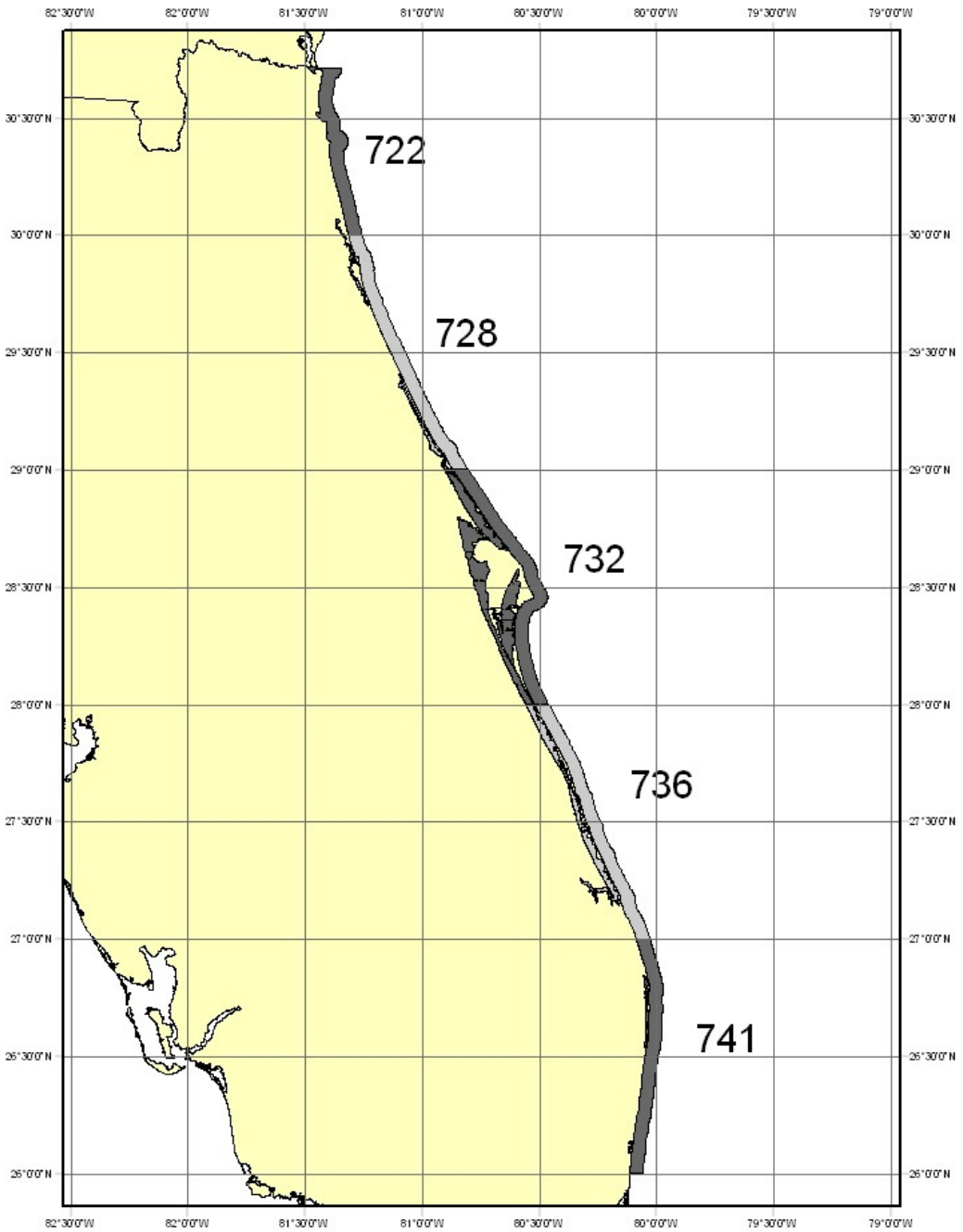


EXHIBIT FL- 2. NUMBER OF ACTIVE TRAP FISHERS IN FLORIDA STATE WATERS (2017)

	AREA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Aggregate Number of Active Fishers	722	37	37	37	43	47	51	45	39	38	41	37	35
	728	41	45	52	63	61	59	55	54	45	36	34	35
	732	27	30	35	41	39	32	29	27	31	37	28	21
	736	5	10	10	6	8	6	5	6	4	6	6	5
	741	4	3	2	3	3	2	2	2	3	6	7	4
Percent of Trips to Offshore Areas	722	0.25%	0.00%	0.22%	0.00%	0.37%	0.40%	0.42%	0.00%	0.00%	0.00%	0.26%	0.00%
	728	4.33%	4.13%	5.02%	2.96%	3.45%	1.97%	1.14%	0.82%	1.61%	1.81%	3.80%	2.60%
	732	0.00%	0.00%	0.62%	0.00%	0.30%	0.00%	0.00%	3.50%	6.53%	0.00%	0.43%	0.54%
	736	3.13%	7.32%	12.50%	2.70%	0.00%	0.00%	7.69%	17.24%	0.00%	0.00%	0.00%	0.00%
	741	16.70%	28.60%	0.00%	0.00%	17.60%	0.00%	28.60%	15.40%	40.00%	10.00%	11.80%	22.20%
Number of Fishers Active in Offshoer Waters	722	0	-	0	-	0	0	0	-	-	-	0	-
	728	2	2	3	2	2	1	1	0	1	1	1	1
	732	-	-	0	-	0	-	-	1	2	-	0	0
	736	0	1	1	0	-	-	0	1	-	-	-	-
	741	1	1	-	-	1	-	1	0	1	1	1	1
Number of Fishers Active in Inshore Waters	722	37	37	37	43	47	51	45	39	38	41	37	35
	728	39	43	49	61	59	58	54	54	44	35	33	34
	732	27	30	35	41	39	32	29	26	29	37	28	21
	736	5	9	9	6	8	6	5	5	4	6	6	5
	741	3	2	2	3	2	2	1	2	2	5	6	3

EXHIBIT FL- 3. GEAR CONFIGURATION ASSUMPTIONS FOR TRAP VESSELS FISHING IN FLORIDA STATE WATERS (2017)

MODEL VESSEL AREA	TRAPS FISHED PER LICENSE	TRAPS PER TRAWL	NUMBER OF ENDLINES
722	137	1	1
728	79	1	1
732	100	1	1
736	61	1	1
741	22	1	1

APPENDIX A | NARWC SIGHTINGS PER UNIT EFFORT DATA SOURCES

Survey data sources currently included in the North Atlantic Right Whale Consortium database, 1 December 2019.

Northeast:

AERIAL SURVEYS:

CETAP line-transect surveys, AT-11—1979, 1980, 1981, 1982
CETAP line-transect training flights, AT-11—1978, 1979
CETAP line-transect Great South Channel surveys, AT-11 & Skymaster—1980, 1981
CETAP POP surveys, private single-engine aircraft, USCG Albatross, B-N Islander, USCG helicopter—1978, 1979, 1980, 1981
URI line-transect Great South Channel surveys, Skymaster—1984, 1985, 1987, 1988, 1989, 1991, 1992, 1993
URI POP Great South Channel surveys, Skymaster—1985, 1986, 1987, 1988, 1989, 1992
Provincetown Center for Coastal Studies, Cape Cod Bay surveys, Skymaster—1998–2019 (survey format changed during 2015 season to a new one intermediate between line-transect and POP-type)
Associated Scientists at Woods Hole, Cape Cod Bay, blimp—1990
NEFSC AMAPPS (Atlantic Marine Assessment Program for Protected Species), Twin Otter—2010–2012
NEFSC broad-scale and focused right whale surveys, Twin Otter—1998–2018
NEFSC stock assessment, harbor porpoise, other surveys, Twin Otter (maybe some AT-11 and other aircraft)—1991, 1995, 1998, 2002, 2004
NLPSC (Northeast Large Pelagic Survey Collaborative) line-transect surveys, Mass.-R.I. Wind Energy Areas, Skymaster—2011–2015
New England Aquarium line-transect surveys of Mass.-R.I. Wind Energy Areas (extension of NLPSC program), Skymaster—2017–2018
East Coast Ecosystems, Bay of Fundy/Scotian Shelf, various aircraft—1997
New England Aquarium, Bay of Fundy, Scotian Shelf, Gulf of Maine, various aircraft—1994, 1996, 1997, 2011
Riverhead Foundation, New York/New Jersey, Skymaster—2005

SHIPBOARD POP SURVEYS:

CETAP, various platforms: 1978, 1979, 1980
URI, Great South Channel, various platforms—1986–1989, 1991, 1992
URI, Rhode Island Sound to Kelvin Seamount, USNS Bartlett—1986
URI, Southern New England, Gulf of Maine, Scotian Shelf, Gulf Stream, SSV Westward—1986
Manomet Bird Observatory, NE continental shelf, NOAA ships—1980–1988
Provincetown Center for Coastal Studies, Cape Cod Bay, various—1987–1992, 1997–2003
New England Aquarium (and Canadian Whale Institute), mostly Bay of Fundy (partial), Mass Bay, Gulf of Maine, various—1987–2018
NEFSC, large whale, stock assessment, and harbor porpoise surveys, various—1991, 1992, 1995, 1997, 1998,1999, 2000, 2001, 2002, 2003, 2004, 2005

International Fund for Animal Welfare, Gulf of Maine, Song of the Whale—1997, 1999, 2000
Whale Center of New England, Mass Bay/Jeffreys Ledge—2004

Mid-Atlantic:

AERIAL SURVEYS:
CETAP line-transect surveys, AT-11—1978, 1979, 1980, 1981, 1982
CETAP line-transect training flights, AT-11—1978, 1979
CETAP POP surveys, private single-engine aircraft, USCG Albatross, B-N Islander, USCG helicopter—1978, 1979, 1980, 1981
URI POP Great South Channel surveys, Skymaster (transits)—1986, 1988
NEFSC broad-scale and focused right whale surveys, Twin Otter—1999–2007, 2012–2018
NEFSC stock assessment, bottlenose dolphin, other surveys, Twin Otter, AT-11 and maybe some other aircraft—1991, 1995, 1998, 2002, 2004, 2005
NEFSC & SEFSC AMAPPS (Atlantic Marine Assessment Program for Protected Species), Twin Otter—2010–2013
Riverhead Foundation, New York/New Jersey, Skymaster—2005
University of North Carolina at Wilmington, Wallops Island & Onslow Bay SWTR, Skymaster—1998–1999
University of North Carolina at Wilmington, North Carolina, Skymaster—2001–2002

SHIPBOARD POP SURVEYS:

CETAP, various platforms: 1978, 1979, 1980
URI, Rhode Island Sound to Kelvin Seamount, USNS Bartlett—1986
URI, Southern New England, Gulf of Maine, Scotian Shelf, Gulf Stream, SSV Westward—1986
Manomet Bird Observatory, NE continental shelf, NOAA ships—1980–1988
NEFSC, large whale, stock assessment, and harbor porpoise surveys, various—1995, 1997, 1998, 1999, 2002, 2004, 2005

Southeast:

AERIAL SURVEYS:

CETAP line-transect surveys, AT-11—1979, 1980
URI line-transect surveys, Georgia/Florida, AT-11—1987
New England Aquarium line-transect surveys (MMS project), Skymaster—1989-1992
CETAP POP surveys, private single-engine aircraft, USCG Albatross, B-N Islander, USCG helicopter—1978, 1979, 1980
NEFSC bottlenose dolphin, stock assessment, other surveys, Twin Otter, AT-11 (maybe other aircraft)—1991, 1992, 1995, 2002, 2004, 2005

IEc

NEFSC & SEFSC AMAPPS (Atlantic Marine Assessment Program for Protected Species), Twin Otter—2010–2013
U.S. Navy, ship shock trials—1995, 1997, 1999
University of North Carolina at Wilmington, Wallops Island & Onslow Bay SWTR, Skymaster—1998–1999
University of North Carolina at Wilmington, North Carolina, Skymaster—2001–2002
Continental Shelf Associates, offshore surveys (MMS), Skymaster—1996, 1997
Associated Scientists at Woods Hole, SEUS blimp surveys—1991–1993, 2001
Associated Scientists at Woods Hole, Florida nearshore surveys, AirCam—2011, 2012
New England Aquarium, nearshore, misc.—1988–1997
New England Aquarium, South Carolina, misc.—2000
New England Aquarium, EWS, Skymaster—1997–2002
New England Aquarium, central EWS, Skymaster—2002–2010
Florida Wildlife Research Institute, nearshore, misc.—1992–1999
FWRI, offshore, misc.—1996–1998
FWRI, nearshore, Skymaster—1999-2002
FWRI, southern EWS, Skymaster—2002-2019
FWRI, central EWS, Skymaster—2010 (there was a change in the survey design from three areas to only northern (Georgia) and southern (Florida), but I don't recall whether it happened with the 2014-15 or 2015-16 winter season)
Georgia DNR, nearshore, misc.—1993–1998
Georgia DNR, nearshore, Partenavia—1998–2001
Georgia DNR, nearshore, Skymaster—2001–2002
Georgia DNR, offshore, misc.—1996
Georgia DNR, offshore, Skymaster—1998–2001
Georgia DNR, offshore, NOAA Twin Otter—2001–2002
Wildlife Trust, northern EWS (Georgia), NOAA Twin Otter—2002–2011
Wildlife Trust, offshore, Skymaster—2002–2003
Wildlife Trust, offshore, NOAA Twin Otter—2003–2004
Wildlife Trust, South Carolina EWS, Skymaster—2004–2011
Sea to Shore Alliance (name change to Clearwater Marine Aquarium Research Institute after a merger in 2019), northern EWS (Georgia), NOAA Twin Otter—2011–2019
Sea to Shore Alliance, South Carolina EWS, Skymaster—2011–2013 (2014?)

SHIPBOARD POP SURVEYS:

CETAP, various platforms: 1979, 1980
Manomet Bird Observatory, NE continental shelf, NOAA ships—1980–1988
NEFSC, large whale, stock assessment, and bottlenose dolphin surveys, various—1992, 1995, 1997, 1998, 1999, 2002, 2004, 2005

Canada:

AERIAL SURVEYS:

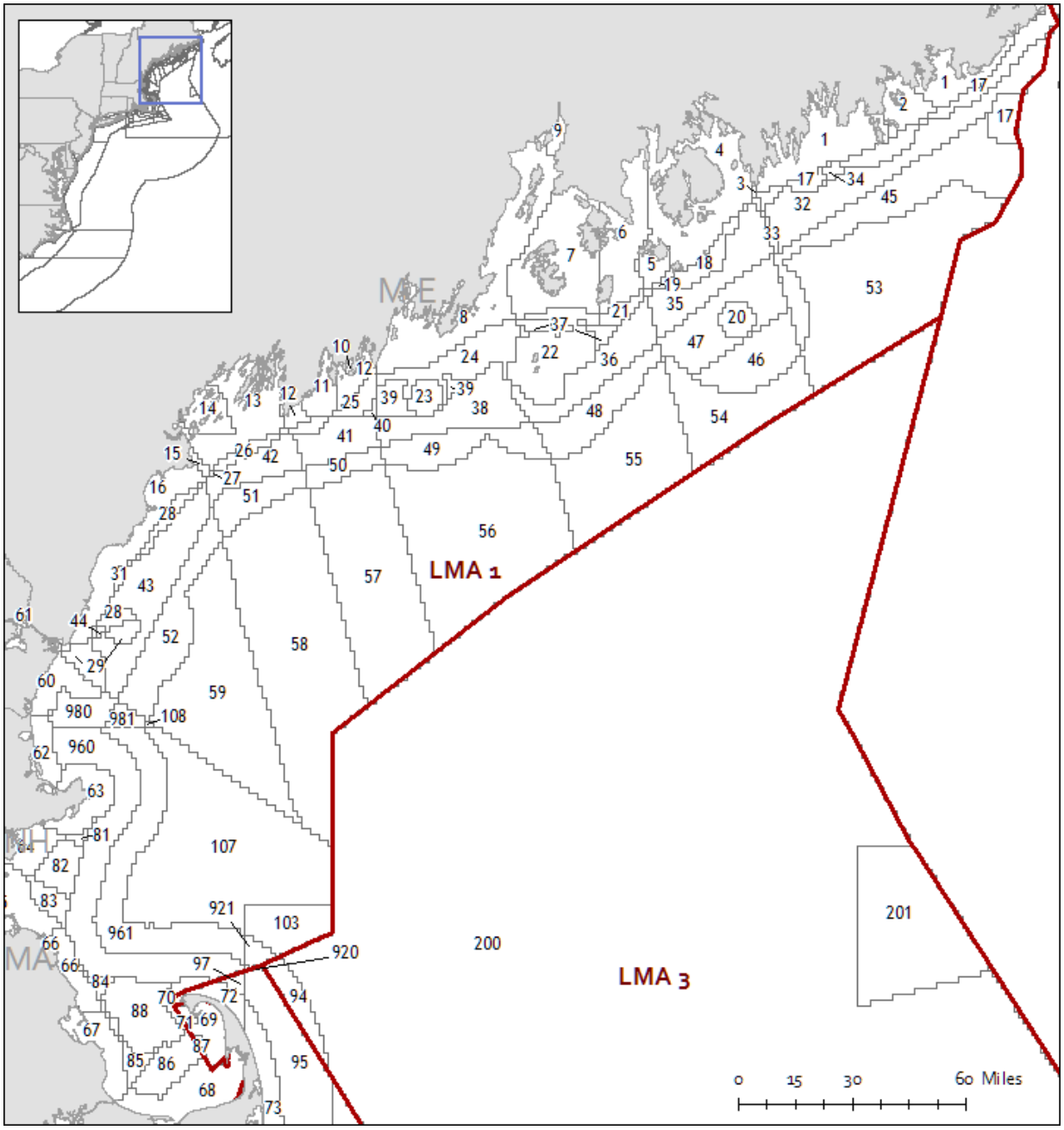
CETAP line-transect surveys, AT-11 & Skymaster—1979, 1980, 1981, 1985, 1987, 1988
CETAP line-transect training flights, AT-11—1979
CETAP POP surveys, Skymaster & miscellaneous aircraft—1979, 1988, 1992
New England Aquarium line-transect surveys using Northeast Large Pelagic Survey Collaborative protocols, Bay of Fundy/Scotian Shelf—2013
Provincetown Center for Coastal Studies, Skymaster—1998, 1999, 2000
NEFSC AMAPPS (Atlantic Marine Assessment Program for Protected Species), Twin Otter—2010–2012
NEFSC broad-scale and focused right whale surveys, Bay of Fundy, Scotian Shelf, Gulf of St. Lawrence (in 2015), Twin Otter—1998–2018
NEFSC stock assessment, harbor porpoise, other surveys, Twin Otter (maybe some other aircraft)—1991, 1995, 1998, 2002, 2004
East Coast Ecosystems, Bay of Fundy/Scotian Shelf, various aircraft—1997–2001
New England Aquarium, Bay of Fundy, Scotian Shelf, various aircraft—1994, 1995, 1996, 1997, 2004, 2011

SHIPBOARD POP SURVEYS:

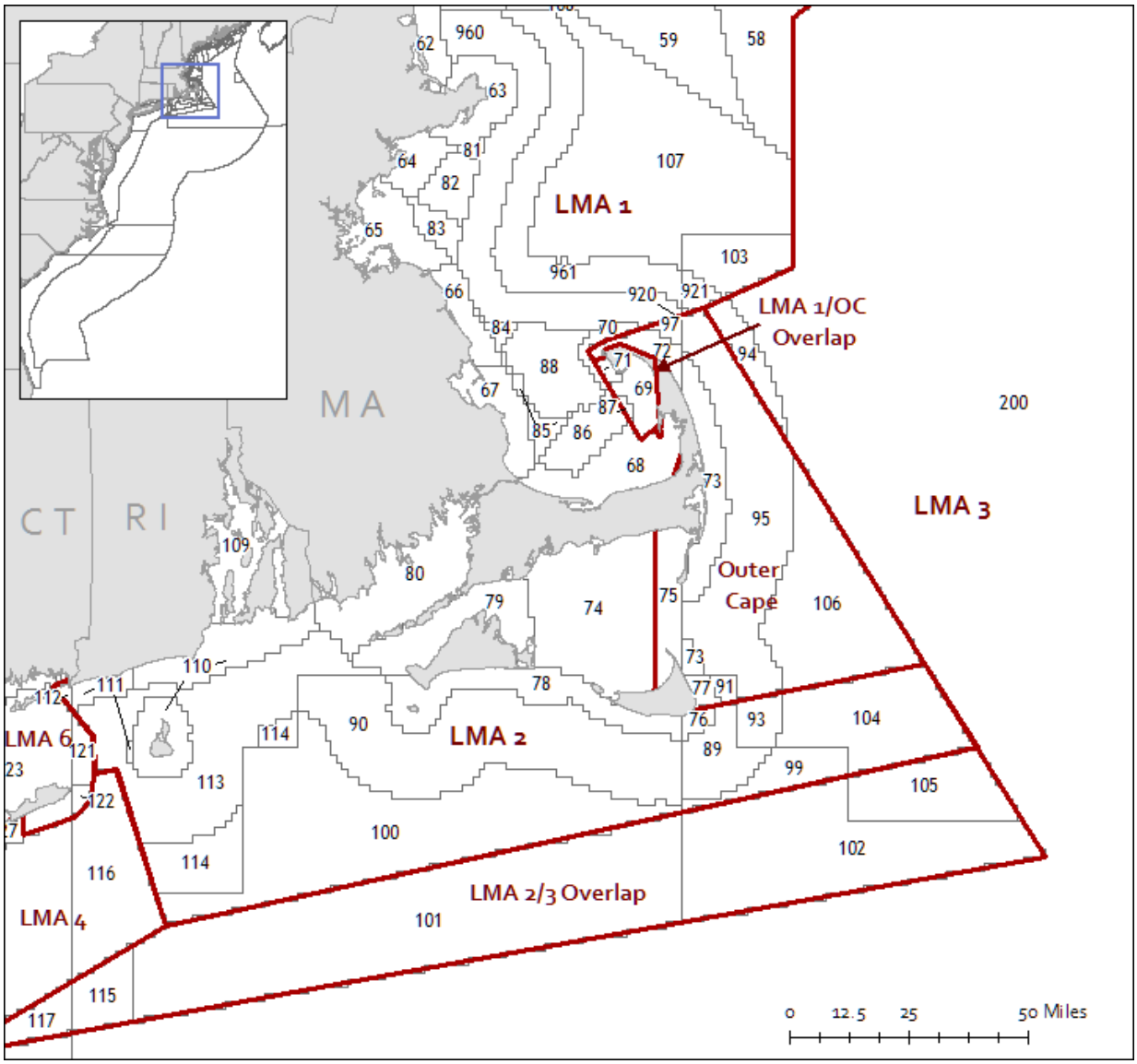
CETAP, various platforms: 1978, 1979, 1980
URI, Rhode Island Sound to Kelvin Seamount, USNS Bartlett—1986
URI, Southern New England, Gulf of Maine, Scotian Shelf, Gulf Stream, SSV Westward—1986
Manomet Bird Observatory, NE continental shelf, NOAA ships—1980–1988
East Coast Ecosystems, Bay of Fundy, various—1994-2002
New England Aquarium (and Canadian Whale Institute), mostly Bay of Fundy, some Scotian Shelf, Gulf of Maine, Gulf of St. Lawrence—1987–2018
NEFSC, large whale, stock assessment, and harbor porpoise surveys, various—1991, 1992, 1995, 1997, 1998, 1999, 2000, 2001, 2002, 2003
International Fund for Animal Welfare, Gulf of Maine, Song of the Whale—1997
Canadian Dept. of Fisheries and Oceans, Bay of Fundy/Scotian Shelf—2006–2008

APPENDIX B| MODEL VESSEL REGIONS

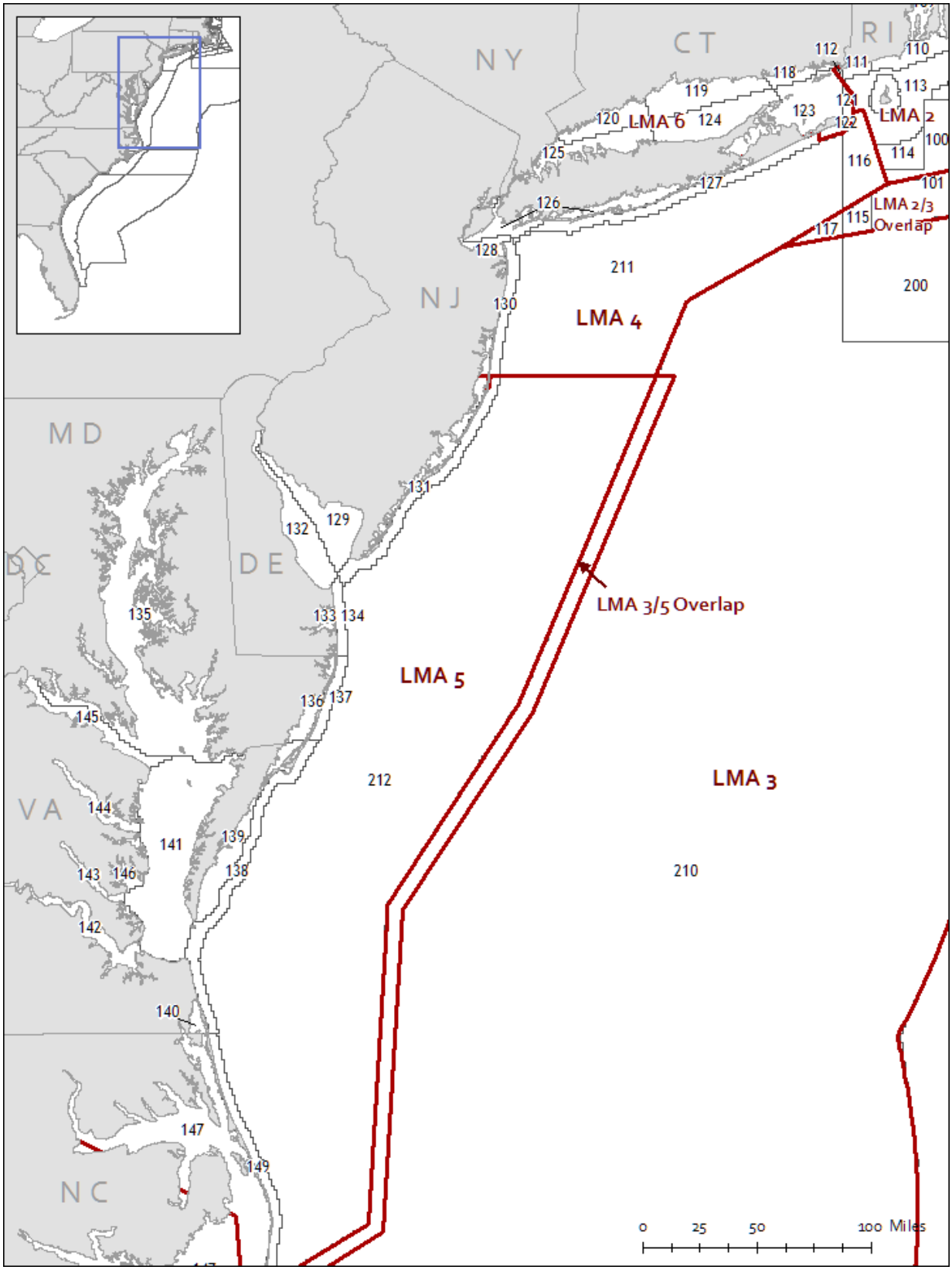
MAINE | NEW HAMPSHIRE | LMA 1 | LMA 3



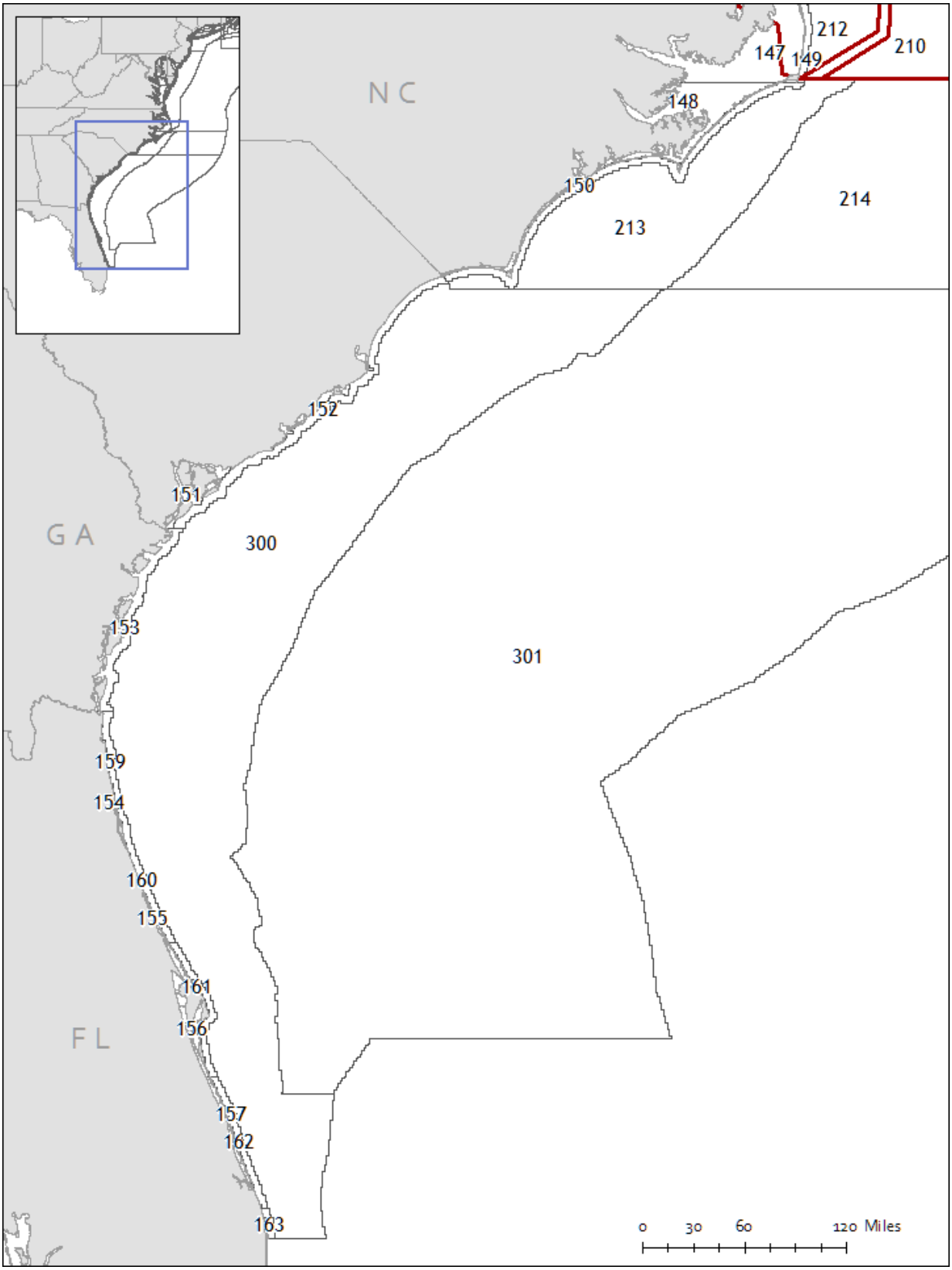
MASSACHUSETTS | RHODE ISLAND | LMA 1 | LMA 2 | OUTER CAPE



MID- ATLANTIC | LMA 4 | LMA 5 | LMA 6



SOUTHEAST


N C
G A
F L
212
210
147
149
148
150
214
213
152
151
300
153
301
159
154
160
155
161
156
157
162
163
0 30 60 120 Miles

REGION ID AND REGION NAME

REGION ID	REGION NAME
1	Maine State Zone A Exempt
2	Maine State Zone A Exempt Washington County Trawl Limits
3	Maine State Zone B Exempt
4	Maine State Zone B Exempt Hancock County Trawl Limits
5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone
6	Maine State Zone C Exempt Hancock County Trawl Limits
7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits
8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits
9	Maine State Zone D Exempt Penobscot Bay Closed Area
10	Maine State Zone E Exempt Linekin Bay Trawl Limits
11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits
12	Maine State Zone E Exempt Zone E Trap Limits
13	Maine State Zone F Exempt
14	Maine State Zone F Exempt Casco Bay Trawl Limits
15	Maine State Zone G Exempt
16	Maine State Zone G Exempt Southern Maine Trawl Limits
17	Maine State Zone A
18	Maine State Zone B Hancock County Trawl Limits
19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone
20	Maine State Zone B Waters Around Mount Desert Rock
21	Maine State Zone C
22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits
23	Maine State Zone D Monhegan Conservation Zone
24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits
25	Maine State Zone E Zone E Trap Limits
26	Maine State Zone F
27	Maine State Zone G
28	Maine State Zone G Southern Maine Trawl Limits
29	Maine State Zone G Waters off Kittery Trawl Limits
30	Maine Nearshore Zone A 3-6 Miles Exempt
31	Maine Nearshore Zone G 3-6 Miles Exempt
32	Maine Nearshore Zone A 3-6 Miles
33	Maine Nearshore Zone A 3-6 Miles (Hancock County Trawl Limits)
34	Maine Nearshore Zone A 3-6 Miles Pocket
35	Maine Nearshore Zone B 3-6 Miles (Hancock County Trawl Limits)
36	Maine Nearshore Zone C 3-6 Miles

REGION ID	REGION NAME
37	Maine Nearshore Zone C 3-6 Miles Pocket
38	Maine Nearshore Zone D 3-6 Miles
39	Maine Nearshore Zone D 3-6 Miles Pocket
40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)
41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)
42	Maine Nearshore Zone F 3-6 Miles
43	Maine Nearshore Zone G 3-6 Miles
44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)
45	Maine Nearshore Zone A 6-12 Miles
46	Maine Nearshore Zone B 6-12 Miles
47	Maine Nearshore Zone B 6-12 Miles (Waters Around Mount Desert Rock)
48	Maine Nearshore Zone C 6-12 Miles
49	Maine Nearshore Zone D 6-12 Miles
50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)
51	Maine Nearshore Zone F 6-12 Miles
52	Maine Nearshore Zone G 6-12 Miles
53	Maine Nearshore Zone A +12 Miles
54	Maine Nearshore Zone B +12 Miles
55	Maine Nearshore Zone C +12 Miles
56	Maine Nearshore Zone D +12 Miles
57	Maine Nearshore Zone E +12 Miles Zone E (Trap Limits)
58	Maine Nearshore Zone F +12 Miles
59	Maine Nearshore Zone G +12 Miles
60	NH Atlantic Exempt
61	NH Inland Bays Exempt
62	Mass State Area 1 Exempt
63	Mass State Area 2 Exempt
64	Mass State Area 3 Exempt
65	Mass State Area 4 Exempt
66	Mass State Area 5 Exempt
67	Mass State Area 6 Exempt
68	Mass State Area 7 - LMA 1 (0 -3) Exempt
69	Mass State Area 7 - LMA 1/OC (0-3) Exempt
70	Mass State Area 8 - LMA 1 (0-3) Exempt
71	Mass State Area 8 - LMA 1/OC (0-3) Exempt
72	Mass State Area 8 - LMA OC (0-3) Exempt
73	Mass State Area 9 Exempt
74	Mass State Area 10 - LMA 2 (0-3) Exempt
75	Mass State Area 10 - LMA OC (0-3) Exempt

REGION ID	REGION NAME
76	Mass State Area 11 - LMA 2 (0-3) Exempt
77	Mass State Area 11 - LMA OC (0-3) Exempt
78	Mass State Area 12 Exempt
79	Mass State Area 13 Exempt
80	Mass State Area 14 Exempt
81	Mass State Area 2
82	Mass State Area 3
83	Mass State Area 4
84	Mass State Area 5
85	Mass State Area 6
86	Mass State Area 7 - LMA 1 (0 -3)
87	Mass State Area 7 - LMA 1/OC (0-3)
88	Mass State Area 8 - LMA 1 (0-3)
89	Mass Nearshore Area 17 - LMA 2 (3-12)
90	Mass Nearshore Area 16 - LMA 2 (3-12)
91	Mass Nearshore Area 17 - LMA OC (3-12)
920	Mass Nearshore Area 18 - LMA 1 (3-6)
921	Mass Nearshore Area 18 - LMA 1 (6-12)
93	Mass Nearshore Area 18 - LMA 2 (3-12)
94	Mass Nearshore Area 18 - LMA 3 (3-12)
95	Mass Nearshore Area 18 - LMA OC (3-12)
960	Mass Nearshore Area 19 - LMA 1 (3-6)
961	Mass Nearshore Area 19 - LMA 1 (6-12)
97	Mass Nearshore Area 19 - LMA OC (3-12)
980	Mass Nearshore Area 20 LMA 1 (3-6)
981	Mass Nearshore Area 20 LMA 1 (6-12)
99	Mass Nearshore Area 17 - LMA 2 (12+)
100	Mass Nearshore Area 16 - LMA 2 (12+)
101	Mass Nearshore Area 16 - LMA 2/3 (12+)
102	Mass Nearshore Area 17 - LMA 2/3 Overlap (12+)
103	Mass Nearshore Area 18 - LMA 1 (12+)
104	Mass Nearshore Area 18 - LMA 2 (12+)
105	Mass Nearshore Area 18 - LMA 2/3 (12+)
106	Mass Nearshore Area 18 - LMA OC (12+)
107	Mass Nearshore Area 19 - LMA 1 (12+)
108	Mass Nearshore Area 20 LMA 1 (12+)
109	RI 538 / 539 Bays Exempt
110	RI 538 / 539 Atlantic Exempt
111	RI 611 Exempt (Northeast)

REGION ID	REGION NAME
112	RI 611 Exempt (Mid-Atlantic)
113	RI 539 Nearshore - LMA 2 (3-12)
114	RI 539 Nearshore - LMA 2 (12+)
115	RI 613 Nearshore LMA 2/3 (12+)
116	RI 613 LMA 4 (12+)
117	RI Area 613 LMA 2/3 Overlap Mid-Atlantic
118	CT Long Island Sound East Exempt
119	CT Long Island Sound Central Exempt
120	CT Long Island Sound West Exempt
121	NY Long Island Sound East Non-Exempt (Northeast))
122	NY South of Long Island Non-Exempt LMA 4 (NE)
123	NY Long Island Sound East Exempt
124	NY Long Island Sound Central Exempt
125	NY Long Island Sound West Exempt
126	NY South of Long Island Exempt
127	NY South of Long Island Non-Exempt (Mid-Atlantic)
128	NJ LMA 4 Exempt
129	NJ LMA 5 Exempt
130	NJ LMA 4 Non-exempt
131	NJ LMA 5 Non-exempt
132	DE Delaware Bay Exempt
133	DE Inland Bays Exempt
134	DE Atlantic Ocean
135	MD Chesapeake Bay Exempt
136	MD Coastal Bays Exempt
137	MD Atlantic Ocean
138	VA Atlantic Ocean System 1
139	VA Seaside Eastern Shore System 2
140	VA Miscellaneous Seaside Codes System 3
141	VA Chesapeake Bay System 4
142	VA James River System 5
143	VA York River System 6
144	VA Rappahannock River System 7
145	VA Potomac River System 8
146	VA Other Chesapeake Bay Tribs System 9
147	NC North of Cape Hatteras Exempt
148	NC South of Cape Hatteras Exempt
149	NC North of Cape Hatteras Non-Exempt
150	NC South of Cape Hatteras Non-Exempt

REGION ID	REGION NAME
151	SC Exempt
152	SC Non-Exempt
153	GA Non-Exempt
154	FL Jacksonville (722) Exempt
155	FL St. Augustine (728) Exempt
156	FL Cape Canaveral (732) Exempt
157	FL Fort Pierce (736) Exempt
158	FL West Palm Beach (741) Exempt
159	FL Jacksonville (722) Non-Exempt
160	FL St. Augustine (728) Non-Exempt
161	FL Cape Canaveral (732) Non-Exempt
162	FL Fort Pierce (736) Non-Exempt
163	FL West Palm Beach (741) Non-Exempt
200	Other LMA 3 (12+) Offshore
201	Other LMA 3 (12+) Offshore Georges Basin
210	LMA 3 Mid-Atlantic Offshore
211	LMA 4 Mid-Atlantic Nearshore
212	LMA 5 Mid-Atlantic Nearshore
213	Outside LMA 5 Mid-Atlantic Nearshore
214	Outside LMA 3 Mid-Atlantic Offshore
300	South Atlantic Nearshore
301	South Atlantic Offshore

APPENDIX C | NORTHEAST LOBSTER MODEL VESSEL DISTRIBUTIONS

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	1	Maine State Zone A Exempt	1	1 to 100	0.00%	0.00%	0.00%	8.10%	7.40%	11.90%	23.80%	23.40%	20.90%	16.40%	14.20%	2.20%
ME	1	Maine State Zone A Exempt	1	101 to 300	12.50%	0.00%	0.00%	8.10%	11.10%	13.30%	15.20%	14.50%	15.00%	12.70%	14.90%	4.30%
ME	1	Maine State Zone A Exempt	1	301 to 500	0.00%	0.00%	0.00%	5.40%	6.20%	8.90%	5.40%	5.50%	6.40%	9.00%	4.50%	4.30%
ME	1	Maine State Zone A Exempt	1	501 to 700	0.00%	25.00%	10.00%	2.70%	3.70%	4.40%	5.40%	6.00%	5.00%	3.70%	0.70%	2.20%
ME	1	Maine State Zone A Exempt	1	701+	0.00%	0.00%	0.00%	2.70%	3.70%	5.90%	6.30%	8.90%	9.10%	9.00%	4.50%	0.00%
ME	1	Maine State Zone A Exempt	2	1 to 100	0.00%	0.00%	20.00%	2.70%	4.90%	0.70%	1.30%	0.40%	0.50%	0.50%	0.70%	6.50%
ME	1	Maine State Zone A Exempt	2	101 to 300	37.50%	25.00%	10.00%	18.90%	9.90%	8.10%	3.60%	3.80%	4.10%	3.70%	6.00%	13.00%
ME	1	Maine State Zone A Exempt	2	301 to 500	0.00%	0.00%	0.00%	8.10%	16.00%	6.70%	3.10%	3.40%	4.10%	5.80%	10.40%	8.70%
ME	1	Maine State Zone A Exempt	2	501 to 700	0.00%	0.00%	0.00%	8.10%	2.50%	5.20%	8.50%	4.70%	4.10%	4.80%	6.70%	4.30%
ME	1	Maine State Zone A Exempt	2	701+	0.00%	0.00%	0.00%	0.00%	3.70%	3.70%	5.40%	8.90%	8.20%	8.50%	3.70%	2.20%
ME	1	Maine State Zone A Exempt	3 to 4	1 to 100	0.00%	0.00%	0.00%	2.70%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	1	Maine State Zone A Exempt	3 to 4	101 to 300	0.00%	25.00%	10.00%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%	2.20%	4.30%
ME	1	Maine State Zone A Exempt	3 to 4	301 to 500	0.00%	0.00%	10.00%	0.00%	3.70%	1.50%	1.80%	1.30%	0.50%	1.10%	0.70%	2.20%
ME	1	Maine State Zone A Exempt	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.90%	0.90%	1.40%	1.60%	0.70%	0.00%
ME	1	Maine State Zone A Exempt	3 to 4	701+	0.00%	0.00%	0.00%	2.70%	1.20%	2.20%	1.30%	2.60%	3.20%	1.60%	0.70%	0.00%
ME	1	Maine State Zone A Exempt	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%
ME	1	Maine State Zone A Exempt	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	2.50%	1.50%	0.40%	0.00%	0.00%	0.00%	3.70%	0.00%
ME	1	Maine State Zone A Exempt	5 to 9	301 to 500	0.00%	25.00%	10.00%	2.70%	0.00%	2.20%	0.40%	0.90%	0.90%	2.60%	3.00%	4.30%
ME	1	Maine State Zone A Exempt	5 to 9	501 to 700	12.50%	0.00%	0.00%	2.70%	1.20%	0.70%	0.00%	0.00%	0.50%	0.50%	1.50%	2.20%
ME	1	Maine State Zone A Exempt	5 to 9	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	1.30%	1.40%	1.60%	1.50%	0.00%
ME	1	Maine State Zone A Exempt	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	1.20%	0.00%	1.30%	0.90%	0.00%	0.00%	0.70%	4.30%
ME	1	Maine State Zone A Exempt	10 to 14	101 to 300	12.50%	0.00%	10.00%	0.00%	1.20%	3.70%	1.30%	0.40%	0.90%	1.60%	1.50%	2.20%
ME	1	Maine State Zone A Exempt	10 to 14	301 to 500	0.00%	0.00%	0.00%	2.70%	0.00%	0.70%	0.90%	1.30%	0.90%	0.50%	2.20%	2.20%
ME	1	Maine State Zone A Exempt	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	1.20%	2.20%	2.70%	1.30%	0.90%	1.10%	1.50%	0.00%
ME	1	Maine State Zone A Exempt	10 to 14	701+	0.00%	0.00%	10.00%	0.00%	1.20%	0.00%	0.40%	1.30%	2.30%	1.60%	2.20%	4.30%
ME	1	Maine State Zone A Exempt	15 to 19	101 to 300	12.50%	0.00%	10.00%	8.10%	4.90%	3.00%	1.30%	0.90%	1.40%	1.10%	0.70%	0.00%
ME	1	Maine State Zone A Exempt	15 to 19	301 to 500	12.50%	0.00%	0.00%	2.70%	1.20%	0.70%	0.00%	0.40%	0.90%	0.00%	0.70%	0.00%
ME	1	Maine State Zone A Exempt	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	2.50%	1.50%	0.40%	0.40%	0.50%	0.50%	0.70%	6.50%
ME	1	Maine State Zone A Exempt	15 to 19	701+	0.00%	0.00%	0.00%	2.70%	1.20%	0.70%	2.20%	2.60%	3.60%	5.30%	4.50%	4.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	1	Maine State Zone A Exempt	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.50%	0.70%	0.00%
ME	1	Maine State Zone A Exempt	20 to 39	101 to 300	0.00%	0.00%	0.00%	5.40%	0.00%	0.70%	0.90%	0.40%	0.00%	0.50%	0.00%	0.00%
ME	1	Maine State Zone A Exempt	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	4.90%	1.50%	0.90%	1.70%	0.90%	1.10%	0.70%	6.50%
ME	1	Maine State Zone A Exempt	20 to 39	501 to 700	0.00%	0.00%	0.00%	2.70%	1.20%	2.20%	2.20%	0.90%	1.40%	1.10%	0.70%	4.30%
ME	1	Maine State Zone A Exempt	20 to 39	701+	0.00%	0.00%	0.00%	0.00%	1.20%	0.70%	0.90%	1.30%	1.40%	2.10%	1.50%	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	1	1 to 100	0.00%	0.00%	0.00%	8.10%	7.40%	11.90 %	23.80 %	23.40 %	20.90 %	16.40 %	14.20 %	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	1	101 to 300	12.50 %	0.00%	0.00%	8.10%	11.10 %	13.30 %	15.20 %	14.50 %	15.00 %	12.70 %	14.90 %	4.30%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	1	301 to 500	0.00%	0.00%	0.00%	5.40%	6.20%	8.90%	5.40%	5.50%	6.40%	9.00%	4.50%	4.30%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	1	501 to 700	0.00%	25.00 %	10.00 %	2.70%	3.70%	4.40%	5.40%	6.00%	5.00%	3.70%	0.70%	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	1	701+	0.00%	0.00%	0.00%	2.70%	3.70%	5.90%	6.30%	8.90%	9.10%	9.00%	4.50%	0.00%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	2	1 to 100	0.00%	0.00%	20.00 %	2.70%	4.90%	0.70%	1.30%	0.40%	0.50%	0.50%	0.70%	6.50%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	2	101 to 300	37.50 %	25.00 %	10.00 %	18.90 %	9.90%	8.10%	3.60%	3.80%	4.10%	3.70%	6.00%	13.00 %
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	2	301 to 500	0.00%	0.00%	0.00%	8.10%	16.00 %	6.70%	3.10%	3.40%	4.10%	5.80%	10.40 %	8.70%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	2	501 to 700	0.00%	0.00%	0.00%	8.10%	2.50%	5.20%	8.50%	4.70%	4.10%	4.80%	6.70%	4.30%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	2	701+	0.00%	0.00%	0.00%	0.00%	3.70%	3.70%	5.40%	8.90%	8.20%	8.50%	3.70%	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4	1 to 100	0.00%	0.00%	0.00%	2.70%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4	101 to 300	0.00%	25.00 %	10.00 %	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%	2.20%	4.30%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4	301 to 500	0.00%	0.00%	10.00 %	0.00%	3.70%	1.50%	1.80%	1.30%	0.50%	1.10%	0.70%	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.90%	0.90%	1.40%	1.60%	0.70%	0.00%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4	701+	0.00%	0.00%	0.00%	2.70%	1.20%	2.20%	1.30%	2.60%	3.20%	1.60%	0.70%	0.00%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4 adjusted for max tpt - 4	1 to 100	0.00%	0.00%	0.00%	0.00%	1.20%	1.50%	1.30%	0.90%	0.00%	0.50%	2.20%	4.30%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4 adjusted for max tpt - 4	101 to 300	25.00 %	0.00%	20.00 %	13.50 %	8.60%	8.90%	4.00%	1.70%	2.30%	3.20%	6.00%	2.20%
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4 adjusted for max tpt - 4	301 to 500	12.50 %	25.00 %	10.00 %	8.10%	6.20%	5.20%	2.20%	4.30%	3.60%	4.20%	6.70%	13.00 %
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4 adjusted for max tpt - 4	501 to 700	12.50 %	0.00%	0.00%	5.40%	6.20%	6.70%	5.40%	2.60%	3.20%	3.20%	4.50%	13.00 %
ME	2	Maine State Zone A Exempt Washington County Trawl Limits	3 to 4 adjusted for max tpt - 4	701+	0.00%	0.00%	10.00 %	2.70%	3.70%	1.50%	4.90%	6.40%	8.60%	10.60 %	9.70%	10.90 %
ME	3	Maine State Zone B Exempt	1	1 to 100	0.00%	0.00%	0.00%	0.00%	4.80%	24.30 %	35.40 %	33.90 %	31.30 %	20.50 %	5.70%	15.50 %
ME	3	Maine State Zone B Exempt	1	101 to 300	0.00%	0.00%	0.00%	10.80 %	12.70 %	10.80 %	10.50 %	10.60 %	11.40 %	11.40 %	9.20%	6.90%
ME	3	Maine State Zone B Exempt	1	301 to 500	11.10 %	7.10%	4.00%	5.40%	6.30%	9.00%	8.30%	3.70%	3.60%	3.00%	9.20%	0.00%
ME	3	Maine State Zone B Exempt	1	501 to 700	0.00%	0.00%	0.00%	0.00%	1.60%	1.80%	5.50%	3.70%	3.60%	7.60%	4.60%	3.40%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	3	Maine State Zone B Exempt	1	701+	0.00%	0.00%	0.00%	2.70%	6.30%	4.50%	4.40%	5.80%	4.80%	4.50%	1.10%	0.00%
ME	3	Maine State Zone B Exempt	2	1 to 100	0.00%	0.00%	4.00%	5.40%	0.00%	0.90%	1.10%	1.60%	1.80%	2.30%	3.40%	8.60%
ME	3	Maine State Zone B Exempt	2	101 to 300	11.10 %	14.30 %	16.00 %	27.00 %	19.00 %	9.00%	2.20%	2.60%	3.60%	5.30%	9.20%	12.10 %
ME	3	Maine State Zone B Exempt	2	301 to 500	0.00%	0.00%	12.00 %	8.10%	9.50%	10.80 %	5.50%	6.30%	4.20%	7.60%	9.20%	10.30 %
ME	3	Maine State Zone B Exempt	2	501 to 700	16.70 %	14.30 %	12.00 %	2.70%	6.30%	3.60%	5.00%	4.80%	5.40%	9.10%	12.60 %	8.60%
ME	3	Maine State Zone B Exempt	2	701+	11.10 %	7.10%	4.00%	5.40%	1.60%	4.50%	6.60%	11.10 %	12.70 %	7.60%	5.70%	3.40%
ME	3	Maine State Zone B Exempt	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
ME	3	Maine State Zone B Exempt	3 to 4	101 to 300	0.00%	0.00%	8.00%	0.00%	1.60%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%
ME	3	Maine State Zone B Exempt	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%	1.10%	1.70%
ME	3	Maine State Zone B Exempt	3 to 4	501 to 700	11.10 %	14.30 %	8.00%	5.40%	1.60%	0.00%	0.60%	0.00%	0.00%	0.00%	2.30%	1.70%
ME	3	Maine State Zone B Exempt	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	1.60%	0.90%	0.60%	0.50%	0.00%	2.30%	2.30%	3.40%
ME	3	Maine State Zone B Exempt	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	1.60%	0.00%	0.00%	0.50%	0.60%	0.00%	1.10%	0.00%
ME	3	Maine State Zone B Exempt	5 to 9	101 to 300	5.60%	7.10%	0.00%	2.70%	3.20%	0.90%	0.60%	0.50%	1.20%	0.80%	0.00%	0.00%
ME	3	Maine State Zone B Exempt	5 to 9	301 to 500	0.00%	0.00%	0.00%	2.70%	1.60%	0.90%	1.10%	1.60%	2.40%	0.80%	3.40%	1.70%
ME	3	Maine State Zone B Exempt	5 to 9	501 to 700	0.00%	0.00%	0.00%	2.70%	1.60%	1.80%	0.60%	0.50%	0.00%	0.00%	0.00%	1.70%
ME	3	Maine State Zone B Exempt	5 to 9	701+	5.60%	0.00%	4.00%	2.70%	1.60%	0.90%	0.60%	0.00%	0.60%	0.00%	1.10%	1.70%
ME	3	Maine State Zone B Exempt	10 to 14	1 to 100	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	3	Maine State Zone B Exempt	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.60%	0.00%	0.60%	0.80%	1.10%	0.00%
ME	3	Maine State Zone B Exempt	10 to 14	301 to 500	5.60%	7.10%	8.00%	0.00%	1.60%	0.90%	0.00%	0.50%	0.00%	1.50%	1.10%	1.70%
ME	3	Maine State Zone B Exempt	10 to 14	501 to 700	5.60%	7.10%	8.00%	8.10%	3.20%	1.80%	2.20%	1.60%	1.80%	0.80%	1.10%	3.40%
ME	3	Maine State Zone B Exempt	10 to 14	701+	5.60%	7.10%	0.00%	0.00%	0.00%	1.80%	2.20%	2.60%	1.80%	3.80%	3.40%	1.70%
ME	3	Maine State Zone B Exempt	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	1.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	3	Maine State Zone B Exempt	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%
ME	3	Maine State Zone B Exempt	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%
ME	3	Maine State Zone B Exempt	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	1.10%	2.40%	3.00%	1.10%	0.00%
ME	3	Maine State Zone B Exempt	15 to 19	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.50%	1.20%	1.50%	0.00%	0.00%
ME	3	Maine State Zone B Exempt	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.60%	0.50%	0.60%	0.80%	0.00%	6.90%
ME	3	Maine State Zone B Exempt	20 to 39	101 to 300	5.60%	7.10%	4.00%	2.70%	4.80%	1.80%	0.60%	0.50%	0.60%	0.00%	2.30%	1.70%
ME	3	Maine State Zone B Exempt	20 to 39	301 to 500	0.00%	0.00%	0.00%	2.70%	3.20%	1.80%	1.10%	1.60%	0.60%	1.50%	1.10%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	3	Maine State Zone B Exempt	20 to 39	501 to 700	5.60%	7.10%	4.00%	2.70%	3.20%	0.90%	1.10%	1.60%	1.20%	0.00%	0.00%	0.00%
ME	3	Maine State Zone B Exempt	20 to 39	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.10%	1.60%	1.80%	1.50%	1.10%	0.00%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	1	1 to 100	0.00%	0.00%	0.00%	0.00%	4.80%	24.30 %	35.40 %	33.90 %	31.30 %	20.50 %	5.70%	15.50 %
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	1	101 to 300	0.00%	0.00%	0.00%	10.80 %	12.70 %	10.80 %	10.50 %	10.60 %	11.40 %	11.40 %	9.20%	6.90%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	1	301 to 500	11.10 %	7.10%	4.00%	5.40%	6.30%	9.00%	8.30%	3.70%	3.60%	3.00%	9.20%	0.00%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	1	501 to 700	0.00%	0.00%	0.00%	0.00%	1.60%	1.80%	5.50%	3.70%	3.60%	7.60%	4.60%	3.40%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	1	701+	0.00%	0.00%	0.00%	2.70%	6.30%	4.50%	4.40%	5.80%	4.80%	4.50%	1.10%	0.00%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	2	1 to 100	0.00%	0.00%	4.00%	5.40%	0.00%	0.90%	1.10%	1.60%	1.80%	2.30%	3.40%	8.60%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	2	101 to 300	11.10 %	14.30 %	16.00 %	27.00 %	19.00 %	9.00%	2.20%	2.60%	3.60%	5.30%	9.20%	12.10 %
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	2	301 to 500	0.00%	0.00%	12.00 %	8.10%	9.50%	10.80 %	5.50%	6.30%	4.20%	7.60%	9.20%	10.30 %
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	2	501 to 700	16.70 %	14.30 %	12.00 %	2.70%	6.30%	3.60%	5.00%	4.80%	5.40%	9.10%	12.60 %	8.60%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	2	701+	11.10 %	7.10%	4.00%	5.40%	1.60%	4.50%	6.60%	11.10 %	12.70 %	7.60%	5.70%	3.40%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	4.00%	0.00%	3.20%	0.90%	1.10%	1.10%	1.20%	0.80%	1.10%	10.30 %
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	11.10 %	14.30 %	12.00 %	5.40%	9.50%	4.50%	1.70%	1.10%	2.40%	3.80%	6.90%	1.70%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	5.60%	7.10%	8.00%	5.40%	6.30%	6.30%	2.80%	3.70%	3.00%	3.80%	9.20%	5.20%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	22.20 %	28.60 %	20.00 %	18.90 %	9.50%	4.50%	5.00%	4.80%	5.40%	3.80%	4.60%	6.90%
ME	4	Maine State Zone B Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	11.10 %	7.10%	4.00%	2.70%	3.20%	4.50%	5.00%	5.30%	5.40%	9.10%	8.00%	6.90%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	1	1 to 100	0.00%	0.00%	0.00%	0.00%	4.80%	24.30 %	35.40 %	33.90 %	31.30 %	20.50 %	5.70%	15.50 %
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	1	101 to 300	0.00%	0.00%	0.00%	10.80 %	12.70 %	10.80 %	10.50 %	10.60 %	11.40 %	11.40 %	9.20%	6.90%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	1	301 to 500	11.10 %	7.10%	4.00%	5.40%	6.30%	9.00%	8.30%	3.70%	3.60%	3.00%	9.20%	0.00%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	1	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	2.70%	7.90%	6.30%	9.90%	9.50%	8.40%	12.10 %	5.70%	3.40%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	2	1 to 100	0.00%	0.00%	4.00%	5.40%	0.00%	0.90%	1.10%	1.60%	1.80%	2.30%	3.40%	8.60%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	2	101 to 300	11.10 %	14.30 %	16.00 %	27.00 %	19.00 %	9.00%	2.20%	2.60%	3.60%	5.30%	9.20%	12.10 %
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	2	301 to 500	0.00%	0.00%	12.00 %	8.10%	9.50%	10.80 %	5.50%	6.30%	4.20%	7.60%	9.20%	10.30 %
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	2	501 to 700 adjusted for max traps	27.80 %	21.40 %	16.00 %	8.10%	7.90%	8.10%	11.60 %	15.90 %	18.10 %	16.70 %	18.40 %	12.10 %
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	4.00%	0.00%	3.20%	0.90%	1.10%	1.10%	1.20%	0.80%	1.10%	10.30 %
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	101 to 300	11.10 %	14.30 %	12.00 %	5.40%	9.50%	4.50%	1.70%	1.10%	2.40%	3.80%	6.90%	1.70%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	301 to 500	5.60%	7.10%	8.00%	5.40%	6.30%	6.30%	2.80%	3.70%	3.00%	3.80%	9.20%	5.20%
ME	5	Maine State Zone B Exempt Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	501 to 700 adjusted for max traps	33.30 %	35.70 %	24.00 %	21.60 %	12.70 %	9.00%	9.90%	10.10 %	10.80 %	12.90 %	12.60 %	13.80 %

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	1	1 to 100	3.60%	0.00%	0.00%	8.00%	2.40%	11.40 %	19.30 %	20.30 %	16.00 %	9.60%	8.60%	6.00%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	1	101 to 300	3.60%	4.50%	0.00%	2.00%	8.20%	9.50%	6.90%	7.30%	7.10%	6.20%	6.60%	4.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	1	301 to 500	0.00%	0.00%	0.00%	6.00%	2.40%	3.80%	4.10%	3.90%	4.20%	4.00%	2.60%	1.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	1	501 to 700	0.00%	0.00%	0.00%	0.00%	2.40%	4.40%	3.20%	2.60%	3.30%	2.80%	2.00%	0.00%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	1	701+	0.00%	0.00%	0.00%	4.00%	3.50%	2.50%	5.50%	5.20%	7.10%	2.80%	2.60%	1.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	2	1 to 100	3.60%	4.50%	0.00%	2.00%	1.20%	1.30%	0.00%	0.40%	0.00%	0.00%	5.30%	7.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	2	101 to 300	10.70 %	9.10%	14.30 %	8.00%	11.80 %	5.70%	3.20%	2.60%	2.40%	5.60%	7.90%	14.90 %
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	2	301 to 500	0.00%	4.50%	3.60%	6.00%	15.30 %	12.70 %	6.40%	4.70%	4.70%	7.90%	12.60 %	7.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	2	501 to 700	10.70 %	0.00%	10.70 %	6.00%	7.10%	13.30 %	9.60%	8.20%	6.60%	7.90%	9.30%	6.00%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	2	701+	3.60%	4.50%	3.60%	6.00%	8.20%	7.00%	12.40 %	15.10 %	14.60 %	16.40 %	6.00%	7.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	0.00%	4.00%	0.00%	1.90%	3.70%	3.40%	3.80%	1.10%	3.30%	6.00%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	17.90 %	22.70 %	25.00 %	16.00 %	10.60 %	3.80%	4.10%	4.30%	4.70%	4.50%	8.60%	9.00%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	14.30 %	27.30 %	21.40 %	16.00 %	11.80 %	10.10 %	5.00%	3.40%	3.80%	6.80%	6.60%	7.50%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	21.40 %	13.60 %	10.70 %	10.00 %	5.90%	5.70%	5.50%	5.60%	7.50%	8.50%	7.30%	9.00%
ME	6	Maine State Zone C Exempt Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	10.70 %	9.10%	10.70 %	6.00%	9.40%	7.00%	11.00 %	12.90 %	14.20 %	15.80 %	10.60 %	11.90 %
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	1 to 100	3.60%	0.00%	0.00%	8.00%	2.40%	11.40 %	19.30 %	20.30 %	16.00 %	9.60%	8.60%	6.00%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	101 to 300	3.60%	4.50%	0.00%	2.00%	8.20%	9.50%	6.90%	7.30%	7.10%	6.20%	6.60%	4.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	301 to 500	0.00%	0.00%	0.00%	6.00%	2.40%	3.80%	4.10%	3.90%	4.20%	4.00%	2.60%	1.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	501 to 700	0.00%	0.00%	0.00%	0.00%	2.40%	4.40%	3.20%	2.60%	3.30%	2.80%	2.00%	0.00%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	701+	0.00%	0.00%	0.00%	4.00%	3.50%	2.50%	5.50%	5.20%	7.10%	2.80%	2.60%	1.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	1 to 100	3.60%	4.50%	0.00%	2.00%	1.20%	1.30%	0.00%	0.40%	0.00%	0.00%	5.30%	7.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	101 to 300	10.70 %	9.10%	14.30 %	8.00%	11.80 %	5.70%	3.20%	2.60%	2.40%	5.60%	7.90%	14.90 %
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	301 to 500	0.00%	4.50%	3.60%	6.00%	15.30 %	12.70 %	6.40%	4.70%	4.70%	7.90%	12.60 %	7.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	501 to 700	10.70 %	0.00%	10.70 %	6.00%	7.10%	13.30 %	9.60%	8.20%	6.60%	7.90%	9.30%	6.00%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	701+	3.60%	4.50%	3.60%	6.00%	8.20%	7.00%	12.40 %	15.10 %	14.60 %	16.40 %	6.00%	7.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	0.00%	4.00%	0.00%	1.90%	3.70%	3.40%	3.80%	1.10%	3.30%	6.00%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	17.90 %	22.70 %	25.00 %	16.00 %	10.60 %	3.80%	4.10%	4.30%	4.70%	4.50%	8.60%	9.00%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	14.30 %	27.30 %	21.40 %	16.00 %	11.80 %	10.10 %	5.00%	3.40%	3.80%	6.80%	6.60%	7.50%
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	21.40 %	13.60 %	10.70 %	10.00 %	5.90%	5.70%	5.50%	5.60%	7.50%	8.50%	7.30%	9.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	7	Maine State Zone C Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	10.70%	9.10%	10.70%	6.00%	9.40%	7.00%	11.00%	12.90%	14.20%	15.80%	10.60%	11.90%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	1 to 100	3.00%	0.00%	7.40%	9.80%	14.90%	20.50%	29.70%	27.90%	23.60%	20.40%	12.40%	7.60%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	101 to 300	12.10%	9.50%	14.80%	12.20%	16.20%	16.00%	11.40%	10.00%	10.60%	11.20%	11.20%	15.20%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	301 to 500	6.10%	0.00%	3.70%	12.20%	13.50%	9.00%	6.60%	6.70%	6.50%	7.80%	7.50%	1.10%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	501 to 700	6.10%	4.80%	7.40%	2.40%	1.40%	7.70%	7.90%	8.30%	8.80%	8.30%	8.10%	3.30%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	1	701+	0.00%	0.00%	0.00%	0.00%	2.70%	7.10%	12.20%	13.30%	10.20%	8.70%	3.70%	3.30%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	1 to 100	0.00%	0.00%	0.00%	4.90%	1.40%	2.60%	0.90%	2.10%	1.40%	1.50%	1.90%	6.50%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	101 to 300	21.20%	23.80%	14.80%	17.10%	10.80%	3.80%	4.80%	3.80%	3.70%	3.40%	5.60%	6.50%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	301 to 500	9.10%	19.00%	14.80%	12.20%	4.10%	6.40%	1.70%	2.10%	0.90%	3.40%	9.30%	13.00%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	501 to 700	9.10%	4.80%	3.70%	2.40%	10.80%	4.50%	4.40%	4.20%	6.50%	5.80%	6.20%	8.70%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	2	701+	6.10%	4.80%	3.70%	4.90%	2.70%	3.20%	4.80%	5.80%	11.10%	10.70%	10.60%	3.30%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	4.80%	0.00%	4.90%	2.70%	2.60%	1.70%	2.10%	1.90%	0.50%	2.50%	5.40%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	3.00%	0.00%	7.40%	4.90%	4.10%	5.80%	2.20%	1.70%	1.40%	3.90%	5.00%	14.10%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	15.20%	14.30%	7.40%	4.90%	6.80%	3.20%	3.10%	3.80%	4.20%	4.40%	8.70%	4.30%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	0.00%	4.80%	3.70%	2.40%	4.10%	3.80%	5.20%	3.30%	2.80%	2.90%	5.00%	2.20%
ME	8	Maine State Zone D Exempt Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	9.10%	9.50%	11.10%	4.90%	4.10%	3.80%	3.50%	5.00%	6.50%	7.30%	2.50%	5.40%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	1	1 to 100	3.00%	0.00%	7.40%	9.80%	14.90%	20.50%	29.70%	27.90%	23.60%	20.40%	12.40%	7.60%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	1	101 to 300	12.10%	9.50%	14.80%	12.20%	16.20%	16.00%	11.40%	10.00%	10.60%	11.20%	11.20%	15.20%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	1	301 to 500	6.10%	0.00%	3.70%	12.20%	13.50%	9.00%	6.60%	6.70%	6.50%	7.80%	7.50%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	1	501 to 700	6.10%	4.80%	7.40%	2.40%	1.40%	7.70%	7.90%	8.30%	8.80%	8.30%	8.10%	3.30%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	1	701+	0.00%	0.00%	0.00%	0.00%	2.70%	7.10%	12.20%	13.30%	10.20%	8.70%	3.70%	3.30%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	2	1 to 100	0.00%	0.00%	0.00%	4.90%	1.40%	2.60%	0.90%	2.10%	1.40%	1.50%	1.90%	6.50%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	2	101 to 300	21.20%	23.80%	14.80%	17.10%	10.80%	3.80%	4.80%	3.80%	3.70%	3.40%	5.60%	6.50%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	2	301 to 500	9.10%	19.00%	14.80%	12.20%	4.10%	6.40%	1.70%	2.10%	0.90%	3.40%	9.30%	13.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	2	501 to 700	9.10%	4.80%	3.70%	2.40%	10.80%	4.50%	4.40%	4.20%	6.50%	5.80%	6.20%	8.70%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	2	701+	6.10%	4.80%	3.70%	4.90%	2.70%	3.20%	4.80%	5.80%	11.10%	10.70%	10.60%	3.30%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	3 to 4	1 to 100	0.00%	4.80%	0.00%	2.40%	1.40%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	3 to 4	101 to 300	0.00%	0.00%	0.00%	2.40%	1.40%	0.60%	0.00%	0.00%	0.00%	0.50%	0.00%	4.30%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	3 to 4	301 to 500	6.10%	9.50%	3.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%	1.20%	1.10%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.90%	0.00%	0.00%	0.00%	1.20%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	3 to 4	701+	3.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.40%	0.50%	1.00%	0.00%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	1.30%	1.30%	0.50%	0.00%	0.00%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	1.40%	2.60%	0.40%	0.00%	0.00%	1.00%	0.60%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	1.30%	1.30%	1.40%	1.50%	1.90%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	5 to 9	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	1.70%	1.70%	0.90%	1.00%	0.00%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	5 to 9	701+	0.00%	4.80%	3.70%	0.00%	0.00%	0.60%	0.90%	0.40%	0.50%	1.00%	1.20%	2.20%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	10 to 14	1 to 100	0.00%	0.00%	0.00%	2.40%	0.00%	0.60%	0.40%	0.80%	1.40%	0.50%	2.50%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	10 to 14	101 to 300	3.00%	0.00%	0.00%	0.00%	0.00%	1.30%	1.30%	1.30%	0.90%	1.90%	3.10%	7.60%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	10 to 14	301 to 500	6.10%	0.00%	0.00%	0.00%	2.70%	0.60%	0.90%	1.70%	0.90%	0.50%	1.90%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	10 to 14	501 to 700	0.00%	4.80%	3.70%	2.40%	1.40%	1.30%	1.70%	1.30%	1.40%	1.00%	3.70%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	10 to 14	701+	3.00%	0.00%	3.70%	0.00%	0.00%	1.90%	1.30%	2.90%	3.20%	2.90%	0.00%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	15 to 19	101 to 300	0.00%	0.00%	7.40%	2.40%	0.00%	0.60%	0.00%	0.40%	0.00%	0.00%	1.20%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	15 to 19	301 to 500	3.00%	4.80%	3.70%	2.40%	2.70%	0.60%	0.90%	0.40%	0.50%	1.00%	1.20%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.00%	0.50%	1.00%	0.00%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	15 to 19	701+	3.00%	4.80%	3.70%	4.90%	2.70%	0.60%	0.90%	0.40%	1.40%	2.40%	0.60%	1.10%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	1.40%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	1.40%	0.60%	0.40%	0.00%	0.50%	0.50%	0.00%	2.20%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	20 to 39	301 to 500	0.00%	0.00%	0.00%	2.40%	1.40%	1.30%	0.00%	0.40%	0.50%	0.50%	2.50%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	1.40%	1.90%	0.00%	0.40%	0.00%	0.00%	0.00%	0.00%
ME	9	Maine State Zone D Exempt Penobscot Bay Closed Area	20 to 39	701+	0.00%	0.00%	0.00%	0.00%	1.40%	0.60%	0.40%	0.80%	0.90%	0.00%	0.60%	0.00%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	1	1 to 100	5.90%	0.00%	9.10%	23.50%	35.10%	38.70%	37.10%	37.30%	35.60%	26.40%	12.10%	14.00%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	1	101 to 300	5.90%	9.10%	9.10%	5.90%	18.90%	17.20%	16.40%	16.90%	14.40%	19.80%	22.70%	16.30%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	1	301 to 500	5.90%	9.10%	0.00%	0.00%	2.70%	6.50%	5.20%	4.20%	6.70%	6.60%	9.10%	7.00%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	1	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	11.20%	11.00%	12.50%	12.10%	12.10%	4.70%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2	1 to 100	11.80%	18.20%	18.20%	17.60%	5.40%	3.20%	2.60%	1.70%	1.90%	1.10%	0.00%	2.30%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2 adjusted for max tpt	1 to 100	5.90%	0.00%	0.00%	0.00%	0.00%	1.10%	1.70%	0.80%	1.00%	3.30%	1.50%	0.00%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2	101 to 300	17.60%	9.10%	9.10%	23.50%	16.20%	7.50%	5.20%	5.90%	4.80%	6.60%	10.60%	11.60%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2 adjusted for max tpt	101 to 300	17.60 %	18.20 %	18.20 %	5.90%	5.40%	3.20%	0.00%	0.80%	3.80%	1.10%	1.50%	7.00%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2	301 to 500	5.90%	9.10%	18.20 %	5.90%	5.40%	7.50%	4.30%	5.90%	5.80%	4.40%	6.10%	14.00 %
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2 adjusted for max tpt	301 to 500	11.80 %	9.10%	18.20 %	11.80 %	8.10%	6.50%	4.30%	1.70%	0.00%	0.00%	7.60%	7.00%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	3.40%	3.40%	3.80%	6.60%	4.50%	2.30%
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2 adjusted for max tpt	501 to 700	5.90%	9.10%	0.00%	5.90%	2.70%	4.30%	8.60%	10.20 %	9.60%	12.10 %	12.10 %	14.00 %
ME	10	Maine State Zone E Exempt Linekin Bay Trawl Limits	2 adjusted for max tpt	701+	5.90%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	1	1 to 100	5.90%	0.00%	9.10%	23.50 %	35.10 %	38.70 %	37.10 %	37.30 %	35.60 %	26.40 %	12.10 %	14.00 %
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	1	101 to 300	5.90%	9.10%	9.10%	5.90%	18.90 %	17.20 %	16.40 %	16.90 %	14.40 %	19.80 %	22.70 %	16.30 %
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	1	301 to 500	5.90%	9.10%	0.00%	0.00%	2.70%	6.50%	5.20%	4.20%	6.70%	6.60%	9.10%	7.00%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	1	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	11.20 %	11.00 %	12.50 %	12.10 %	12.10 %	4.70%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	2	1 to 100	11.80 %	18.20 %	18.20 %	17.60 %	5.40%	3.20%	2.60%	1.70%	1.90%	1.10%	0.00%	2.30%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	2	101 to 300	17.60 %	9.10%	9.10%	23.50 %	16.20 %	7.50%	5.20%	5.90%	4.80%	6.60%	10.60 %	11.60 %
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	2	301 to 500	5.90%	9.10%	18.20 %	5.90%	5.40%	7.50%	4.30%	5.90%	5.80%	4.40%	6.10%	14.00 %
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	2	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	3.40%	3.40%	3.80%	6.60%	4.50%	2.30%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	3 to 4 adjusted for max tpt - 3	1 to 100	5.90%	0.00%	0.00%	0.00%	0.00%	1.10%	1.70%	0.80%	1.00%	3.30%	1.50%	0.00%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	3 to 4 adjusted for max tpt - 3	101 to 300	17.60 %	18.20 %	18.20 %	5.90%	5.40%	3.20%	0.00%	0.80%	3.80%	1.10%	1.50%	7.00%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	3 to 4 adjusted for max tpt - 3	301 to 500	11.80 %	9.10%	18.20 %	11.80 %	8.10%	6.50%	4.30%	1.70%	0.00%	0.00%	7.60%	7.00%
ME	11	Maine State Zone E Exempt Sheepscot Bay and Sequin Island Trawl Limits & Zone E Trap Limits	3 to 4 adjusted for max tpt - 3	501 to 700 adjusted for max traps	11.80 %	18.20 %	0.00%	5.90%	2.70%	4.30%	8.60%	10.20 %	9.60%	12.10 %	12.10 %	14.00 %
ME	12	Maine State Zone E Exempt Zone E Trap Limits	1	1 to 100	5.90%	0.00%	9.10%	23.50 %	35.10 %	38.70 %	37.10 %	37.30 %	35.60 %	26.40 %	12.10 %	14.00 %
ME	12	Maine State Zone E Exempt Zone E Trap Limits	1	101 to 300	5.90%	9.10%	9.10%	5.90%	18.90 %	17.20 %	16.40 %	16.90 %	14.40 %	19.80 %	22.70 %	16.30 %
ME	12	Maine State Zone E Exempt Zone E Trap Limits	1	301 to 500	5.90%	9.10%	0.00%	0.00%	2.70%	6.50%	5.20%	4.20%	6.70%	6.60%	9.10%	7.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	1	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	11.20 %	11.00 %	12.50 %	12.10 %	12.10 %	4.70%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	2	1 to 100	11.80 %	18.20 %	18.20 %	17.60 %	5.40%	3.20%	2.60%	1.70%	1.90%	1.10%	0.00%	2.30%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	2	101 to 300	17.60 %	9.10%	9.10%	23.50 %	16.20 %	7.50%	5.20%	5.90%	4.80%	6.60%	10.60 %	11.60 %
ME	12	Maine State Zone E Exempt Zone E Trap Limits	2	301 to 500	5.90%	9.10%	18.20 %	5.90%	5.40%	7.50%	4.30%	5.90%	5.80%	4.40%	6.10%	14.00 %
ME	12	Maine State Zone E Exempt Zone E Trap Limits	2	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	3.40%	3.40%	3.80%	6.60%	4.50%	2.30%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	2.20%	1.50%	0.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	3 to 4	101 to 300	0.00%	0.00%	0.00%	0.00%	2.70%	1.10%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	3 to 4	301 to 500	0.00%	9.10%	0.00%	0.00%	2.70%	1.10%	1.70%	0.80%	0.00%	0.00%	1.50%	4.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	12	Maine State Zone E Exempt Zone E Trap Limits	3 to 4	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	2.60%	2.50%	1.90%	3.30%	1.50%	2.30%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	5 to 9	1 to 100	5.90%	0.00%	0.00%	0.00%	0.00%	1.10%	1.70%	0.80%	0.00%	1.10%	0.00%	0.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	5 to 9	101 to 300	17.60 %	18.20 %	18.20 %	5.90%	2.70%	2.20%	0.00%	0.80%	1.90%	1.10%	1.50%	7.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	5 to 9	301 to 500	11.80 %	0.00%	18.20 %	11.80 %	5.40%	5.40%	2.60%	0.80%	0.00%	0.00%	3.00%	2.30%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	5 to 9	501 to 700 adjusted for max traps	5.90%	9.10%	0.00%	5.90%	2.70%	3.20%	6.00%	7.60%	7.70%	7.70%	10.60 %	11.60 %
ME	12	Maine State Zone E Exempt Zone E Trap Limits	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	10 to 14	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	0.00%	0.00%
ME	12	Maine State Zone E Exempt Zone E Trap Limits	20 to 39	501 to 700 adjusted for max traps	5.90%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	1	1 to 100	4.80%	0.00%	5.90%	18.50 %	18.80 %	37.20 %	41.00 %	36.90 %	33.30 %	22.70 %	9.80%	5.60%
ME	13	Maine State Zone F Exempt	1	101 to 300	4.80%	9.10%	5.90%	7.40%	4.20%	5.80%	6.80%	7.80%	8.50%	6.40%	5.90%	5.60%
ME	13	Maine State Zone F Exempt	1	301 to 500	0.00%	0.00%	0.00%	0.00%	2.10%	2.20%	2.00%	2.90%	2.80%	4.30%	2.00%	1.90%
ME	13	Maine State Zone F Exempt	1	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.50%	1.10%	0.70%	2.00%	0.00%
ME	13	Maine State Zone F Exempt	2	1 to 100	0.00%	0.00%	0.00%	0.00%	4.20%	2.90%	2.00%	2.40%	1.70%	1.40%	2.90%	0.00%
ME	13	Maine State Zone F Exempt	2	101 to 300	23.80 %	27.30 %	23.50 %	7.40%	8.30%	5.10%	4.40%	4.40%	5.10%	6.40%	5.90%	7.40%
ME	13	Maine State Zone F Exempt	2	301 to 500	0.00%	0.00%	0.00%	3.70%	2.10%	1.50%	2.00%	1.90%	2.80%	3.50%	4.90%	1.90%
ME	13	Maine State Zone F Exempt	2	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	0.50%	0.00%	0.00%	1.00%	0.00%
ME	13	Maine State Zone F Exempt	2	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	1.50%	1.10%	2.10%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	2.10%	2.20%	0.50%	0.50%	0.00%	1.40%	0.00%	1.90%
ME	13	Maine State Zone F Exempt	3 to 4	101 to 300	4.80%	0.00%	0.00%	3.70%	4.20%	2.20%	1.00%	1.00%	1.70%	1.40%	3.90%	0.00%
ME	13	Maine State Zone F Exempt	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.50%	1.00%	1.10%	1.40%	1.00%	0.00%
ME	13	Maine State Zone F Exempt	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	1.50%	0.50%	1.10%	0.70%	1.00%	0.00%
ME	13	Maine State Zone F Exempt	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	5 to 9	1 to 100	9.50%	18.20 %	5.90%	3.70%	0.00%	0.00%	1.00%	1.50%	1.10%	0.70%	2.00%	5.60%
ME	13	Maine State Zone F Exempt	5 to 9	101 to 300	9.50%	9.10%	17.60 %	11.10 %	20.80 %	5.80%	1.50%	1.90%	1.70%	2.80%	5.90%	7.40%
ME	13	Maine State Zone F Exempt	5 to 9	301 to 500	9.50%	0.00%	11.80 %	7.40%	2.10%	9.50%	3.90%	3.40%	2.80%	2.80%	9.80%	14.80 %
ME	13	Maine State Zone F Exempt	5 to 9	501 to 700	4.80%	0.00%	5.90%	3.70%	8.30%	7.30%	7.30%	6.30%	5.10%	6.40%	6.90%	9.30%
ME	13	Maine State Zone F Exempt	5 to 9	701+	9.50%	18.20 %	0.00%	3.70%	4.20%	7.30%	12.70 %	17.00 %	18.10 %	22.00 %	20.60 %	11.10 %
ME	13	Maine State Zone F Exempt	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	1.00%	1.90%
ME	13	Maine State Zone F Exempt	10 to 14	101 to 300	0.00%	0.00%	0.00%	7.40%	2.10%	2.20%	0.00%	0.00%	0.60%	0.70%	2.00%	9.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	13	Maine State Zone F Exempt	10 to 14	301 to 500	0.00%	0.00%	0.00%	3.70%	6.30%	2.90%	1.50%	1.50%	1.70%	3.50%	3.90%	1.90%
ME	13	Maine State Zone F Exempt	10 to 14	501 to 700	4.80%	18.20%	0.00%	0.00%	2.10%	0.70%	2.90%	1.50%	2.80%	4.30%	2.90%	0.00%
ME	13	Maine State Zone F Exempt	10 to 14	701+	9.50%	0.00%	5.90%	3.70%	2.10%	2.20%	3.40%	2.90%	3.40%	3.50%	3.90%	7.40%
ME	13	Maine State Zone F Exempt	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	2.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	15 to 19	501 to 700	0.00%	0.00%	5.90%	3.70%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	15 to 19	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.60%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	20 to 39	1 to 100	4.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	1.90%
ME	13	Maine State Zone F Exempt	20 to 39	101 to 300	0.00%	0.00%	5.90%	7.40%	2.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	13	Maine State Zone F Exempt	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	1.00%	1.90%
ME	13	Maine State Zone F Exempt	20 to 39	701+	0.00%	0.00%	5.90%	3.70%	2.10%	0.00%	0.50%	0.50%	0.60%	0.70%	0.00%	3.70%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	1	1 to 100	4.80%	0.00%	5.90%	18.50%	18.80%	37.20%	41.00%	36.90%	33.30%	22.70%	9.80%	5.60%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	1	101 to 300	4.80%	9.10%	5.90%	7.40%	4.20%	5.80%	6.80%	7.80%	8.50%	6.40%	5.90%	5.60%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	1	301 to 500	0.00%	0.00%	0.00%	0.00%	2.10%	2.20%	2.00%	2.90%	2.80%	4.30%	2.00%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	1	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.50%	1.10%	0.70%	2.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	2	1 to 100	0.00%	0.00%	0.00%	0.00%	4.20%	2.90%	2.00%	2.40%	1.70%	1.40%	2.90%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	2	101 to 300	23.80%	27.30%	23.50%	7.40%	8.30%	5.10%	4.40%	4.40%	5.10%	6.40%	5.90%	7.40%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	2	301 to 500	0.00%	0.00%	0.00%	3.70%	2.10%	1.50%	2.00%	1.90%	2.80%	3.50%	4.90%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	2	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	0.50%	0.00%	0.00%	1.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	2	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	1.50%	1.10%	2.10%	0.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	2.10%	2.20%	0.50%	0.50%	0.00%	1.40%	0.00%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	3 to 4	101 to 300	4.80%	0.00%	0.00%	3.70%	4.20%	2.20%	1.00%	1.00%	1.70%	1.40%	3.90%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.50%	1.00%	1.10%	1.40%	1.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	1.50%	0.50%	1.10%	0.70%	1.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	5 to 9	1 to 100	9.50%	18.20%	5.90%	3.70%	0.00%	0.00%	1.00%	1.50%	1.10%	0.70%	2.00%	5.60%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	5 to 9	101 to 300	9.50%	9.10%	17.60%	11.10%	20.80%	5.80%	1.50%	1.90%	1.70%	2.80%	5.90%	7.40%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	5 to 9	301 to 500	9.50%	0.00%	11.80%	7.40%	2.10%	9.50%	3.90%	3.40%	2.80%	2.80%	9.80%	14.80%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	5 to 9	501 to 700	4.80%	0.00%	5.90%	3.70%	8.30%	7.30%	7.30%	6.30%	5.10%	6.40%	6.90%	9.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	5 to 9	701+	9.50%	18.20 %	0.00%	3.70%	4.20%	7.30%	12.70 %	17.00 %	18.10 %	22.00 %	20.60 %	11.10 %
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	1.00%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 14	101 to 300	0.00%	0.00%	0.00%	7.40%	2.10%	2.20%	0.00%	0.00%	0.60%	0.70%	2.00%	9.30%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 14	301 to 500	0.00%	0.00%	0.00%	3.70%	6.30%	2.90%	1.50%	1.50%	1.70%	3.50%	3.90%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 14	501 to 700	4.80%	18.20 %	0.00%	0.00%	2.10%	0.70%	2.90%	1.50%	2.80%	4.30%	2.90%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 14	701+	9.50%	0.00%	5.90%	3.70%	2.10%	2.20%	3.40%	2.90%	3.40%	3.50%	3.90%	7.40%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 15 adjusted for max tpt - 12	1 to 100	4.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.60%	0.00%	0.00%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 15 adjusted for max tpt - 12	101 to 300	0.00%	0.00%	5.90%	7.40%	4.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 15 adjusted for max tpt - 12	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	1.00%	1.90%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 15 adjusted for max tpt - 12	501 to 700	0.00%	0.00%	5.90%	3.70%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%
ME	14	Maine State Zone F Exempt Casco Bay Trawl Limits	10 to 15 adjusted for max tpt - 12	701+	0.00%	0.00%	5.90%	3.70%	2.10%	0.00%	0.50%	1.00%	1.10%	0.70%	0.00%	3.70%
ME	15	Maine State Zone G Exempt	1	1 to 100	0.00%	0.00%	6.70%	14.80 %	28.30 %	41.90 %	49.10 %	48.60 %	46.40 %	40.00 %	13.00 %	3.10%
ME	15	Maine State Zone G Exempt	1	101 to 300	13.30 %	7.70%	26.70 %	25.90 %	10.90 %	10.80 %	9.40%	9.90%	8.20%	5.30%	8.70%	15.60 %
ME	15	Maine State Zone G Exempt	1	301 to 500	6.70%	0.00%	0.00%	7.40%	15.20 %	6.80%	2.80%	2.70%	3.10%	5.30%	8.70%	0.00%
ME	15	Maine State Zone G Exempt	1	501 to 700	6.70%	0.00%	6.70%	0.00%	2.20%	4.10%	4.70%	3.60%	5.20%	2.70%	6.50%	6.30%
ME	15	Maine State Zone G Exempt	1	701+	0.00%	0.00%	0.00%	0.00%	4.30%	4.10%	3.80%	4.50%	4.10%	6.70%	0.00%	0.00%
ME	15	Maine State Zone G Exempt	2	1 to 100	6.70%	7.70%	6.70%	7.40%	4.30%	1.40%	1.90%	1.80%	3.10%	4.00%	4.30%	6.30%
ME	15	Maine State Zone G Exempt	2	101 to 300	6.70%	15.40 %	13.30 %	11.10 %	4.30%	6.80%	1.90%	1.80%	3.10%	1.30%	2.20%	6.30%
ME	15	Maine State Zone G Exempt	2	301 to 500	0.00%	0.00%	0.00%	3.70%	4.30%	1.40%	1.90%	0.90%	1.00%	2.70%	4.30%	9.40%
ME	15	Maine State Zone G Exempt	2	501 to 700	0.00%	0.00%	0.00%	3.70%	0.00%	0.00%	3.80%	1.80%	4.10%	5.30%	2.20%	3.10%
ME	15	Maine State Zone G Exempt	2	701+	6.70%	15.40 %	0.00%	7.40%	2.20%	4.10%	1.90%	2.70%	2.10%	2.70%	4.30%	0.00%
ME	15	Maine State Zone G Exempt	3 to 4	1 to 100	13.30 %	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.90%	1.00%	1.30%	2.20%	3.10%
ME	15	Maine State Zone G Exempt	3 to 4	101 to 300	6.70%	15.40 %	13.30 %	0.00%	2.20%	1.40%	1.90%	1.80%	3.10%	4.00%	6.50%	6.30%
ME	15	Maine State Zone G Exempt	3 to 4	301 to 500	13.30 %	7.70%	13.30 %	0.00%	6.50%	1.40%	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%
ME	15	Maine State Zone G Exempt	3 to 4	501 to 700	0.00%	7.70%	0.00%	0.00%	2.20%	1.40%	0.00%	2.70%	2.10%	1.30%	2.20%	0.00%
ME	15	Maine State Zone G Exempt	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	4.70%	1.80%	2.10%	1.30%	2.20%	3.10%
ME	15	Maine State Zone G Exempt	5 to 9	1 to 100	0.00%	0.00%	0.00%	3.70%	2.20%	0.00%	0.90%	1.80%	0.00%	0.00%	2.20%	6.30%
ME	15	Maine State Zone G Exempt	5 to 9	101 to 300	6.70%	7.70%	6.70%	3.70%	0.00%	4.10%	0.90%	0.90%	0.00%	1.30%	4.30%	0.00%
ME	15	Maine State Zone G Exempt	5 to 9	301 to 500	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	15	Maine State Zone G Exempt	5 to 9	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.90%	0.00%	1.30%	0.00%	0.00%
ME	15	Maine State Zone G Exempt	5 to 9	701+	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	2.80%	5.40%	5.20%	5.30%	8.70%	3.10%
ME	15	Maine State Zone G Exempt	10 to 14	1 to 100	0.00%	0.00%	0.00%	3.70%	2.20%	0.00%	0.00%	0.00%	1.00%	0.00%	4.30%	3.10%
ME	15	Maine State Zone G Exempt	10 to 14	101 to 300	0.00%	0.00%	0.00%	3.70%	2.20%	1.40%	2.80%	1.80%	1.00%	1.30%	0.00%	0.00%
ME	15	Maine State Zone G Exempt	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	2.20%	2.70%	2.80%	0.90%	2.10%	4.00%	4.30%	6.30%
ME	15	Maine State Zone G Exempt	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	1.00%	0.00%	0.00%	3.10%
ME	15	Maine State Zone G Exempt	10 to 14	701+	0.00%	0.00%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	1.00%	1.30%	2.20%	6.30%
ME	15	Maine State Zone G Exempt	15 to 19	101 to 300	0.00%	7.70%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	15	Maine State Zone G Exempt	15 to 19	701+	0.00%	0.00%	0.00%	3.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	15	Maine State Zone G Exempt	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.90%	0.00%	1.30%	2.20%	0.00%
ME	15	Maine State Zone G Exempt	20 to 39	701+	6.70%	7.70%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	1	1 to 100	0.00%	0.00%	6.70%	14.80 %	28.30 %	41.90 %	49.10 %	48.60 %	46.40 %	40.00 %	13.00 %	3.10%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	1	101 to 300	13.30 %	7.70%	26.70 %	25.90 %	10.90 %	10.80 %	9.40%	9.90%	8.20%	5.30%	8.70%	15.60 %
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	1	301 to 500	6.70%	0.00%	0.00%	7.40%	15.20 %	6.80%	2.80%	2.70%	3.10%	5.30%	8.70%	0.00%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	1	501 to 700	6.70%	0.00%	6.70%	0.00%	2.20%	4.10%	4.70%	3.60%	5.20%	2.70%	6.50%	6.30%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	1	701+	0.00%	0.00%	0.00%	0.00%	4.30%	4.10%	3.80%	4.50%	4.10%	6.70%	0.00%	0.00%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	2	1 to 100	6.70%	7.70%	6.70%	7.40%	4.30%	1.40%	1.90%	1.80%	3.10%	4.00%	4.30%	6.30%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	2	101 to 300	6.70%	15.40 %	13.30 %	11.10 %	4.30%	6.80%	1.90%	1.80%	3.10%	1.30%	2.20%	6.30%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	2	301 to 500	0.00%	0.00%	0.00%	3.70%	4.30%	1.40%	1.90%	0.90%	1.00%	2.70%	4.30%	9.40%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	2	501 to 700	0.00%	0.00%	0.00%	3.70%	0.00%	0.00%	3.80%	1.80%	4.10%	5.30%	2.20%	3.10%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	2	701+	6.70%	15.40 %	0.00%	7.40%	2.20%	4.10%	1.90%	2.70%	2.10%	2.70%	4.30%	0.00%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	13.30 %	0.00%	0.00%	7.40%	4.30%	0.00%	2.80%	2.70%	2.10%	1.30%	8.70%	12.50 %
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	13.30 %	30.80 %	20.00 %	7.40%	6.50%	8.10%	5.70%	5.40%	4.10%	8.00%	13.00 %	6.30%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	20.00 %	7.70%	13.30 %	0.00%	8.70%	4.10%	2.80%	0.90%	2.10%	4.00%	8.70%	12.50 %
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	0.00%	7.70%	0.00%	0.00%	2.20%	2.70%	0.00%	5.40%	3.10%	2.70%	2.20%	3.10%
ME	16	Maine State Zone G Exempt Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	6.70%	7.70%	6.70%	3.70%	2.20%	4.10%	7.50%	7.20%	8.20%	8.00%	13.00 %	15.60 %
ME	17	Maine State Zone A	2	1 to 100	0.00%	0.00%	20.00 %	10.80 %	12.30 %	12.60 %	25.10 %	23.80 %	21.40 %	16.90 %	14.90 %	8.70%
ME	17	Maine State Zone A	2	101 to 300	50.00 %	25.00 %	10.00 %	27.00 %	21.00 %	21.50 %	18.80 %	18.30 %	19.10 %	16.40 %	20.90 %	17.40 %
ME	17	Maine State Zone A	2	301 to 500	0.00%	0.00%	0.00%	13.50 %	22.20 %	15.60 %	8.50%	8.90%	10.50 %	14.80 %	14.90 %	13.00 %

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	17	Maine State Zone A	2	501 to 700	0.00%	25.00%	10.00%	10.80%	6.20%	9.60%	13.90%	10.60%	9.10%	8.50%	7.50%	6.50%
ME	17	Maine State Zone A	2	701+	0.00%	0.00%	0.00%	2.70%	7.40%	9.60%	11.70%	17.90%	17.30%	17.50%	8.20%	2.20%
ME	17	Maine State Zone A	3 to 4	1 to 100	0.00%	0.00%	0.00%	2.70%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	17	Maine State Zone A	3 to 4	101 to 300	0.00%	25.00%	10.00%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%	2.20%	4.30%
ME	17	Maine State Zone A	3 to 4	301 to 500	0.00%	0.00%	10.00%	0.00%	3.70%	1.50%	1.80%	1.30%	0.50%	1.10%	0.70%	2.20%
ME	17	Maine State Zone A	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.90%	0.90%	1.40%	1.60%	0.70%	0.00%
ME	17	Maine State Zone A	3 to 4	701+	0.00%	0.00%	0.00%	2.70%	1.20%	2.20%	1.30%	2.60%	3.20%	1.60%	0.70%	0.00%
ME	17	Maine State Zone A	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%
ME	17	Maine State Zone A	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	2.50%	1.50%	0.40%	0.00%	0.00%	0.00%	3.70%	0.00%
ME	17	Maine State Zone A	5 to 9	301 to 500	0.00%	25.00%	10.00%	2.70%	0.00%	2.20%	0.40%	0.90%	0.90%	2.60%	3.00%	4.30%
ME	17	Maine State Zone A	5 to 9	501 to 700	12.50%	0.00%	0.00%	2.70%	1.20%	0.70%	0.00%	0.00%	0.50%	0.50%	1.50%	2.20%
ME	17	Maine State Zone A	5 to 9	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	1.30%	1.40%	1.60%	1.50%	0.00%
ME	17	Maine State Zone A	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	1.20%	0.00%	1.30%	0.90%	0.00%	0.00%	0.70%	4.30%
ME	17	Maine State Zone A	10 to 14	101 to 300	12.50%	0.00%	10.00%	0.00%	1.20%	3.70%	1.30%	0.40%	0.90%	1.60%	1.50%	2.20%
ME	17	Maine State Zone A	10 to 14	301 to 500	0.00%	0.00%	0.00%	2.70%	0.00%	0.70%	0.90%	1.30%	0.90%	0.50%	2.20%	2.20%
ME	17	Maine State Zone A	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	1.20%	2.20%	2.70%	1.30%	0.90%	1.10%	1.50%	0.00%
ME	17	Maine State Zone A	10 to 14	701+	0.00%	0.00%	10.00%	0.00%	1.20%	0.00%	0.40%	1.30%	2.30%	1.60%	2.20%	4.30%
ME	17	Maine State Zone A	15 to 19	101 to 300	12.50%	0.00%	10.00%	8.10%	4.90%	3.00%	1.30%	0.90%	1.40%	1.10%	0.70%	0.00%
ME	17	Maine State Zone A	15 to 19	301 to 500	12.50%	0.00%	0.00%	2.70%	1.20%	0.70%	0.00%	0.40%	0.90%	0.00%	0.70%	0.00%
ME	17	Maine State Zone A	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	2.50%	1.50%	0.40%	0.40%	0.50%	0.50%	0.70%	6.50%
ME	17	Maine State Zone A	15 to 19	701+	0.00%	0.00%	0.00%	2.70%	1.20%	0.70%	2.20%	2.60%	3.60%	5.30%	4.50%	4.30%
ME	17	Maine State Zone A	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.50%	0.70%	0.00%
ME	17	Maine State Zone A	20 to 39	101 to 300	0.00%	0.00%	0.00%	5.40%	0.00%	0.70%	0.90%	0.40%	0.00%	0.50%	0.00%	0.00%
ME	17	Maine State Zone A	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	4.90%	1.50%	0.90%	1.70%	0.90%	1.10%	0.70%	6.50%
ME	17	Maine State Zone A	20 to 39	501 to 700	0.00%	0.00%	0.00%	2.70%	1.20%	2.20%	2.20%	0.90%	1.40%	1.10%	0.70%	4.30%
ME	17	Maine State Zone A	20 to 39	701+	0.00%	0.00%	0.00%	0.00%	1.20%	0.70%	0.90%	1.30%	1.40%	2.10%	1.50%	2.20%
ME	18	Maine State Zone B Hancock County Trawl Limits	2	1 to 100	0.00%	0.00%	4.00%	5.40%	4.80%	25.20%	36.50%	35.40%	33.10%	22.70%	9.20%	24.10%
ME	18	Maine State Zone B Hancock County Trawl Limits	2	101 to 300	11.10%	14.30%	16.00%	37.80%	31.70%	19.80%	12.70%	13.20%	15.10%	16.70%	18.40%	19.00%
ME	18	Maine State Zone B Hancock County Trawl Limits	2	301 to 500	11.10%	7.10%	16.00%	13.50%	15.90%	19.80%	13.80%	10.10%	7.80%	10.60%	18.40%	10.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	18	Maine State Zone B Hancock County Trawl Limits	2	501 to 700	16.70%	14.30%	12.00%	2.70%	7.90%	5.40%	10.50%	8.50%	9.00%	16.70%	17.20%	12.10%
ME	18	Maine State Zone B Hancock County Trawl Limits	2	701+	11.10%	7.10%	4.00%	8.10%	7.90%	9.00%	11.00%	16.90%	17.50%	12.10%	6.90%	3.40%
ME	18	Maine State Zone B Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	4.00%	0.00%	3.20%	0.90%	1.10%	1.10%	1.20%	0.80%	1.10%	10.30%
ME	18	Maine State Zone B Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	11.10%	14.30%	12.00%	5.40%	9.50%	4.50%	1.70%	1.10%	2.40%	3.80%	6.90%	1.70%
ME	18	Maine State Zone B Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	5.60%	7.10%	8.00%	5.40%	6.30%	6.30%	2.80%	3.70%	3.00%	3.80%	9.20%	5.20%
ME	18	Maine State Zone B Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	22.20%	28.60%	20.00%	18.90%	9.50%	4.50%	5.00%	4.80%	5.40%	3.80%	4.60%	6.90%
ME	18	Maine State Zone B Hancock County Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	11.10%	7.10%	4.00%	2.70%	3.20%	4.50%	5.00%	5.30%	5.40%	9.10%	8.00%	6.90%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	2	1 to 100	0.00%	0.00%	4.00%	5.40%	4.80%	25.20%	36.50%	35.40%	33.10%	22.70%	9.20%	24.10%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	2	101 to 300	11.10%	14.30%	16.00%	37.80%	31.70%	19.80%	12.70%	13.20%	15.10%	16.70%	18.40%	19.00%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	2	301 to 500	11.10%	7.10%	16.00%	13.50%	15.90%	19.80%	13.80%	10.10%	7.80%	10.60%	18.40%	10.30%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	2	501 to 700 adjusted for max traps	27.80%	21.40%	16.00%	10.80%	15.90%	14.40%	21.50%	25.40%	26.50%	28.80%	24.10%	15.50%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	4.00%	0.00%	3.20%	0.90%	1.10%	1.10%	1.20%	0.80%	1.10%	10.30%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	101 to 300	11.10%	14.30%	12.00%	5.40%	9.50%	4.50%	1.70%	1.10%	2.40%	3.80%	6.90%	1.70%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	301 to 500	5.60%	7.10%	8.00%	5.40%	6.30%	6.30%	2.80%	3.70%	3.00%	3.80%	9.20%	5.20%
ME	19	Maine State Zone B Hancock County Trawl Limits & Swans Island Conservation Zone	3 to 4 adjusted for max tpt - 3	501 to 700 adjusted for max traps	33.30%	35.70%	24.00%	21.60%	12.70%	9.00%	9.90%	10.10%	10.80%	12.90%	12.60%	13.80%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	2	1 to 100	0.00%	0.00%	4.00%	5.40%	4.80%	25.20%	36.50%	35.40%	33.10%	22.70%	9.20%	24.10%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	2	101 to 300	11.10%	14.30%	16.00%	37.80%	31.70%	19.80%	12.70%	13.20%	15.10%	16.70%	18.40%	19.00%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	2	301 to 500	11.10%	7.10%	16.00%	13.50%	15.90%	19.80%	13.80%	10.10%	7.80%	10.60%	18.40%	10.30%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	2	501 to 700	16.70%	14.30%	12.00%	2.70%	7.90%	5.40%	10.50%	8.50%	9.00%	16.70%	17.20%	12.10%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	2	701+	11.10%	7.10%	4.00%	8.10%	7.90%	9.00%	11.00%	16.90%	17.50%	12.10%	6.90%	3.40%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	3 to 4	101 to 300	0.00%	0.00%	8.00%	0.00%	1.60%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%	1.10%	1.70%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	3 to 4	501 to 700	11.10%	14.30%	8.00%	5.40%	1.60%	0.00%	0.60%	0.00%	0.00%	0.00%	2.30%	1.70%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	1.60%	0.90%	0.60%	0.50%	0.00%	2.30%	2.30%	3.40%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	5 to 9 adjusted for max tpt	1 to 100	0.00%	0.00%	4.00%	0.00%	3.20%	0.90%	1.10%	1.10%	1.20%	0.80%	1.10%	6.90%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	5 to 9 adjusted for max tpt	101 to 300	11.10%	14.30%	4.00%	5.40%	7.90%	4.50%	1.70%	1.10%	2.40%	1.50%	6.90%	1.70%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	5 to 9 adjusted for max tpt	301 to 500	5.60%	7.10%	8.00%	5.40%	6.30%	6.30%	2.20%	3.70%	3.00%	3.80%	8.00%	3.40%
ME	20	Maine State Zone B Waters Around Mount Desert Rock	5 to 9 adjusted for max tpt	501 to 700	11.10%	14.30%	12.00%	13.50%	7.90%	4.50%	4.40%	4.80%	5.40%	3.80%	2.30%	5.20%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	20	Maine State Zone B Waters Around Mount Desert Rock	5 to 9 adjusted for max tpt	701+	11.10 %	7.10%	4.00%	2.70%	1.60%	3.60%	4.40%	4.80%	5.40%	6.80%	5.70%	3.40%
ME	21	Maine State Zone C	2	1 to 100	7.10%	4.50%	0.00%	10.00 %	3.50%	12.70 %	19.30 %	20.70 %	16.00 %	9.60%	13.90 %	13.40 %
ME	21	Maine State Zone C	2	101 to 300	14.30 %	13.60 %	14.30 %	10.00 %	20.00 %	15.20 %	10.10 %	9.90%	9.40%	11.90 %	14.60 %	19.40 %
ME	21	Maine State Zone C	2	301 to 500	0.00%	4.50%	3.60%	12.00 %	17.60 %	16.50 %	10.60 %	8.60%	9.00%	11.90 %	15.20 %	9.00%
ME	21	Maine State Zone C	2	501 to 700	10.70 %	0.00%	10.70 %	6.00%	9.40%	17.70 %	12.80 %	10.80 %	9.90%	10.70 %	11.30 %	6.00%
ME	21	Maine State Zone C	2	701+	3.60%	4.50%	3.60%	10.00 %	11.80 %	9.50%	17.90 %	20.30 %	21.70 %	19.20 %	8.60%	9.00%
ME	21	Maine State Zone C	3 to 4	1 to 100	0.00%	0.00%	0.00%	2.00%	0.00%	0.60%	0.90%	0.00%	0.50%	0.00%	0.00%	0.00%
ME	21	Maine State Zone C	3 to 4	101 to 300	7.10%	13.60 %	7.10%	4.00%	1.20%	0.60%	1.40%	1.30%	0.90%	1.10%	1.30%	1.50%
ME	21	Maine State Zone C	3 to 4	301 to 500	0.00%	0.00%	0.00%	4.00%	2.40%	0.60%	0.50%	0.00%	0.90%	1.70%	0.70%	0.00%
ME	21	Maine State Zone C	3 to 4	501 to 700	0.00%	0.00%	0.00%	2.00%	0.00%	0.60%	0.00%	0.40%	0.00%	0.60%	0.70%	0.00%
ME	21	Maine State Zone C	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	1.20%	0.60%	0.90%	1.30%	2.80%	2.80%	0.70%	3.00%
ME	21	Maine State Zone C	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	2.80%	3.00%	2.80%	1.10%	2.00%	1.50%
ME	21	Maine State Zone C	5 to 9	101 to 300	3.60%	4.50%	3.60%	4.00%	5.90%	1.90%	2.30%	2.60%	2.40%	1.70%	2.60%	4.50%
ME	21	Maine State Zone C	5 to 9	301 to 500	0.00%	4.50%	7.10%	4.00%	1.20%	5.10%	1.80%	1.30%	0.90%	2.30%	1.30%	1.50%
ME	21	Maine State Zone C	5 to 9	501 to 700	3.60%	4.50%	0.00%	0.00%	0.00%	0.60%	3.20%	3.00%	4.20%	4.00%	3.30%	3.00%
ME	21	Maine State Zone C	5 to 9	701+	7.10%	9.10%	10.70 %	6.00%	3.50%	1.90%	2.80%	2.60%	1.90%	2.80%	2.00%	4.50%
ME	21	Maine State Zone C	10 to 14	1 to 100	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	1.30%	4.50%
ME	21	Maine State Zone C	10 to 14	101 to 300	3.60%	4.50%	14.30 %	6.00%	3.50%	1.30%	0.50%	0.40%	0.90%	1.70%	3.30%	3.00%
ME	21	Maine State Zone C	10 to 14	301 to 500	14.30 %	18.20 %	7.10%	8.00%	8.20%	3.80%	2.30%	1.30%	1.40%	2.30%	4.00%	6.00%
ME	21	Maine State Zone C	10 to 14	501 to 700	17.90 %	9.10%	10.70 %	8.00%	5.90%	3.20%	2.30%	2.20%	2.80%	3.40%	2.60%	6.00%
ME	21	Maine State Zone C	10 to 14	701+	3.60%	0.00%	0.00%	0.00%	4.70%	3.80%	6.40%	8.20%	9.00%	9.00%	7.30%	4.50%
ME	21	Maine State Zone C	15 to 19	101 to 300	3.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	0.00%
ME	21	Maine State Zone C	15 to 19	301 to 500	0.00%	4.50%	3.60%	0.00%	0.00%	0.60%	0.50%	0.90%	0.00%	0.60%	0.70%	0.00%
ME	21	Maine State Zone C	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	0.00%	0.00%	0.50%	0.60%	0.70%	0.00%
ME	21	Maine State Zone C	15 to 19	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.90%	0.90%	0.50%	1.10%	0.70%	0.00%
ME	21	Maine State Zone C	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.40%	0.00%	0.00%	0.00%	0.00%
ME	21	Maine State Zone C	20 to 39	101 to 300	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%
ME	21	Maine State Zone C	20 to 39	301 to 500	0.00%	0.00%	3.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	2	1 to 100	7.10%	4.50%	0.00%	10.00 %	3.50%	12.70 %	19.30 %	20.70 %	16.00 %	9.60%	13.90 %	13.40 %

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	2	101 to 300	14.30%	13.60%	14.30%	10.00%	20.00%	15.20%	10.10%	9.90%	9.40%	11.90%	14.60%	19.40%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	2	301 to 500	0.00%	4.50%	3.60%	12.00%	17.60%	16.50%	10.60%	8.60%	9.00%	11.90%	15.20%	9.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	2	501 to 700	10.70%	0.00%	10.70%	6.00%	9.40%	17.70%	12.80%	10.80%	9.90%	10.70%	11.30%	6.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	2	701+	3.60%	4.50%	3.60%	10.00%	11.80%	9.50%	17.90%	20.30%	21.70%	19.20%	8.60%	9.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	0.00%	4.00%	0.00%	1.90%	3.70%	3.40%	3.80%	1.10%	3.30%	6.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	17.90%	22.70%	25.00%	16.00%	10.60%	3.80%	4.10%	4.30%	4.70%	4.50%	8.60%	9.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	14.30%	27.30%	21.40%	16.00%	11.80%	10.10%	5.00%	3.40%	3.80%	6.80%	6.60%	7.50%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	21.40%	13.60%	10.70%	10.00%	5.90%	5.70%	5.50%	5.60%	7.50%	8.50%	7.30%	9.00%
ME	22	Maine State Zone C Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	10.70%	9.10%	10.70%	6.00%	9.40%	7.00%	11.00%	12.90%	14.20%	15.80%	10.60%	11.90%
ME	23	Maine State Zone D Monhegan Conservation Zone	2	1 to 100	3.00%	0.00%	7.40%	14.60%	16.20%	23.10%	30.60%	30.00%	25.00%	21.80%	14.30%	14.10%
ME	23	Maine State Zone D Monhegan Conservation Zone	2	101 to 300	33.30%	33.30%	29.60%	29.30%	27.00%	19.90%	16.20%	13.80%	14.40%	14.60%	16.80%	21.70%
ME	23	Maine State Zone D Monhegan Conservation Zone	2	301 to 500 adjusted for max traps	36.40%	33.30%	33.30%	34.10%	35.10%	37.80%	37.60%	40.40%	44.00%	44.70%	45.30%	32.60%
ME	23	Maine State Zone D Monhegan Conservation Zone	3 to 4	1 to 100	0.00%	4.80%	0.00%	2.40%	1.40%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	23	Maine State Zone D Monhegan Conservation Zone	3 to 4	101 to 300	0.00%	0.00%	0.00%	2.40%	1.40%	0.60%	0.00%	0.00%	0.00%	0.50%	0.00%	4.30%
ME	23	Maine State Zone D Monhegan Conservation Zone	3 to 4	301 to 500 adjusted for max traps	9.10%	9.50%	3.70%	0.00%	1.40%	0.00%	0.90%	0.40%	1.40%	1.90%	2.50%	3.30%
ME	23	Maine State Zone D Monhegan Conservation Zone	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	1.30%	1.30%	0.50%	0.00%	0.00%	0.00%
ME	23	Maine State Zone D Monhegan Conservation Zone	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	1.40%	2.60%	0.40%	0.00%	0.00%	1.00%	0.60%	0.00%
ME	23	Maine State Zone D Monhegan Conservation Zone	5 to 9	301 to 500 adjusted for max traps	0.00%	4.80%	3.70%	0.00%	0.00%	1.90%	3.90%	3.30%	2.80%	3.40%	3.10%	3.30%
ME	23	Maine State Zone D Monhegan Conservation Zone	10 to 14	1 to 100	0.00%	0.00%	0.00%	2.40%	0.00%	0.60%	0.40%	0.80%	1.40%	0.50%	2.50%	1.10%
ME	23	Maine State Zone D Monhegan Conservation Zone	10 to 14	101 to 300	3.00%	0.00%	0.00%	0.00%	0.00%	1.30%	1.30%	1.30%	0.90%	1.90%	3.10%	7.60%
ME	23	Maine State Zone D Monhegan Conservation Zone	10 to 14	301 to 500 adjusted for max traps	9.10%	4.80%	7.40%	2.40%	4.10%	3.80%	3.90%	5.80%	5.60%	4.40%	5.60%	3.30%
ME	23	Maine State Zone D Monhegan Conservation Zone	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%
ME	23	Maine State Zone D Monhegan Conservation Zone	15 to 19	101 to 300	0.00%	0.00%	7.40%	2.40%	0.00%	0.60%	0.00%	0.40%	0.00%	0.00%	1.20%	0.00%
ME	23	Maine State Zone D Monhegan Conservation Zone	15 to 19	301 to 500 adjusted for max traps	6.10%	9.50%	7.40%	7.30%	5.40%	1.30%	2.60%	0.80%	2.30%	4.40%	1.90%	2.20%
ME	23	Maine State Zone D Monhegan Conservation Zone	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	1.40%	0.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	23	Maine State Zone D Monhegan Conservation Zone	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	1.40%	0.60%	0.40%	0.00%	0.50%	0.50%	0.00%	2.20%
ME	23	Maine State Zone D Monhegan Conservation Zone	20 to 39	301 to 500 adjusted for max traps	0.00%	0.00%	0.00%	2.40%	4.10%	3.80%	0.40%	1.70%	1.40%	0.50%	3.10%	0.00%
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	2	1 to 100	3.00%	0.00%	7.40%	14.60%	16.20%	23.10%	30.60%	30.00%	25.00%	21.80%	14.30%	14.10%
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	2	101 to 300	33.30%	33.30%	29.60%	29.30%	27.00%	19.90%	16.20%	13.80%	14.40%	14.60%	16.80%	21.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	2	301 to 500	15.20 %	19.00 %	18.50 %	24.40 %	17.60 %	15.40 %	8.30%	8.80%	7.40%	11.20 %	16.80 %	14.10 %
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	2	501 to 700	15.20 %	9.50%	11.10 %	4.90%	12.20 %	12.20 %	12.20 %	12.50 %	15.30 %	14.10 %	14.30 %	12.00 %
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	2	701+	6.10%	4.80%	3.70%	4.90%	5.40%	10.30 %	17.00 %	19.20 %	21.30 %	19.40 %	14.30 %	6.50%
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	4.80%	0.00%	4.90%	2.70%	2.60%	1.70%	2.10%	1.90%	0.50%	2.50%	5.40%
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	3.00%	0.00%	7.40%	4.90%	4.10%	5.80%	2.20%	1.70%	1.40%	3.90%	5.00%	14.10 %
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	15.20 %	14.30 %	7.40%	4.90%	6.80%	3.20%	3.10%	3.80%	4.20%	4.40%	8.70%	4.30%
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	0.00%	4.80%	3.70%	2.40%	4.10%	3.80%	5.20%	3.30%	2.80%	2.90%	5.00%	2.20%
ME	24	Maine State Zone D Pemaquid to Robinson's Pt. Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	9.10%	9.50%	11.10 %	4.90%	4.10%	3.80%	3.50%	5.00%	6.50%	7.30%	2.50%	5.40%
ME	25	Maine State Zone E Zone E Trap Limits	2	1 to 100	17.60 %	18.20 %	27.30 %	41.20 %	40.50 %	41.90 %	39.70 %	39.00 %	37.50 %	27.50 %	12.10 %	16.30 %
ME	25	Maine State Zone E Zone E Trap Limits	2	101 to 300	23.50 %	18.20 %	18.20 %	29.40 %	35.10 %	24.70 %	21.60 %	22.90 %	19.20 %	26.40 %	33.30 %	27.90 %
ME	25	Maine State Zone E Zone E Trap Limits	2	301 to 500	11.80 %	18.20 %	18.20 %	5.90%	8.10%	14.00 %	9.50%	10.20 %	12.50 %	11.00 %	15.20 %	20.90 %
ME	25	Maine State Zone E Zone E Trap Limits	2	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	4.30%	14.70 %	14.40 %	16.30 %	18.70 %	16.70 %	7.00%
ME	25	Maine State Zone E Zone E Trap Limits	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	2.20%	1.50%	0.00%
ME	25	Maine State Zone E Zone E Trap Limits	3 to 4	101 to 300	0.00%	0.00%	0.00%	0.00%	2.70%	1.10%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%
ME	25	Maine State Zone E Zone E Trap Limits	3 to 4	301 to 500	0.00%	9.10%	0.00%	0.00%	2.70%	1.10%	1.70%	0.80%	0.00%	0.00%	1.50%	4.70%
ME	25	Maine State Zone E Zone E Trap Limits	3 to 4	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	2.60%	2.50%	1.90%	3.30%	1.50%	2.30%
ME	25	Maine State Zone E Zone E Trap Limits	5 to 9	1 to 100	5.90%	0.00%	0.00%	0.00%	0.00%	1.10%	1.70%	0.80%	0.00%	1.10%	0.00%	0.00%
ME	25	Maine State Zone E Zone E Trap Limits	5 to 9	101 to 300	17.60 %	18.20 %	18.20 %	5.90%	2.70%	2.20%	0.00%	0.80%	1.90%	1.10%	1.50%	7.00%
ME	25	Maine State Zone E Zone E Trap Limits	5 to 9	301 to 500	11.80 %	0.00%	18.20 %	11.80 %	5.40%	5.40%	2.60%	0.80%	0.00%	0.00%	3.00%	2.30%
ME	25	Maine State Zone E Zone E Trap Limits	5 to 9	501 to 700 adjusted for max traps	5.90%	9.10%	0.00%	5.90%	2.70%	3.20%	6.00%	7.60%	7.70%	7.70%	10.60 %	11.60 %
ME	25	Maine State Zone E Zone E Trap Limits	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%
ME	25	Maine State Zone E Zone E Trap Limits	10 to 14	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	0.00%	0.00%
ME	25	Maine State Zone E Zone E Trap Limits	20 to 39	501 to 700 adjusted for max traps	5.90%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	2	1 to 100	4.80%	0.00%	5.90%	18.50 %	22.90 %	40.10 %	42.90 %	39.30 %	35.00 %	24.10 %	12.70 %	5.60%
ME	26	Maine State Zone F	2	101 to 300	28.60 %	36.40 %	29.40 %	14.80 %	12.50 %	10.90 %	11.20 %	12.10 %	13.60 %	12.80 %	11.80 %	13.00 %
ME	26	Maine State Zone F	2	301 to 500	0.00%	0.00%	0.00%	3.70%	4.20%	3.60%	3.90%	4.90%	5.60%	7.80%	6.90%	3.70%
ME	26	Maine State Zone F	2	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	0.50%	0.00%	0.00%	1.00%	0.00%
ME	26	Maine State Zone F	2	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.90%	2.30%	2.80%	2.00%	0.00%
ME	26	Maine State Zone F	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	2.10%	2.20%	0.50%	0.50%	0.00%	1.40%	0.00%	1.90%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	26	Maine State Zone F	3 to 4	101 to 300	4.80%	0.00%	0.00%	3.70%	4.20%	2.20%	1.00%	1.00%	1.70%	1.40%	3.90%	0.00%
ME	26	Maine State Zone F	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.50%	1.00%	1.10%	1.40%	1.00%	0.00%
ME	26	Maine State Zone F	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	1.50%	0.50%	1.10%	0.70%	1.00%	0.00%
ME	26	Maine State Zone F	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	5 to 9	1 to 100	9.50%	18.20%	5.90%	3.70%	0.00%	0.00%	1.00%	1.50%	1.10%	0.70%	2.00%	5.60%
ME	26	Maine State Zone F	5 to 9	101 to 300	9.50%	9.10%	17.60%	11.10%	20.80%	5.80%	1.50%	1.90%	1.70%	2.80%	5.90%	7.40%
ME	26	Maine State Zone F	5 to 9	301 to 500	9.50%	0.00%	11.80%	7.40%	2.10%	9.50%	3.90%	3.40%	2.80%	2.80%	9.80%	14.80%
ME	26	Maine State Zone F	5 to 9	501 to 700	4.80%	0.00%	5.90%	3.70%	8.30%	7.30%	7.30%	6.30%	5.10%	6.40%	6.90%	9.30%
ME	26	Maine State Zone F	5 to 9	701+	9.50%	18.20%	0.00%	3.70%	4.20%	7.30%	12.70%	17.00%	18.10%	22.00%	20.60%	11.10%
ME	26	Maine State Zone F	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	1.00%	1.90%
ME	26	Maine State Zone F	10 to 14	101 to 300	0.00%	0.00%	0.00%	7.40%	2.10%	2.20%	0.00%	0.00%	0.60%	0.70%	2.00%	9.30%
ME	26	Maine State Zone F	10 to 14	301 to 500	0.00%	0.00%	0.00%	3.70%	6.30%	2.90%	1.50%	1.50%	1.70%	3.50%	3.90%	1.90%
ME	26	Maine State Zone F	10 to 14	501 to 700	4.80%	18.20%	0.00%	0.00%	2.10%	0.70%	2.90%	1.50%	2.80%	4.30%	2.90%	0.00%
ME	26	Maine State Zone F	10 to 14	701+	9.50%	0.00%	5.90%	3.70%	2.10%	2.20%	3.40%	2.90%	3.40%	3.50%	3.90%	7.40%
ME	26	Maine State Zone F	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	2.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	15 to 19	501 to 700	0.00%	0.00%	5.90%	3.70%	0.00%	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	15 to 19	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%	0.60%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	20 to 39	1 to 100	4.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	1.90%
ME	26	Maine State Zone F	20 to 39	101 to 300	0.00%	0.00%	5.90%	7.40%	2.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	26	Maine State Zone F	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	1.00%	1.90%
ME	26	Maine State Zone F	20 to 39	701+	0.00%	0.00%	5.90%	3.70%	2.10%	0.00%	0.50%	0.50%	0.60%	0.70%	0.00%	3.70%
ME	27	Maine State Zone G	2	1 to 100	6.70%	7.70%	13.30%	22.20%	32.60%	43.20%	50.90%	50.50%	49.50%	44.00%	17.40%	9.40%
ME	27	Maine State Zone G	2	101 to 300	20.00%	23.10%	40.00%	37.00%	15.20%	17.60%	11.30%	11.70%	11.30%	6.70%	10.90%	21.90%
ME	27	Maine State Zone G	2	301 to 500	6.70%	0.00%	0.00%	11.10%	19.60%	8.10%	4.70%	3.60%	4.10%	8.00%	13.00%	9.40%
ME	27	Maine State Zone G	2	501 to 700	6.70%	0.00%	6.70%	3.70%	2.20%	4.10%	8.50%	5.40%	9.30%	8.00%	8.70%	9.40%
ME	27	Maine State Zone G	2	701+	6.70%	15.40%	0.00%	7.40%	6.50%	8.10%	5.70%	7.20%	6.20%	9.30%	4.30%	0.00%
ME	27	Maine State Zone G	3 to 4	1 to 100	13.30%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.90%	1.00%	1.30%	2.20%	3.10%
ME	27	Maine State Zone G	3 to 4	101 to 300	6.70%	15.40%	13.30%	0.00%	2.20%	1.40%	1.90%	1.80%	3.10%	4.00%	6.50%	6.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	27	Maine State Zone G	3 to 4	301 to 500	13.30%	7.70%	13.30%	0.00%	6.50%	1.40%	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%
ME	27	Maine State Zone G	3 to 4	501 to 700	0.00%	7.70%	0.00%	0.00%	2.20%	1.40%	0.00%	2.70%	2.10%	1.30%	2.20%	0.00%
ME	27	Maine State Zone G	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	4.70%	1.80%	2.10%	1.30%	2.20%	3.10%
ME	27	Maine State Zone G	5 to 9	1 to 100	0.00%	0.00%	0.00%	3.70%	2.20%	0.00%	0.90%	1.80%	0.00%	0.00%	2.20%	6.30%
ME	27	Maine State Zone G	5 to 9	101 to 300	6.70%	7.70%	6.70%	3.70%	0.00%	4.10%	0.90%	0.90%	0.00%	1.30%	4.30%	0.00%
ME	27	Maine State Zone G	5 to 9	301 to 500	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%
ME	27	Maine State Zone G	5 to 9	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.90%	0.00%	1.30%	0.00%	0.00%
ME	27	Maine State Zone G	5 to 9	701+	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	2.80%	5.40%	5.20%	5.30%	8.70%	3.10%
ME	27	Maine State Zone G	10 to 14	1 to 100	0.00%	0.00%	0.00%	3.70%	2.20%	0.00%	0.00%	0.00%	1.00%	0.00%	4.30%	3.10%
ME	27	Maine State Zone G	10 to 14	101 to 300	0.00%	0.00%	0.00%	3.70%	2.20%	1.40%	2.80%	1.80%	1.00%	1.30%	0.00%	0.00%
ME	27	Maine State Zone G	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	2.20%	2.70%	2.80%	0.90%	2.10%	4.00%	4.30%	6.30%
ME	27	Maine State Zone G	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	1.00%	0.00%	0.00%	3.10%
ME	27	Maine State Zone G	10 to 14	701+	0.00%	0.00%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	1.00%	1.30%	2.20%	6.30%
ME	27	Maine State Zone G	15 to 19	101 to 300	0.00%	7.70%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	27	Maine State Zone G	15 to 19	701+	0.00%	0.00%	0.00%	3.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	27	Maine State Zone G	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.90%	0.00%	1.30%	2.20%	0.00%
ME	27	Maine State Zone G	20 to 39	701+	6.70%	7.70%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%
ME	28	Maine State Zone G Southern Maine Trawl Limits	2	1 to 100	6.70%	7.70%	13.30%	22.20%	32.60%	43.20%	50.90%	50.50%	49.50%	44.00%	17.40%	9.40%
ME	28	Maine State Zone G Southern Maine Trawl Limits	2	101 to 300	20.00%	23.10%	40.00%	37.00%	15.20%	17.60%	11.30%	11.70%	11.30%	6.70%	10.90%	21.90%
ME	28	Maine State Zone G Southern Maine Trawl Limits	2	301 to 500	6.70%	0.00%	0.00%	11.10%	19.60%	8.10%	4.70%	3.60%	4.10%	8.00%	13.00%	9.40%
ME	28	Maine State Zone G Southern Maine Trawl Limits	2	501 to 700	6.70%	0.00%	6.70%	3.70%	2.20%	4.10%	8.50%	5.40%	9.30%	8.00%	8.70%	9.40%
ME	28	Maine State Zone G Southern Maine Trawl Limits	2	701+	6.70%	15.40%	0.00%	7.40%	6.50%	8.10%	5.70%	7.20%	6.20%	9.30%	4.30%	0.00%
ME	28	Maine State Zone G Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	1 to 100	13.30%	0.00%	0.00%	7.40%	4.30%	0.00%	2.80%	2.70%	2.10%	1.30%	8.70%	12.50%
ME	28	Maine State Zone G Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	101 to 300	13.30%	30.80%	20.00%	7.40%	6.50%	8.10%	5.70%	5.40%	4.10%	8.00%	13.00%	6.30%
ME	28	Maine State Zone G Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	301 to 500	20.00%	7.70%	13.30%	0.00%	8.70%	4.10%	2.80%	0.90%	2.10%	4.00%	8.70%	12.50%
ME	28	Maine State Zone G Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	501 to 700	0.00%	7.70%	0.00%	0.00%	2.20%	2.70%	0.00%	5.40%	3.10%	2.70%	2.20%	3.10%
ME	28	Maine State Zone G Southern Maine Trawl Limits	3 to 4 adjusted for max tpt - 3	701+	6.70%	7.70%	6.70%	3.70%	2.20%	4.10%	7.50%	7.20%	8.20%	8.00%	13.00%	15.60%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	2	1 to 100	6.70%	7.70%	13.30%	22.20%	32.60%	43.20%	50.90%	50.50%	49.50%	44.00%	17.40%	9.40%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	2	101 to 300	20.00%	23.10%	40.00%	37.00%	15.20%	17.60%	11.30%	11.70%	11.30%	6.70%	10.90%	21.90%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	2	301 to 500	6.70%	0.00%	0.00%	11.10 %	19.60 %	8.10%	4.70%	3.60%	4.10%	8.00%	13.00 %	9.40%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	2	501 to 700	6.70%	0.00%	6.70%	3.70%	2.20%	4.10%	8.50%	5.40%	9.30%	8.00%	8.70%	9.40%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	2	701+	6.70%	15.40 %	0.00%	7.40%	6.50%	8.10%	5.70%	7.20%	6.20%	9.30%	4.30%	0.00%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	3 to 4	1 to 100	13.30 %	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.90%	1.00%	1.30%	2.20%	3.10%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	3 to 4	101 to 300	6.70%	15.40 %	13.30 %	0.00%	2.20%	1.40%	1.90%	1.80%	3.10%	4.00%	6.50%	6.30%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	3 to 4	301 to 500	13.30 %	7.70%	13.30 %	0.00%	6.50%	1.40%	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	3 to 4	501 to 700	0.00%	7.70%	0.00%	0.00%	2.20%	1.40%	0.00%	2.70%	2.10%	1.30%	2.20%	0.00%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	4.70%	1.80%	2.10%	1.30%	2.20%	3.10%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	5 to 9	1 to 100	0.00%	0.00%	0.00%	3.70%	2.20%	0.00%	0.90%	1.80%	0.00%	0.00%	2.20%	6.30%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	5 to 9	101 to 300	6.70%	7.70%	6.70%	3.70%	0.00%	4.10%	0.90%	0.90%	0.00%	1.30%	4.30%	0.00%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	5 to 9	301 to 500	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	5 to 9	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	0.00%	0.90%	0.00%	1.30%	0.00%	0.00%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	5 to 9	701+	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	2.80%	5.40%	5.20%	5.30%	8.70%	3.10%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	10 to 15 adjusted for max tpt - 10	1 to 100	0.00%	0.00%	0.00%	3.70%	2.20%	0.00%	0.00%	0.00%	1.00%	0.00%	4.30%	3.10%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	10 to 15 adjusted for max tpt - 10	101 to 300	0.00%	7.70%	0.00%	3.70%	4.30%	2.70%	2.80%	2.70%	1.00%	2.70%	2.20%	0.00%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	10 to 15 adjusted for max tpt - 10	301 to 500	0.00%	0.00%	0.00%	0.00%	2.20%	2.70%	2.80%	0.90%	2.10%	4.00%	4.30%	6.30%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	10 to 15 adjusted for max tpt - 10	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	1.00%	0.00%	0.00%	3.10%
ME	29	Maine State Zone G Waters off Kittery Trawl Limits	10 to 15 adjusted for max tpt - 10	701+	6.70%	7.70%	6.70%	3.70%	2.20%	0.00%	0.00%	0.00%	1.00%	1.30%	2.20%	9.40%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	1	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	5.40%	2.30%	2.20%	2.00%	0.00%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	1	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%	2.10%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	1	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	1	701+	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	4.50%	4.40%	4.00%	2.10%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	2	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.20%	0.00%	0.00%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	2	101 to 300	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%	0.00%	0.00%	2.10%	2.30%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	2	301 to 500	8.30%	0.00%	7.10%	4.50%	3.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	2	501 to 700	8.30%	14.30 %	7.10%	9.10%	3.00%	2.70%	2.30%	2.20%	2.00%	6.30%	4.70%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	2	701+	0.00%	0.00%	0.00%	0.00%	6.10%	2.70%	11.40 %	13.30 %	10.00 %	8.30%	7.00%	6.50%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	3 to 4	101 to 300	0.00%	0.00%	7.10%	4.50%	3.00%	0.00%	2.30%	0.00%	0.00%	0.00%	0.00%	3.20%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	3 to 4	301 to 500	0.00%	0.00%	7.10%	0.00%	9.10%	0.00%	0.00%	2.20%	0.00%	2.10%	7.00%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	2.20%	0.00%	0.00%	4.70%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	8.10%	6.80%	6.70%	6.00%	4.20%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	5 to 9	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.80%	0.00%	4.00%	2.10%	2.30%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	5 to 9	501 to 700	0.00%	0.00%	0.00%	4.50%	3.00%	2.70%	0.00%	2.20%	2.00%	0.00%	4.70%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	5 to 9	701+	0.00%	0.00%	0.00%	9.10%	6.10%	5.40%	9.10%	2.20%	2.00%	4.20%	2.30%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	2.30%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	10 to 14	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	3.00%	5.40%	0.00%	4.40%	0.00%	4.20%	2.30%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	3.00%	2.70%	2.30%	4.40%	4.00%	2.10%	0.00%	9.70%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	10 to 14	701+	0.00%	14.30 %	7.10%	4.50%	6.10%	8.10%	0.00%	4.40%	2.00%	4.20%	4.70%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	15 to 19	101 to 300	8.30%	0.00%	7.10%	4.50%	3.00%	2.70%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	15 to 19	301 to 500	16.70 %	28.60 %	14.30 %	13.60 %	9.10%	2.70%	0.00%	0.00%	2.00%	2.10%	0.00%	3.20%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	9.10%	5.40%	0.00%	2.20%	0.00%	0.00%	2.30%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	15 to 19	701+	0.00%	0.00%	7.10%	0.00%	3.00%	5.40%	9.10%	17.80 %	14.00 %	10.40 %	20.90 %	6.50%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	2.30%	2.20%	2.00%	2.10%	2.30%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	20 to 39	101 to 300	8.30%	14.30 %	7.10%	4.50%	3.00%	5.40%	2.30%	0.00%	2.00%	0.00%	0.00%	6.50%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	20 to 39	301 to 500	25.00 %	0.00%	14.30 %	22.70 %	9.10%	0.00%	9.10%	2.20%	4.00%	4.20%	2.30%	0.00%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	20 to 39	501 to 700	8.30%	14.30 %	7.10%	4.50%	6.10%	8.10%	2.30%	2.20%	4.00%	4.20%	4.70%	9.70%
ME	30	Maine Nearshore Zone A 3-6 Miles Exempt	20 to 39	701+	16.70 %	14.30 %	7.10%	4.50%	9.10%	18.90 %	25.00 %	20.00 %	30.00 %	29.20 %	18.60 %	22.60 %
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	1	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	10.50 %	5.90%	6.30%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	1	101 to 300	0.00%	0.00%	0.00%	6.70%	6.30%	10.50 %	11.80 %	6.30%	6.30%	10.50 %	5.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	1	301 to 500	0.00%	0.00%	0.00%	6.70%	0.00%	5.30%	5.90%	6.30%	12.50 %	5.30%	5.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	1	701+	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	5.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	2	1 to 100	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	2	101 to 300	7.70%	0.00%	9.10%	6.70%	6.30%	0.00%	0.00%	6.30%	6.30%	5.30%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	2	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	5.90%	6.30%	0.00%	0.00%	10.00 %	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	2	501 to 700	0.00%	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	5.00%	11.80 %
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	2	701+	15.40 %	25.00 %	27.30 %	13.30 %	12.50 %	15.80 %	17.60 %	18.80 %	12.50 %	10.50 %	10.00 %	11.80 %
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	3 to 4	101 to 300	7.70%	0.00%	0.00%	6.70%	6.30%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	3 to 4	701+	0.00%	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	5 to 9	501 to 700	7.70%	12.50 %	9.10%	13.30 %	0.00%	0.00%	0.00%	6.30%	0.00%	5.30%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	5 to 9	701+	7.70%	12.50 %	0.00%	6.70%	6.30%	5.30%	5.90%	6.30%	12.50 %	10.50 %	5.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	11.80 %	6.30%	6.30%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	6.30%	10.50 %	0.00%	6.30%	0.00%	10.50 %	10.00 %	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	10 to 14	301 to 500	0.00%	0.00%	0.00%	6.70%	6.30%	5.30%	5.90%	6.30%	12.50 %	5.30%	5.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	10 to 14	501 to 700	0.00%	12.50 %	0.00%	0.00%	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	5.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	10 to 14	701+	7.70%	0.00%	0.00%	0.00%	6.30%	0.00%	11.80 %	6.30%	6.30%	10.50 %	5.00%	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	15 to 19	101 to 300	0.00%	0.00%	9.10%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	15 to 19	301 to 500	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	15 to 19	701+	7.70%	12.50 %	9.10%	13.30 %	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	10.00 %	5.90%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	20 to 39	101 to 300	0.00%	0.00%	0.00%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	31	Maine Nearshore Zone G 3-6 Miles Exempt	20 to 39	701+	15.40 %	25.00 %	18.20 %	6.70%	6.30%	5.30%	5.90%	12.50 %	12.50 %	10.50 %	10.00 %	17.60 %
ME	32	Maine Nearshore Zone A 3-6 Miles	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	5.40%	2.30%	4.40%	2.00%	0.00%	0.00%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	3 to 4	101 to 300	0.00%	0.00%	7.10%	4.50%	6.10%	0.00%	4.50%	0.00%	0.00%	4.20%	2.30%	6.50%
ME	32	Maine Nearshore Zone A 3-6 Miles	3 to 4	301 to 500	8.30%	0.00%	14.30 %	4.50%	12.10 %	0.00%	0.00%	2.20%	2.00%	2.10%	7.00%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	3 to 4	501 to 700	8.30%	14.30 %	7.10%	9.10%	3.00%	5.40%	2.30%	4.40%	2.00%	8.30%	9.30%	0.00%
ME	32	Maine Nearshore Zone A 3-6 Miles	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	6.10%	13.50 %	22.70 %	24.40 %	20.00 %	14.60 %	7.00%	6.50%
ME	32	Maine Nearshore Zone A 3-6 Miles	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%
ME	32	Maine Nearshore Zone A 3-6 Miles	5 to 9	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	32	Maine Nearshore Zone A 3-6 Miles	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.80%	0.00%	4.00%	2.10%	2.30%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	5 to 9	501 to 700	0.00%	0.00%	0.00%	4.50%	3.00%	2.70%	0.00%	2.20%	2.00%	0.00%	4.70%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	5 to 9	701+	0.00%	0.00%	0.00%	9.10%	6.10%	5.40%	9.10%	2.20%	2.00%	4.20%	2.30%	0.00%
ME	32	Maine Nearshore Zone A 3-6 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	2.30%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	10 to 14	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	3.00%	5.40%	0.00%	4.40%	0.00%	4.20%	2.30%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	3.00%	2.70%	2.30%	4.40%	4.00%	2.10%	0.00%	9.70%
ME	32	Maine Nearshore Zone A 3-6 Miles	10 to 14	701+	0.00%	14.30%	7.10%	4.50%	6.10%	8.10%	0.00%	4.40%	2.00%	4.20%	4.70%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	15 to 19	101 to 300	8.30%	0.00%	7.10%	4.50%	3.00%	2.70%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	15 to 19	301 to 500	16.70%	28.60%	14.30%	13.60%	9.10%	2.70%	0.00%	0.00%	2.00%	2.10%	0.00%	3.20%
ME	32	Maine Nearshore Zone A 3-6 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	9.10%	5.40%	0.00%	2.20%	0.00%	0.00%	2.30%	0.00%
ME	32	Maine Nearshore Zone A 3-6 Miles	15 to 19	701+	0.00%	0.00%	7.10%	0.00%	3.00%	5.40%	9.10%	17.80%	14.00%	10.40%	20.90%	6.50%
ME	32	Maine Nearshore Zone A 3-6 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	2.30%	2.20%	2.00%	2.10%	2.30%	0.00%
ME	32	Maine Nearshore Zone A 3-6 Miles	20 to 39	101 to 300	8.30%	14.30%	7.10%	4.50%	3.00%	5.40%	2.30%	0.00%	2.00%	0.00%	0.00%	6.50%
ME	32	Maine Nearshore Zone A 3-6 Miles	20 to 39	301 to 500	25.00%	0.00%	14.30%	22.70%	9.10%	0.00%	9.10%	2.20%	4.00%	4.20%	2.30%	0.00%
ME	32	Maine Nearshore Zone A 3-6 Miles	20 to 39	501 to 700	8.30%	14.30%	7.10%	4.50%	6.10%	8.10%	2.30%	2.20%	4.00%	4.20%	4.70%	9.70%
ME	32	Maine Nearshore Zone A 3-6 Miles	20 to 39	701+	16.70%	14.30%	7.10%	4.50%	9.10%	18.90%	25.00%	20.00%	30.00%	29.20%	18.60%	22.60%
ME	33	Maine Nearshore Zone A 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	8.10%	4.50%	6.70%	6.00%	4.20%	4.70%	6.50%
ME	33	Maine Nearshore Zone A 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	101 to 300	16.70%	14.30%	21.40%	22.70%	12.10%	8.10%	6.80%	0.00%	2.00%	4.20%	7.00%	19.40%
ME	33	Maine Nearshore Zone A 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	301 to 500	50.00%	28.60%	42.90%	40.90%	33.30%	8.10%	15.90%	8.90%	12.00%	14.60%	14.00%	12.90%
ME	33	Maine Nearshore Zone A 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	501 to 700	16.70%	28.60%	14.30%	18.20%	24.20%	24.30%	6.80%	15.60%	12.00%	14.60%	20.90%	22.60%
ME	33	Maine Nearshore Zone A 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	701+	16.70%	28.60%	21.40%	18.20%	30.30%	51.40%	65.90%	68.90%	68.00%	62.50%	53.50%	38.70%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	2	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	5.40%	2.30%	4.40%	2.00%	0.00%	0.00%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	2	101 to 300	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	2.30%	0.00%	0.00%	4.20%	2.30%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	2	301 to 500	8.30%	0.00%	7.10%	4.50%	3.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	2	501 to 700	8.30%	14.30%	7.10%	9.10%	3.00%	2.70%	2.30%	2.20%	2.00%	8.30%	4.70%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	2	701+	0.00%	0.00%	0.00%	0.00%	6.10%	5.40%	15.90%	17.80%	14.00%	10.40%	7.00%	6.50%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	3 to 4	101 to 300	0.00%	0.00%	7.10%	4.50%	3.00%	0.00%	2.30%	0.00%	0.00%	0.00%	0.00%	3.20%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	3 to 4	301 to 500	0.00%	0.00%	7.10%	0.00%	9.10%	0.00%	0.00%	2.20%	0.00%	2.10%	7.00%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	2.20%	0.00%	0.00%	4.70%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	8.10%	6.80%	6.70%	6.00%	4.20%	0.00%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	5 to 9	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.80%	0.00%	4.00%	2.10%	2.30%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	5 to 9	501 to 700	0.00%	0.00%	0.00%	4.50%	3.00%	2.70%	0.00%	2.20%	2.00%	0.00%	4.70%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	5 to 9	701+	0.00%	0.00%	0.00%	9.10%	6.10%	5.40%	9.10%	2.20%	2.00%	4.20%	2.30%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	2.30%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	10 to 14	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	3.00%	5.40%	0.00%	4.40%	0.00%	4.20%	2.30%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	3.00%	2.70%	2.30%	4.40%	4.00%	2.10%	0.00%	9.70%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	10 to 14	701+	0.00%	14.30 %	7.10%	4.50%	6.10%	8.10%	0.00%	4.40%	2.00%	4.20%	4.70%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	15 to 19	101 to 300	8.30%	0.00%	7.10%	4.50%	3.00%	2.70%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	15 to 19	301 to 500	16.70 %	28.60 %	14.30 %	13.60 %	9.10%	2.70%	0.00%	0.00%	2.00%	2.10%	0.00%	3.20%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	9.10%	5.40%	0.00%	2.20%	0.00%	0.00%	2.30%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	15 to 19	701+	0.00%	0.00%	7.10%	0.00%	3.00%	5.40%	9.10%	17.80 %	14.00 %	10.40 %	20.90 %	6.50%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	2.30%	2.20%	2.00%	2.10%	2.30%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	20 to 39	101 to 300	8.30%	14.30 %	7.10%	4.50%	3.00%	5.40%	2.30%	0.00%	2.00%	0.00%	0.00%	6.50%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	20 to 39	301 to 500	25.00 %	0.00%	14.30 %	22.70 %	9.10%	0.00%	9.10%	2.20%	4.00%	4.20%	2.30%	0.00%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	20 to 39	501 to 700	8.30%	14.30 %	7.10%	4.50%	6.10%	8.10%	2.30%	2.20%	4.00%	4.20%	4.70%	9.70%
ME	34	Maine Nearshore Zone A 3-6 Miles Pocket	20 to 39	701+	16.70 %	14.30 %	7.10%	4.50%	9.10%	18.90 %	25.00 %	20.00 %	30.00 %	29.20 %	18.60 %	22.60 %
ME	35	Maine Nearshore Zone B 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	10.50 %	9.50%	0.00%	4.30%	0.00%	0.00%	0.00%
ME	35	Maine Nearshore Zone B 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	101 to 300	26.70 %	0.00%	16.70 %	13.30 %	40.00 %	21.10 %	14.30 %	16.70 %	8.70%	14.80 %	14.80 %	19.00 %
ME	35	Maine Nearshore Zone B 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	301 to 500	40.00 %	60.00 %	33.30 %	40.00 %	13.30 %	15.80 %	14.30 %	11.10 %	17.40 %	22.20 %	22.20 %	38.10 %
ME	35	Maine Nearshore Zone B 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	501 to 700	13.30 %	40.00 %	16.70 %	20.00 %	33.30 %	31.60 %	28.60 %	11.10 %	17.40 %	18.50 %	40.70 %	14.30 %
ME	35	Maine Nearshore Zone B 3-6 Miles (Hancock County Trawl Limits)	3 to 4 adjusted for max tpt - 3	701+	20.00 %	0.00%	33.30 %	26.70 %	13.30 %	21.10 %	33.30 %	61.10 %	52.20 %	44.40 %	22.20 %	28.60 %
ME	36	Maine Nearshore Zone C 3-6 Miles	3 to 4	1 to 100	0.00%	0.00%	8.30%	0.00%	4.30%	0.00%	8.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	3 to 4	101 to 300	5.30%	0.00%	8.30%	11.80 %	8.70%	7.10%	4.00%	4.50%	0.00%	0.00%	0.00%	7.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	36	Maine Nearshore Zone C 3-6 Miles	3 to 4	301 to 500	5.30%	15.40 %	0.00%	5.90%	0.00%	14.30 %	4.00%	0.00%	4.50%	3.60%	10.00 %	3.80%
ME	36	Maine Nearshore Zone C 3-6 Miles	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	13.00 %	14.30 %	4.00%	4.50%	9.10%	3.60%	6.70%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	3 to 4	701+	5.30%	0.00%	0.00%	17.60 %	4.30%	10.70 %	20.00 %	22.70 %	22.70 %	25.00 %	13.30 %	7.70%
ME	36	Maine Nearshore Zone C 3-6 Miles	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	5 to 9	101 to 300	5.30%	7.70%	0.00%	0.00%	8.70%	3.60%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	5 to 9	301 to 500	5.30%	0.00%	0.00%	0.00%	8.70%	0.00%	4.00%	0.00%	0.00%	3.60%	0.00%	3.80%
ME	36	Maine Nearshore Zone C 3-6 Miles	5 to 9	501 to 700	15.80 %	7.70%	8.30%	5.90%	4.30%	3.60%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	5 to 9	701+	5.30%	0.00%	0.00%	5.90%	0.00%	0.00%	8.00%	0.00%	4.50%	0.00%	3.30%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	10 to 14	101 to 300	5.30%	0.00%	0.00%	5.90%	4.30%	14.30 %	8.00%	9.10%	9.10%	3.60%	3.30%	3.80%
ME	36	Maine Nearshore Zone C 3-6 Miles	10 to 14	301 to 500	5.30%	0.00%	16.70 %	5.90%	8.70%	7.10%	4.00%	4.50%	9.10%	14.30 %	10.00 %	11.50 %
ME	36	Maine Nearshore Zone C 3-6 Miles	10 to 14	501 to 700	5.30%	38.50 %	16.70 %	5.90%	8.70%	3.60%	8.00%	0.00%	0.00%	7.10%	0.00%	11.50 %
ME	36	Maine Nearshore Zone C 3-6 Miles	10 to 14	701+	10.50 %	15.40 %	16.70 %	11.80 %	4.30%	17.90 %	16.00 %	31.80 %	27.30 %	21.40 %	36.70 %	30.80 %
ME	36	Maine Nearshore Zone C 3-6 Miles	15 to 19	1 to 100	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	15 to 19	101 to 300	5.30%	0.00%	0.00%	5.90%	4.30%	0.00%	4.00%	4.50%	0.00%	0.00%	3.30%	7.70%
ME	36	Maine Nearshore Zone C 3-6 Miles	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	7.10%	3.30%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	15 to 19	501 to 700	5.30%	0.00%	0.00%	5.90%	8.70%	3.60%	0.00%	0.00%	0.00%	0.00%	3.30%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	15 to 19	701+	10.50 %	7.70%	16.70 %	11.80 %	4.30%	0.00%	4.00%	0.00%	4.50%	7.10%	6.70%	11.50 %
ME	36	Maine Nearshore Zone C 3-6 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	20 to 39	101 to 300	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	36	Maine Nearshore Zone C 3-6 Miles	20 to 39	701+	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	2	1 to 100	0.00%	0.00%	8.30%	0.00%	4.30%	0.00%	8.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	2	101 to 300	5.30%	0.00%	0.00%	11.80 %	8.70%	3.60%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	2	301 to 500	5.30%	7.70%	0.00%	5.90%	0.00%	10.70 %	4.00%	0.00%	0.00%	0.00%	3.30%	3.80%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	2	501 to 700	0.00%	0.00%	0.00%	0.00%	8.70%	14.30 %	4.00%	4.50%	9.10%	3.60%	6.70%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	2	701+	5.30%	0.00%	0.00%	17.60 %	4.30%	7.10%	20.00 %	22.70 %	22.70 %	21.40 %	13.30 %	7.70%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	3 to 4	101 to 300	0.00%	0.00%	8.30%	0.00%	0.00%	3.60%	4.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	3 to 4	301 to 500	0.00%	7.70%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%	4.50%	3.60%	6.70%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	5 to 9	101 to 300	5.30%	7.70%	0.00%	0.00%	8.70%	3.60%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	5 to 9	301 to 500	5.30%	0.00%	0.00%	0.00%	8.70%	0.00%	4.00%	0.00%	0.00%	3.60%	0.00%	3.80%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	5 to 9	501 to 700	15.80 %	7.70%	8.30%	5.90%	4.30%	3.60%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	5 to 9	701+	5.30%	0.00%	0.00%	5.90%	0.00%	0.00%	8.00%	0.00%	4.50%	0.00%	3.30%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	10 to 14	101 to 300	5.30%	0.00%	0.00%	5.90%	4.30%	14.30 %	8.00%	9.10%	9.10%	3.60%	3.30%	3.80%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	10 to 14	301 to 500	5.30%	0.00%	16.70 %	5.90%	8.70%	7.10%	4.00%	4.50%	9.10%	14.30 %	10.00 %	11.50 %
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	10 to 14	501 to 700	5.30%	38.50 %	16.70 %	5.90%	8.70%	3.60%	8.00%	0.00%	0.00%	7.10%	0.00%	11.50 %
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	10 to 14	701+	10.50 %	15.40 %	16.70 %	11.80 %	4.30%	17.90 %	16.00 %	31.80 %	27.30 %	21.40 %	36.70 %	30.80 %
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	15 to 19	1 to 100	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	15 to 19	101 to 300	5.30%	0.00%	0.00%	5.90%	4.30%	0.00%	4.00%	4.50%	0.00%	0.00%	3.30%	7.70%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	7.10%	3.30%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	15 to 19	501 to 700	5.30%	0.00%	0.00%	5.90%	8.70%	3.60%	0.00%	0.00%	0.00%	0.00%	3.30%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	15 to 19	701+	10.50 %	7.70%	16.70 %	11.80 %	4.30%	0.00%	4.00%	0.00%	4.50%	7.10%	6.70%	11.50 %
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	20 to 39	101 to 300	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	37	Maine Nearshore Zone C 3-6 Miles Pocket	20 to 39	701+	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	3 to 4	1 to 100	13.30 %	0.00%	12.50 %	12.50 %	0.00%	0.00%	8.00%	3.70%	3.60%	0.00%	0.00%	11.10 %
ME	38	Maine Nearshore Zone D 3-6 Miles	3 to 4	101 to 300	6.70%	0.00%	6.30%	18.80 %	4.30%	8.70%	4.00%	7.40%	7.10%	6.90%	13.80 %	7.40%
ME	38	Maine Nearshore Zone D 3-6 Miles	3 to 4	301 to 500	13.30 %	0.00%	12.50 %	6.30%	13.00 %	0.00%	8.00%	3.70%	0.00%	3.40%	6.90%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	3 to 4	501 to 700	0.00%	0.00%	6.30%	12.50 %	13.00 %	17.40 %	8.00%	7.40%	7.10%	6.90%	13.80 %	14.80 %
ME	38	Maine Nearshore Zone D 3-6 Miles	3 to 4	701+	33.30 %	44.40 %	31.30 %	31.30 %	26.10 %	43.50 %	36.00 %	44.40 %	50.00 %	41.40 %	34.50 %	22.20 %
ME	38	Maine Nearshore Zone D 3-6 Miles	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	4.30%	4.30%	4.00%	0.00%	0.00%	3.40%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	3.40%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	5 to 9	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	5 to 9	701+	6.70%	11.10 %	6.30%	6.30%	0.00%	0.00%	0.00%	0.00%	3.60%	6.90%	3.40%	7.40%
ME	38	Maine Nearshore Zone D 3-6 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	38	Maine Nearshore Zone D 3-6 Miles	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	13.00 %	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	38	Maine Nearshore Zone D 3-6 Miles	10 to 14	301 to 500	6.70%	22.20 %	18.80 %	12.50 %	8.70%	17.40 %	0.00%	3.70%	3.60%	0.00%	3.40%	3.70%
ME	38	Maine Nearshore Zone D 3-6 Miles	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	8.00%	3.70%	3.60%	6.90%	6.90%	11.10 %
ME	38	Maine Nearshore Zone D 3-6 Miles	10 to 14	701+	0.00%	0.00%	0.00%	0.00%	8.70%	4.30%	4.00%	11.10 %	7.10%	10.30 %	3.40%	3.70%
ME	38	Maine Nearshore Zone D 3-6 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	4.30%	4.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	38	Maine Nearshore Zone D 3-6 Miles	15 to 19	301 to 500	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	15 to 19	501 to 700	0.00%	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	15 to 19	701+	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	7.40%	0.00%	0.00%	3.40%	3.70%
ME	38	Maine Nearshore Zone D 3-6 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	3.60%	3.40%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	38	Maine Nearshore Zone D 3-6 Miles	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	4.00%	3.70%	0.00%	0.00%	0.00%	0.00%
ME	38	Maine Nearshore Zone D 3-6 Miles	20 to 39	701+	6.70%	11.10 %	6.30%	0.00%	0.00%	0.00%	4.00%	0.00%	7.10%	3.40%	6.90%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	2	1 to 100	6.70%	0.00%	12.50 %	6.30%	0.00%	0.00%	8.00%	3.70%	3.60%	0.00%	0.00%	11.10 %
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	2	101 to 300	0.00%	0.00%	0.00%	18.80 %	4.30%	4.30%	4.00%	7.40%	7.10%	3.40%	13.80 %	7.40%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	2	301 to 500	13.30 %	0.00%	12.50 %	6.30%	13.00 %	0.00%	8.00%	0.00%	0.00%	3.40%	6.90%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	2	501 to 700	0.00%	0.00%	0.00%	12.50 %	4.30%	13.00 %	4.00%	3.70%	3.60%	3.40%	6.90%	11.10 %
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	2	701+	13.30 %	0.00%	0.00%	6.30%	17.40 %	34.80 %	28.00 %	37.00 %	35.70 %	34.50 %	27.60 %	14.80 %
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	3 to 4	1 to 100	6.70%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	3 to 4	101 to 300	6.70%	0.00%	6.30%	0.00%	0.00%	4.30%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	3 to 4	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	0.00%	0.00%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	3 to 4	501 to 700	0.00%	0.00%	6.30%	0.00%	8.70%	4.30%	4.00%	3.70%	3.60%	3.40%	6.90%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	3 to 4	701+	20.00 %	44.40 %	31.30 %	25.00 %	8.70%	8.70%	8.00%	7.40%	14.30 %	6.90%	6.90%	7.40%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	4.30%	4.30%	4.00%	0.00%	0.00%	3.40%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	3.40%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	5 to 9	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.60%	0.00%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	5 to 9	701+	6.70%	11.10 %	6.30%	6.30%	0.00%	0.00%	0.00%	0.00%	3.60%	6.90%	3.40%	7.40%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	13.00 %	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	10 to 14	301 to 500	6.70%	22.20 %	18.80 %	12.50 %	8.70%	17.40 %	0.00%	3.70%	3.60%	0.00%	3.40%	3.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	8.00%	3.70%	3.60%	6.90%	6.90%	11.10 %
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	10 to 14	701+	0.00%	0.00%	0.00%	0.00%	8.70%	4.30%	4.00%	11.10 %	7.10%	10.30 %	3.40%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	4.30%	4.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	15 to 19	301 to 500	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	15 to 19	501 to 700	0.00%	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	15 to 19	701+	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	7.40%	0.00%	0.00%	3.40%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	3.60%	3.40%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	4.00%	3.70%	0.00%	0.00%	0.00%	0.00%
ME	39	Maine Nearshore Zone D 3-6 Miles Pocket	20 to 39	701+	6.70%	11.10 %	6.30%	0.00%	0.00%	0.00%	4.00%	0.00%	7.10%	3.40%	6.90%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	2	1 to 100	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%	8.30%	5.60%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	2	101 to 300	9.10%	0.00%	0.00%	14.30 %	9.10%	10.00 %	0.00%	0.00%	0.00%	0.00%	11.10 %	7.10%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	2	301 to 500	9.10%	20.00 %	0.00%	0.00%	0.00%	10.00 %	14.30 %	18.20 %	16.70 %	8.30%	5.60%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	2	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	9.10%	8.30%	0.00%	0.00%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	9.10%	0.00%	0.00%	0.00%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	3 to 4	101 to 300	0.00%	0.00%	0.00%	0.00%	9.10%	20.00 %	0.00%	18.20 %	8.30%	0.00%	11.10 %	14.30 %
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	3 to 4	301 to 500	0.00%	20.00 %	37.50 %	28.60 %	27.30 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	3 to 4	501 to 700 adjusted for max traps	18.20 %	0.00%	12.50 %	14.30 %	9.10%	0.00%	0.00%	0.00%	16.70 %	25.00 %	5.60%	7.10%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	5 to 9	1 to 100	9.10%	0.00%	0.00%	0.00%	0.00%	20.00 %	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	5 to 9	101 to 300	9.10%	20.00 %	12.50 %	14.30 %	9.10%	0.00%	14.30 %	9.10%	0.00%	0.00%	5.60%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	5 to 9	301 to 500	27.30 %	20.00 %	12.50 %	14.30 %	9.10%	0.00%	14.30 %	18.20 %	16.70 %	8.30%	5.60%	14.30 %
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	5 to 9	501 to 700 adjusted for max traps	9.10%	20.00 %	25.00 %	14.30 %	9.10%	10.00 %	0.00%	0.00%	16.70 %	16.70 %	11.10 %	7.10%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	0.00%	0.00%	0.00%	0.00%	7.10%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	10 to 14	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.30%	25.00 %	22.20 %	21.40 %
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%
ME	40	Maine Nearshore Zone E 3-6 Miles Pocket Zone E (Trap Limits)	15 to 19	501 to 700 adjusted for max traps	9.10%	0.00%	0.00%	0.00%	9.10%	10.00 %	14.30 %	9.10%	8.30%	8.30%	5.60%	7.10%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	14.30 %	9.10%	0.00%	8.30%	5.60%	0.00%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	3 to 4	101 to 300	9.10%	0.00%	0.00%	14.30 %	18.20 %	30.00 %	0.00%	18.20 %	8.30%	0.00%	22.20 %	21.40 %
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	3 to 4	301 to 500	9.10%	40.00 %	37.50 %	28.60 %	27.30 %	30.00 %	14.30 %	18.20 %	16.70 %	8.30%	5.60%	0.00%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	3 to 4	501 to 700 adjusted for max traps	18.20 %	0.00%	12.50 %	14.30 %	9.10%	0.00%	14.30 %	9.10%	25.00 %	25.00 %	5.60%	7.10%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	5 to 9	1 to 100	9.10%	0.00%	0.00%	0.00%	0.00%	20.00 %	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	5 to 9	101 to 300	9.10%	20.00 %	12.50 %	14.30 %	9.10%	0.00%	14.30 %	9.10%	0.00%	0.00%	5.60%	0.00%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	5 to 9	301 to 500	27.30 %	20.00 %	12.50 %	14.30 %	9.10%	0.00%	14.30 %	18.20 %	16.70 %	8.30%	5.60%	14.30 %
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	5 to 9	501 to 700 adjusted for max traps	9.10%	20.00 %	25.00 %	14.30 %	9.10%	10.00 %	0.00%	0.00%	16.70 %	16.70 %	11.10 %	7.10%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	0.00%	0.00%	0.00%	0.00%	7.10%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	10 to 14	501 to 700 adjusted for max traps	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.30%	25.00 %	22.20 %	21.40 %
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%
ME	41	Maine Nearshore Zone E 3-6 Miles Zone E (Trap Limits)	15 to 19	501 to 700 adjusted for max traps	9.10%	0.00%	0.00%	0.00%	9.10%	10.00 %	14.30 %	9.10%	8.30%	8.30%	5.60%	7.10%
ME	42	Maine Nearshore Zone F 3-6 Miles	3 to 4	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.10 %	14.30 %	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	3 to 4	101 to 300	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %
ME	42	Maine Nearshore Zone F 3-6 Miles	3 to 4	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	3 to 4	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.10 %	14.30 %	12.50 %	12.50 %	14.30 %	12.50 %
ME	42	Maine Nearshore Zone F 3-6 Miles	5 to 9	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %	12.50 %	14.30 %	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	5 to 9	501 to 700	14.30 %	14.30 %	0.00%	0.00%	12.50 %	37.50 %	11.10 %	28.60 %	12.50 %	12.50 %	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	5 to 9	701+	14.30 %	14.30 %	20.00 %	12.50 %	0.00%	0.00%	22.20 %	0.00%	12.50 %	12.50 %	0.00%	12.50 %
ME	42	Maine Nearshore Zone F 3-6 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	14.30 %	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	10 to 14	101 to 300	0.00%	14.30 %	0.00%	12.50 %	12.50 %	0.00%	0.00%	0.00%	12.50 %	12.50 %	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	10 to 14	301 to 500	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	12.50 %
ME	42	Maine Nearshore Zone F 3-6 Miles	10 to 14	501 to 700	14.30 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	25.00 %
ME	42	Maine Nearshore Zone F 3-6 Miles	10 to 14	701+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	14.30 %	12.50 %
ME	42	Maine Nearshore Zone F 3-6 Miles	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	42	Maine Nearshore Zone F 3-6 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	14.30 %	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	15 to 19	701+	28.60 %	28.60 %	20.00 %	12.50 %	12.50 %	12.50 %	0.00%	14.30 %	12.50 %	12.50 %	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %
ME	42	Maine Nearshore Zone F 3-6 Miles	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	12.50 %	12.50 %	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	20 to 39	301 to 500	0.00%	14.30 %	20.00 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	20 to 39	501 to 700	14.30 %	14.30 %	20.00 %	12.50 %	25.00 %	0.00%	11.10 %	14.30 %	0.00%	0.00%	0.00%	0.00%
ME	42	Maine Nearshore Zone F 3-6 Miles	20 to 39	701+	14.30 %	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	14.30 %	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	3 to 4	1 to 100	7.70%	0.00%	0.00%	0.00%	0.00%	10.50 %	5.90%	6.30%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	3 to 4	101 to 300	15.40 %	0.00%	9.10%	20.00 %	18.80 %	15.80 %	11.80 %	12.50 %	12.50 %	15.80 %	5.00%	11.80 %
ME	43	Maine Nearshore Zone G 3-6 Miles	3 to 4	301 to 500	0.00%	0.00%	0.00%	6.70%	6.30%	10.50 %	11.80 %	12.50 %	12.50 %	10.50 %	15.00 %	5.90%
ME	43	Maine Nearshore Zone G 3-6 Miles	3 to 4	501 to 700	0.00%	0.00%	9.10%	0.00%	6.30%	0.00%	0.00%	0.00%	6.30%	5.30%	15.00 %	17.60 %
ME	43	Maine Nearshore Zone G 3-6 Miles	3 to 4	701+	23.10 %	25.00 %	36.40 %	13.30 %	12.50 %	15.80 %	17.60 %	18.80 %	18.80 %	15.80 %	15.00 %	17.60 %
ME	43	Maine Nearshore Zone G 3-6 Miles	5 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	5 to 9	501 to 700	7.70%	12.50 %	9.10%	13.30 %	0.00%	0.00%	0.00%	6.30%	0.00%	5.30%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	5 to 9	701+	7.70%	12.50 %	0.00%	6.70%	6.30%	5.30%	5.90%	6.30%	12.50 %	10.50 %	5.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	11.80 %	6.30%	6.30%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	10 to 14	101 to 300	0.00%	0.00%	0.00%	0.00%	6.30%	10.50 %	0.00%	6.30%	0.00%	10.50 %	10.00 %	5.90%
ME	43	Maine Nearshore Zone G 3-6 Miles	10 to 14	301 to 500	0.00%	0.00%	0.00%	6.70%	6.30%	5.30%	5.90%	6.30%	12.50 %	5.30%	5.00%	5.90%
ME	43	Maine Nearshore Zone G 3-6 Miles	10 to 14	501 to 700	0.00%	12.50 %	0.00%	0.00%	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	5.00%	5.90%
ME	43	Maine Nearshore Zone G 3-6 Miles	10 to 14	701+	7.70%	0.00%	0.00%	0.00%	6.30%	0.00%	11.80 %	6.30%	6.30%	10.50 %	5.00%	5.90%
ME	43	Maine Nearshore Zone G 3-6 Miles	15 to 19	101 to 300	0.00%	0.00%	9.10%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	15 to 19	301 to 500	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	15 to 19	701+	7.70%	12.50 %	9.10%	13.30 %	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	10.00 %	5.90%
ME	43	Maine Nearshore Zone G 3-6 Miles	20 to 39	101 to 300	0.00%	0.00%	0.00%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	43	Maine Nearshore Zone G 3-6 Miles	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	43	Maine Nearshore Zone G 3-6 Miles	20 to 39	701+	15.40%	25.00%	18.20%	6.70%	6.30%	5.30%	5.90%	12.50%	12.50%	10.50%	10.00%	17.60%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	1	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	10.50%	5.90%	6.30%	0.00%	0.00%	0.00%	0.00%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	1	101 to 300	0.00%	0.00%	0.00%	6.70%	6.30%	10.50%	11.80%	6.30%	6.30%	10.50%	5.00%	5.90%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	1	301 to 500	0.00%	0.00%	0.00%	6.70%	0.00%	5.30%	5.90%	6.30%	12.50%	5.30%	5.00%	5.90%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	1	701+	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	5.00%	0.00%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	2	1 to 100	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	2	101 to 300	7.70%	0.00%	9.10%	6.70%	6.30%	0.00%	0.00%	6.30%	6.30%	5.30%	0.00%	0.00%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	2	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	5.90%	6.30%	0.00%	0.00%	10.00%	0.00%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	2	501 to 700	0.00%	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	5.00%	11.80%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	2	701+	15.40%	25.00%	27.30%	13.30%	12.50%	15.80%	17.60%	18.80%	12.50%	10.50%	10.00%	11.80%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	3 to 4 adjusted for max tpt - 3	1 to 100	0.00%	0.00%	0.00%	0.00%	6.30%	5.30%	11.80%	6.30%	6.30%	0.00%	0.00%	0.00%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	3 to 4 adjusted for max tpt - 3	101 to 300	7.70%	0.00%	9.10%	20.00%	12.50%	15.80%	0.00%	6.30%	0.00%	10.50%	10.00%	11.80%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	3 to 4 adjusted for max tpt - 3	301 to 500	7.70%	0.00%	0.00%	6.70%	18.80%	5.30%	11.80%	6.30%	12.50%	10.50%	5.00%	5.90%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	3 to 4 adjusted for max tpt - 3	501 to 700	7.70%	25.00%	9.10%	13.30%	12.50%	10.50%	5.90%	6.30%	0.00%	5.30%	15.00%	11.80%
ME	44	Maine Nearshore Zone G 3-6 Miles (Southern Maine Trawl Limits)	3 to 4 adjusted for max tpt - 3	701+	38.50%	50.00%	36.40%	26.70%	18.80%	15.80%	23.50%	25.00%	31.30%	31.60%	30.00%	35.30%
ME	45	Maine Nearshore Zone A 6-12 Miles	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	5.40%	2.30%	4.40%	4.00%	0.00%	0.00%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	5 to 9	101 to 300	0.00%	0.00%	7.10%	9.10%	6.10%	0.00%	4.50%	0.00%	0.00%	4.20%	4.70%	6.50%
ME	45	Maine Nearshore Zone A 6-12 Miles	5 to 9	301 to 500	8.30%	0.00%	14.30%	4.50%	12.10%	0.00%	6.80%	2.20%	6.00%	4.20%	9.30%	6.50%
ME	45	Maine Nearshore Zone A 6-12 Miles	5 to 9	501 to 700	8.30%	14.30%	7.10%	13.60%	6.10%	8.10%	2.30%	6.70%	4.00%	8.30%	14.00%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	5 to 9	701+	0.00%	0.00%	0.00%	9.10%	12.10%	18.90%	31.80%	26.70%	22.00%	18.80%	9.30%	6.50%
ME	45	Maine Nearshore Zone A 6-12 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	2.30%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	10 to 14	101 to 300	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	10 to 14	301 to 500	0.00%	0.00%	0.00%	0.00%	3.00%	5.40%	0.00%	4.40%	0.00%	4.20%	2.30%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	10 to 14	501 to 700	0.00%	0.00%	0.00%	0.00%	3.00%	2.70%	2.30%	4.40%	4.00%	2.10%	0.00%	9.70%
ME	45	Maine Nearshore Zone A 6-12 Miles	10 to 14	701+	0.00%	14.30%	7.10%	4.50%	6.10%	8.10%	0.00%	4.40%	2.00%	4.20%	4.70%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	15 to 19	101 to 300	8.30%	0.00%	7.10%	4.50%	3.00%	2.70%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	15 to 19	301 to 500	16.70%	28.60%	14.30%	13.60%	9.10%	2.70%	0.00%	0.00%	2.00%	2.10%	0.00%	3.20%
ME	45	Maine Nearshore Zone A 6-12 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	9.10%	5.40%	0.00%	2.20%	0.00%	0.00%	2.30%	0.00%
ME	45	Maine Nearshore Zone A 6-12 Miles	15 to 19	701+	0.00%	0.00%	7.10%	0.00%	3.00%	5.40%	9.10%	17.80%	14.00%	10.40%	20.90%	6.50%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	45	Maine Nearshore Zone A 6-12 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	2.30%	2.20%	2.00%	2.10%	2.30%	0.00%
ME	45	Maine Nearshore Zone A 6-12 Miles	20 to 39	101 to 300	8.30%	14.30 %	7.10%	4.50%	3.00%	5.40%	2.30%	0.00%	2.00%	0.00%	0.00%	6.50%
ME	45	Maine Nearshore Zone A 6-12 Miles	20 to 39	301 to 500	25.00 %	0.00%	14.30 %	22.70 %	9.10%	0.00%	9.10%	2.20%	4.00%	4.20%	2.30%	0.00%
ME	45	Maine Nearshore Zone A 6-12 Miles	20 to 39	501 to 700	8.30%	14.30 %	7.10%	4.50%	6.10%	8.10%	2.30%	2.20%	4.00%	4.20%	4.70%	9.70%
ME	45	Maine Nearshore Zone A 6-12 Miles	20 to 39	701+	16.70 %	14.30 %	7.10%	4.50%	9.10%	18.90 %	25.00 %	20.00 %	30.00 %	29.20 %	18.60 %	22.60 %
ME	46	Maine Nearshore Zone B 6-12 Miles	5 to 9	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	10.50 %	4.80%	0.00%	4.30%	0.00%	0.00%	0.00%
ME	46	Maine Nearshore Zone B 6-12 Miles	5 to 9	101 to 300	20.00 %	0.00%	8.30%	6.70%	26.70 %	15.80 %	9.50%	16.70 %	8.70%	11.10 %	14.80 %	14.30 %
ME	46	Maine Nearshore Zone B 6-12 Miles	5 to 9	301 to 500	26.70 %	40.00 %	33.30 %	26.70 %	6.70%	10.50 %	9.50%	11.10 %	8.70%	14.80 %	7.40%	23.80 %
ME	46	Maine Nearshore Zone B 6-12 Miles	5 to 9	501 to 700	6.70%	40.00 %	16.70 %	20.00 %	33.30 %	31.60 %	23.80 %	11.10 %	17.40 %	14.80 %	33.30 %	9.50%
ME	46	Maine Nearshore Zone B 6-12 Miles	5 to 9	701+	13.30 %	0.00%	0.00%	6.70%	6.70%	10.50 %	23.80 %	50.00 %	39.10 %	29.60 %	11.10 %	14.30 %
ME	46	Maine Nearshore Zone B 6-12 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	46	Maine Nearshore Zone B 6-12 Miles	10 to 14	101 to 300	6.70%	0.00%	8.30%	6.70%	13.30 %	0.00%	4.80%	0.00%	0.00%	3.70%	0.00%	4.80%
ME	46	Maine Nearshore Zone B 6-12 Miles	10 to 14	301 to 500	13.30 %	20.00 %	0.00%	13.30 %	0.00%	0.00%	0.00%	0.00%	4.30%	7.40%	14.80 %	4.80%
ME	46	Maine Nearshore Zone B 6-12 Miles	10 to 14	501 to 700	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	0.00%	0.00%	0.00%	3.70%	4.80%
ME	46	Maine Nearshore Zone B 6-12 Miles	10 to 14	701+	6.70%	0.00%	16.70 %	6.70%	0.00%	5.30%	4.80%	0.00%	4.30%	3.70%	7.40%	4.80%
ME	46	Maine Nearshore Zone B 6-12 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	46	Maine Nearshore Zone B 6-12 Miles	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.50%
ME	46	Maine Nearshore Zone B 6-12 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	3.70%	0.00%
ME	46	Maine Nearshore Zone B 6-12 Miles	15 to 19	701+	0.00%	0.00%	8.30%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	0.00%	4.80%
ME	46	Maine Nearshore Zone B 6-12 Miles	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	6.70%	5.30%	4.80%	0.00%	4.30%	0.00%	0.00%	0.00%
ME	46	Maine Nearshore Zone B 6-12 Miles	20 to 39	701+	0.00%	0.00%	8.30%	6.70%	6.70%	5.30%	4.80%	11.10 %	8.70%	7.40%	3.70%	4.80%
ME	47	Maine Nearshore Zone B 6-12 Miles (Waters Around Mount Desert Rock)	5 to 9 adjusted for max tpt	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	10.50 %	9.50%	0.00%	4.30%	0.00%	0.00%	0.00%
ME	47	Maine Nearshore Zone B 6-12 Miles (Waters Around Mount Desert Rock)	5 to 9 adjusted for max tpt	101 to 300	26.70 %	0.00%	16.70 %	13.30 %	40.00 %	21.10 %	14.30 %	16.70 %	8.70%	14.80 %	14.80 %	19.00 %
ME	47	Maine Nearshore Zone B 6-12 Miles (Waters Around Mount Desert Rock)	5 to 9 adjusted for max tpt	301 to 500	40.00 %	60.00 %	33.30 %	40.00 %	13.30 %	15.80 %	14.30 %	11.10 %	17.40 %	22.20 %	22.20 %	38.10 %
ME	47	Maine Nearshore Zone B 6-12 Miles (Waters Around Mount Desert Rock)	5 to 9 adjusted for max tpt	501 to 700	13.30 %	40.00 %	16.70 %	20.00 %	33.30 %	31.60 %	28.60 %	11.10 %	17.40 %	18.50 %	40.70 %	14.30 %
ME	47	Maine Nearshore Zone B 6-12 Miles (Waters Around Mount Desert Rock)	5 to 9 adjusted for max tpt	701+	20.00 %	0.00%	33.30 %	26.70 %	13.30 %	21.10 %	33.30 %	61.10 %	52.20 %	44.40 %	22.20 %	28.60 %
ME	48	Maine Nearshore Zone C 6-12 Miles	5 to 9	1 to 100	0.00%	0.00%	8.30%	0.00%	4.30%	0.00%	8.00%	9.10%	0.00%	0.00%	0.00%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	5 to 9	101 to 300	10.50 %	7.70%	8.30%	11.80 %	17.40 %	10.70 %	8.00%	4.50%	0.00%	0.00%	0.00%	7.70%
ME	48	Maine Nearshore Zone C 6-12 Miles	5 to 9	301 to 500	10.50 %	15.40 %	0.00%	5.90%	8.70%	14.30 %	8.00%	0.00%	4.50%	7.10%	10.00 %	7.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	48	Maine Nearshore Zone C 6-12 Miles	5 to 9	501 to 700	15.80 %	7.70%	8.30%	5.90%	17.40 %	17.90 %	4.00%	4.50%	9.10%	7.10%	6.70%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	5 to 9	701+	10.50 %	0.00%	0.00%	23.50 %	4.30%	10.70 %	28.00 %	22.70 %	27.30 %	25.00 %	16.70 %	7.70%
ME	48	Maine Nearshore Zone C 6-12 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	10 to 14	101 to 300	5.30%	0.00%	0.00%	5.90%	4.30%	14.30 %	8.00%	9.10%	9.10%	3.60%	3.30%	3.80%
ME	48	Maine Nearshore Zone C 6-12 Miles	10 to 14	301 to 500	5.30%	0.00%	16.70 %	5.90%	8.70%	7.10%	4.00%	4.50%	9.10%	14.30 %	10.00 %	11.50 %
ME	48	Maine Nearshore Zone C 6-12 Miles	10 to 14	501 to 700	5.30%	38.50 %	16.70 %	5.90%	8.70%	3.60%	8.00%	0.00%	0.00%	7.10%	0.00%	11.50 %
ME	48	Maine Nearshore Zone C 6-12 Miles	10 to 14	701+	10.50 %	15.40 %	16.70 %	11.80 %	4.30%	17.90 %	16.00 %	31.80 %	27.30 %	21.40 %	36.70 %	30.80 %
ME	48	Maine Nearshore Zone C 6-12 Miles	15 to 19	1 to 100	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	15 to 19	101 to 300	5.30%	0.00%	0.00%	5.90%	4.30%	0.00%	4.00%	4.50%	0.00%	0.00%	3.30%	7.70%
ME	48	Maine Nearshore Zone C 6-12 Miles	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	7.10%	3.30%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	15 to 19	501 to 700	5.30%	0.00%	0.00%	5.90%	8.70%	3.60%	0.00%	0.00%	0.00%	0.00%	3.30%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	15 to 19	701+	10.50 %	7.70%	16.70 %	11.80 %	4.30%	0.00%	4.00%	0.00%	4.50%	7.10%	6.70%	11.50 %
ME	48	Maine Nearshore Zone C 6-12 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	20 to 39	101 to 300	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	48	Maine Nearshore Zone C 6-12 Miles	20 to 39	701+	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	49	Maine Nearshore Zone D 6-12 Miles	10 to 14	1 to 100	13.30 %	0.00%	12.50 %	12.50 %	0.00%	0.00%	8.00%	3.70%	3.60%	0.00%	0.00%	14.80 %
ME	49	Maine Nearshore Zone D 6-12 Miles	10 to 14	101 to 300	6.70%	0.00%	6.30%	18.80 %	21.70 %	13.00 %	12.00 %	7.40%	7.10%	10.30 %	13.80 %	11.10 %
ME	49	Maine Nearshore Zone D 6-12 Miles	10 to 14	301 to 500	20.00 %	22.20 %	31.30 %	18.80 %	21.70 %	17.40 %	8.00%	7.40%	3.60%	6.90%	13.80 %	3.70%
ME	49	Maine Nearshore Zone D 6-12 Miles	10 to 14	501 to 700	0.00%	0.00%	6.30%	12.50 %	17.40 %	17.40 %	16.00 %	11.10 %	14.30 %	13.80 %	20.70 %	25.90 %
ME	49	Maine Nearshore Zone D 6-12 Miles	10 to 14	701+	40.00 %	55.60 %	37.50 %	37.50 %	34.80 %	47.80 %	40.00 %	55.60 %	60.70 %	58.60 %	41.40 %	33.30 %
ME	49	Maine Nearshore Zone D 6-12 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	4.30%	4.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	49	Maine Nearshore Zone D 6-12 Miles	15 to 19	301 to 500	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%
ME	49	Maine Nearshore Zone D 6-12 Miles	15 to 19	501 to 700	0.00%	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	49	Maine Nearshore Zone D 6-12 Miles	15 to 19	701+	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	7.40%	0.00%	0.00%	3.40%	3.70%
ME	49	Maine Nearshore Zone D 6-12 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	3.60%	3.40%	0.00%	0.00%
ME	49	Maine Nearshore Zone D 6-12 Miles	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%
ME	49	Maine Nearshore Zone D 6-12 Miles	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	4.00%	3.70%	0.00%	0.00%	0.00%	0.00%
ME	49	Maine Nearshore Zone D 6-12 Miles	20 to 39	701+	6.70%	11.10 %	6.30%	0.00%	0.00%	0.00%	4.00%	0.00%	7.10%	3.40%	6.90%	0.00%
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	10 to 14	1 to 100	9.10%	0.00%	0.00%	0.00%	9.10%	20.00 %	28.60 %	18.20 %	0.00%	8.30%	5.60%	7.10%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	10 to 14	101 to 300	18.20 %	20.00 %	12.50 %	28.60 %	27.30 %	30.00 %	14.30 %	27.30 %	8.30%	0.00%	27.80 %	28.60 %
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	10 to 14	301 to 500	36.40 %	60.00 %	50.00 %	42.90 %	36.40 %	30.00 %	28.60 %	36.40 %	33.30 %	16.70 %	11.10 %	14.30 %
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	10 to 14	501 to 700 adjusted for max traps	27.30 %	20.00 %	37.50 %	28.60 %	18.20 %	10.00 %	14.30 %	9.10%	50.00 %	66.70 %	38.90 %	35.70 %
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%
ME	50	Maine Nearshore Zone E 6-12 Miles Zone E (Trap Limits)	15 to 19	501 to 700 adjusted for max traps	9.10%	0.00%	0.00%	0.00%	9.10%	10.00 %	14.30 %	9.10%	8.30%	8.30%	5.60%	7.10%
ME	51	Maine Nearshore Zone F 6-12 Miles	10 to 14	1 to 100	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	11.10 %	28.60 %	0.00%	0.00%	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	10 to 14	101 to 300	0.00%	14.30 %	0.00%	25.00 %	12.50 %	12.50 %	11.10 %	0.00%	12.50 %	12.50 %	0.00%	12.50 %
ME	51	Maine Nearshore Zone F 6-12 Miles	10 to 14	301 to 500	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %	25.00 %	14.30 %	12.50 %
ME	51	Maine Nearshore Zone F 6-12 Miles	10 to 14	501 to 700	28.60 %	14.30 %	0.00%	0.00%	12.50 %	50.00 %	11.10 %	28.60 %	12.50 %	12.50 %	14.30 %	25.00 %
ME	51	Maine Nearshore Zone F 6-12 Miles	10 to 14	701+	14.30 %	14.30 %	20.00 %	12.50 %	0.00%	0.00%	33.30 %	14.30 %	37.50 %	25.00 %	28.60 %	37.50 %
ME	51	Maine Nearshore Zone F 6-12 Miles	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	14.30 %	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	15 to 19	701+	28.60 %	28.60 %	20.00 %	12.50 %	12.50 %	12.50 %	0.00%	14.30 %	12.50 %	12.50 %	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %
ME	51	Maine Nearshore Zone F 6-12 Miles	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	12.50 %	12.50 %	11.10 %	0.00%	0.00%	0.00%	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	20 to 39	301 to 500	0.00%	14.30 %	20.00 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	20 to 39	501 to 700	14.30 %	14.30 %	20.00 %	12.50 %	25.00 %	0.00%	11.10 %	14.30 %	0.00%	0.00%	0.00%	0.00%
ME	51	Maine Nearshore Zone F 6-12 Miles	20 to 39	701+	14.30 %	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	14.30 %	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	10 to 14	1 to 100	7.70%	0.00%	0.00%	0.00%	6.30%	15.80 %	17.60 %	12.50 %	6.30%	0.00%	0.00%	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	10 to 14	101 to 300	15.40 %	0.00%	9.10%	20.00 %	25.00 %	26.30 %	11.80 %	18.80 %	12.50 %	26.30 %	15.00 %	17.60 %
ME	52	Maine Nearshore Zone G 6-12 Miles	10 to 14	301 to 500	0.00%	0.00%	0.00%	13.30 %	18.80 %	15.80 %	23.50 %	18.80 %	25.00 %	15.80 %	20.00 %	11.80 %
ME	52	Maine Nearshore Zone G 6-12 Miles	10 to 14	501 to 700	7.70%	25.00 %	18.20 %	13.30 %	6.30%	5.30%	0.00%	6.30%	6.30%	10.50 %	20.00 %	23.50 %
ME	52	Maine Nearshore Zone G 6-12 Miles	10 to 14	701+	38.50 %	37.50 %	36.40 %	20.00 %	25.00 %	21.10 %	35.30 %	31.30 %	37.50 %	36.80 %	25.00 %	23.50 %
ME	52	Maine Nearshore Zone G 6-12 Miles	15 to 19	101 to 300	0.00%	0.00%	9.10%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	15 to 19	301 to 500	7.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	52	Maine Nearshore Zone G 6-12 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	15 to 19	701+	7.70%	12.50 %	9.10%	13.30 %	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	10.00 %	5.90%
ME	52	Maine Nearshore Zone G 6-12 Miles	20 to 39	101 to 300	0.00%	0.00%	0.00%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	20 to 39	301 to 500	0.00%	0.00%	0.00%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	52	Maine Nearshore Zone G 6-12 Miles	20 to 39	701+	15.40 %	25.00 %	18.20 %	6.70%	6.30%	5.30%	5.90%	12.50 %	12.50 %	10.50 %	10.00 %	17.60 %
ME	53	Maine Nearshore Zone A +12 Miles	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
ME	53	Maine Nearshore Zone A +12 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50 %	12.50 %	0.00%	0.00%	0.00%
ME	53	Maine Nearshore Zone A +12 Miles	15 to 19	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	8.30%	10.00 %	12.50 %	12.50 %	11.10 %	0.00%	0.00%
ME	53	Maine Nearshore Zone A +12 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	8.30%
ME	53	Maine Nearshore Zone A +12 Miles	15 to 19	701+	18.20 %	12.50 %	18.20 %	15.40 %	18.20 %	8.30%	20.00 %	12.50 %	12.50 %	22.20 %	7.70%	8.30%
ME	53	Maine Nearshore Zone A +12 Miles	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	7.70%	16.70 %
ME	53	Maine Nearshore Zone A +12 Miles	20 to 39	301 to 500	9.10%	25.00 %	18.20 %	7.70%	18.20 %	8.30%	30.00 %	12.50 %	12.50 %	33.30 %	15.40 %	8.30%
ME	53	Maine Nearshore Zone A +12 Miles	20 to 39	501 to 700	0.00%	0.00%	0.00%	7.70%	0.00%	0.00%	10.00 %	25.00 %	12.50 %	0.00%	0.00%	8.30%
ME	53	Maine Nearshore Zone A +12 Miles	20 to 39	701+	72.70 %	62.50 %	63.60 %	69.20 %	63.60 %	75.00 %	20.00 %	25.00 %	37.50 %	33.30 %	53.80 %	50.00 %
ME	54	Maine Nearshore Zone B +12 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	33.30 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	54	Maine Nearshore Zone B +12 Miles	15 to 19	301 to 500	20.00 %	0.00%	0.00%	16.70 %	0.00%	0.00%	0.00%	100.00 %	0.00%	0.00%	100.00 %	0.00%
ME	54	Maine Nearshore Zone B +12 Miles	15 to 19	501 to 700	0.00%	0.00%	0.00%	16.70 %	16.70 %	0.00%	25.00 %	0.00%	100.00 %	50.00 %	0.00%	0.00%
ME	54	Maine Nearshore Zone B +12 Miles	15 to 19	701+	20.00 %	50.00 %	40.00 %	33.30 %	16.70 %	40.00 %	25.00 %	0.00%	0.00%	0.00%	0.00%	0.00%
ME	54	Maine Nearshore Zone B +12 Miles	20 to 39	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00 %
ME	54	Maine Nearshore Zone B +12 Miles	20 to 39	301 to 500	20.00 %	25.00 %	20.00 %	16.70 %	16.70 %	20.00 %	25.00 %	0.00%	0.00%	50.00 %	0.00%	0.00%
ME	54	Maine Nearshore Zone B +12 Miles	20 to 39	701+	40.00 %	25.00 %	40.00 %	16.70 %	16.70 %	20.00 %	25.00 %	0.00%	0.00%	0.00%	0.00%	0.00%
ME	55	Maine Nearshore Zone C +12 Miles	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	28.60 %	0.00%	60.00 %	0.00%	0.00%	0.00%	20.00 %	0.00%
ME	55	Maine Nearshore Zone C +12 Miles	15 to 19	301 to 500	0.00%	14.30 %	0.00%	0.00%	14.30 %	33.30 %	0.00%	50.00 %	0.00%	25.00 %	0.00%	20.00 %
ME	55	Maine Nearshore Zone C +12 Miles	15 to 19	501 to 700	33.30 %	28.60 %	25.00 %	0.00%	0.00%	16.70 %	0.00%	0.00%	50.00 %	0.00%	0.00%	0.00%
ME	55	Maine Nearshore Zone C +12 Miles	15 to 19	701+	50.00 %	28.60 %	50.00 %	50.00 %	57.10 %	33.30 %	20.00 %	25.00 %	25.00 %	25.00 %	40.00 %	40.00 %
ME	55	Maine Nearshore Zone C +12 Miles	20 to 39	101 to 300	16.70 %	0.00%	0.00%	16.70 %	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %	0.00%	0.00%
ME	55	Maine Nearshore Zone C +12 Miles	20 to 39	301 to 500	0.00%	0.00%	0.00%	16.70 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	55	Maine Nearshore Zone C +12 Miles	20 to 39	501 to 700	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %	25.00 %	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ME	55	Maine Nearshore Zone C +12 Miles	20 to 39	701+	0.00%	28.60%	25.00%	16.70%	0.00%	16.70%	20.00%	25.00%	0.00%	0.00%	40.00%	40.00%
ME	56	Maine Nearshore Zone D +12 Miles	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	5.30%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%
ME	56	Maine Nearshore Zone D +12 Miles	15 to 19	101 to 300	4.30%	12.50%	5.30%	9.50%	10.50%	10.50%	6.30%	0.00%	7.10%	6.30%	11.80%	12.50%
ME	56	Maine Nearshore Zone D +12 Miles	15 to 19	301 to 500	13.00%	18.80%	15.80%	4.80%	15.80%	0.00%	12.50%	14.30%	14.30%	12.50%	5.90%	0.00%
ME	56	Maine Nearshore Zone D +12 Miles	15 to 19	501 to 700	17.40%	12.50%	10.50%	9.50%	21.10%	31.60%	6.30%	7.10%	7.10%	12.50%	17.60%	18.80%
ME	56	Maine Nearshore Zone D +12 Miles	15 to 19	701+	56.50%	50.00%	63.20%	61.90%	42.10%	42.10%	68.80%	64.30%	57.10%	50.00%	64.70%	50.00%
ME	56	Maine Nearshore Zone D +12 Miles	20 to 39	101 to 300	4.30%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	7.10%	7.10%	6.30%	0.00%	0.00%
ME	56	Maine Nearshore Zone D +12 Miles	20 to 39	301 to 500	0.00%	6.30%	5.30%	9.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	56	Maine Nearshore Zone D +12 Miles	20 to 39	501 to 700	4.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%
ME	56	Maine Nearshore Zone D +12 Miles	20 to 39	701+	0.00%	0.00%	0.00%	4.80%	5.30%	10.50%	0.00%	7.10%	7.10%	12.50%	0.00%	6.30%
ME	57	Maine Nearshore Zone E +12 Miles Zone E (Trap Limits)	15 to 19	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	57	Maine Nearshore Zone E +12 Miles Zone E (Trap Limits)	15 to 19	101 to 300	0.00%	0.00%	0.00%	0.00%	20.00%	20.00%	0.00%	25.00%	0.00%	0.00%	25.00%	0.00%
ME	57	Maine Nearshore Zone E +12 Miles Zone E (Trap Limits)	15 to 19	301 to 500	0.00%	14.30%	28.60%	28.60%	0.00%	60.00%	25.00%	0.00%	33.30%	33.30%	25.00%	0.00%
ME	57	Maine Nearshore Zone E +12 Miles Zone E (Trap Limits)	15 to 19	501 to 700 adjusted for max traps	100.00%	85.70%	71.40%	71.40%	80.00%	20.00%	50.00%	75.00%	66.70%	66.70%	50.00%	100.00%
ME	58	Maine Nearshore Zone F +12 Miles	20 to 39	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	58	Maine Nearshore Zone F +12 Miles	20 to 39	101 to 300	50.00%	0.00%	25.00%	25.00%	50.00%	0.00%	33.30%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	58	Maine Nearshore Zone F +12 Miles	20 to 39	301 to 500	0.00%	50.00%	25.00%	25.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	58	Maine Nearshore Zone F +12 Miles	20 to 39	501 to 700	0.00%	25.00%	25.00%	50.00%	50.00%	0.00%	33.30%	0.00%	50.00%	33.30%	0.00%	66.70%
ME	58	Maine Nearshore Zone F +12 Miles	20 to 39	701+	50.00%	25.00%	25.00%	0.00%	0.00%	0.00%	0.00%	100.00%	50.00%	66.70%	100.00%	33.30%
ME	59	Maine Nearshore Zone G +12 Miles	20 to 39	101 to 300	0.00%	25.00%	0.00%	0.00%	33.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	59	Maine Nearshore Zone G +12 Miles	20 to 39	301 to 500	25.00%	0.00%	0.00%	0.00%	33.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	59	Maine Nearshore Zone G +12 Miles	20 to 39	501 to 700	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ME	59	Maine Nearshore Zone G +12 Miles	20 to 39	701+	75.00%	75.00%	75.00%	100.00%	33.30%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
NH	60	NH Atlantic Exempt	1	1 to 100	0.00%	12.50%	0.00%	3.70%	23.50%	39.50%	41.40%	38.80%	32.80%	18.10%	3.30%	2.40%
NH	60	NH Atlantic Exempt	10 to 15	1 to 100	10.50%	0.00%	11.10%	0.00%	1.50%	2.40%	1.30%	0.70%	0.70%	1.10%	1.70%	2.40%
NH	60	NH Atlantic Exempt	10 to 15	101 to 300	31.60%	25.00%	11.10%	11.10%	4.40%	2.40%	2.60%	3.30%	5.10%	6.40%	11.70%	9.80%
NH	60	NH Atlantic Exempt	10 to 15	301 to 500	10.50%	12.50%	11.10%	25.90%	7.40%	4.80%	3.90%	4.60%	5.10%	9.60%	15.00%	17.10%
NH	60	NH Atlantic Exempt	10 to 15	501 to 800	21.10%	25.00%	22.20%	14.80%	13.20%	8.90%	5.90%	5.90%	6.60%	8.50%	18.30%	22.00%
NH	60	NH Atlantic Exempt	10 to 15	801+	10.50%	0.00%	0.00%	11.10%	10.30%	8.90%	9.20%	9.90%	10.20%	13.80%	13.30%	7.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NH	60	NH Atlantic Exempt	16+	101 to 300	0.00%	0.00%	11.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%
NH	60	NH Atlantic Exempt	16+	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.80%	0.00%	0.00%	0.70%	2.10%	1.70%	0.00%
NH	60	NH Atlantic Exempt	16+	501 to 800	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%
NH	60	NH Atlantic Exempt	16+	801+	0.00%	0.00%	0.00%	0.00%	1.50%	0.00%	0.00%	0.70%	0.70%	0.00%	0.00%	0.00%
NH	60	NH Atlantic Exempt	2	1 to 100	0.00%	0.00%	0.00%	3.70%	4.40%	5.60%	7.90%	8.60%	8.00%	3.20%	1.70%	2.40%
NH	60	NH Atlantic Exempt	2	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.70%	0.70%	0.00%	0.00%	0.00%
NH	60	NH Atlantic Exempt	3	1 to 100	0.00%	0.00%	0.00%	0.00%	1.50%	2.40%	3.30%	1.30%	1.50%	3.20%	1.70%	0.00%
NH	60	NH Atlantic Exempt	3	101 to 300	0.00%	0.00%	0.00%	0.00%	1.50%	0.80%	0.70%	0.70%	0.70%	1.10%	0.00%	0.00%
NH	60	NH Atlantic Exempt	4 to 5	1 to 100	0.00%	0.00%	0.00%	7.40%	4.40%	6.50%	7.20%	9.90%	10.20%	10.60%	10.00%	7.30%
NH	60	NH Atlantic Exempt	4 to 5	101 to 300	0.00%	0.00%	0.00%	0.00%	4.40%	0.80%	0.70%	0.70%	0.70%	1.10%	5.00%	4.90%
NH	60	NH Atlantic Exempt	4 to 5	301 to 500	0.00%	0.00%	0.00%	0.00%	1.50%	0.80%	0.70%	0.70%	0.70%	1.10%	0.00%	2.40%
NH	60	NH Atlantic Exempt	4 to 5	501 to 800	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.30%	1.30%	1.50%	2.10%	1.70%	0.00%
NH	60	NH Atlantic Exempt	6 to 9	1 to 100	5.30%	0.00%	0.00%	0.00%	7.40%	5.60%	3.30%	3.30%	5.10%	7.40%	0.00%	0.00%
NH	60	NH Atlantic Exempt	6 to 9	101 to 300	5.30%	12.50%	11.10%	14.80%	2.90%	2.40%	4.60%	4.60%	3.60%	3.20%	3.30%	12.20%
NH	60	NH Atlantic Exempt	6 to 9	301 to 500	5.30%	0.00%	11.10%	0.00%	1.50%	0.80%	1.30%	1.30%	1.50%	2.10%	5.00%	2.40%
NH	60	NH Atlantic Exempt	6 to 9	501 to 800	0.00%	12.50%	11.10%	3.70%	7.40%	3.20%	2.60%	2.00%	2.20%	4.30%	5.00%	2.40%
NH	60	NH Atlantic Exempt	6 to 9	801+	0.00%	0.00%	0.00%	3.70%	1.50%	1.60%	1.30%	1.30%	1.50%	1.10%	1.70%	0.00%
NH	61	NH Inland Bays Exempt	1	1 to 100	0.00%	0.00%	0.00%	12.50%	44.80%	50.90%	49.20%	50.00%	49.20%	48.90%	44.00%	20.00%
NH	61	NH Inland Bays Exempt	1	101 to 300	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	1.70%	2.10%	0.00%	0.00%
NH	61	NH Inland Bays Exempt	10 to 15	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	1.60%	1.70%	1.70%	2.10%	4.00%	10.00%
NH	61	NH Inland Bays Exempt	10 to 15	101 to 300	0.00%	25.00%	20.00%	0.00%	3.40%	1.80%	4.80%	5.20%	5.10%	6.40%	8.00%	0.00%
NH	61	NH Inland Bays Exempt	10 to 15	301 to 500	33.30%	25.00%	20.00%	12.50%	3.40%	1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NH	61	NH Inland Bays Exempt	10 to 15	501 to 800	33.30%	50.00%	40.00%	0.00%	3.40%	3.60%	1.60%	1.70%	1.70%	2.10%	12.00%	30.00%
NH	61	NH Inland Bays Exempt	10 to 15	801+	33.30%	0.00%	0.00%	25.00%	6.90%	5.50%	7.90%	5.20%	6.80%	6.40%	8.00%	10.00%
NH	61	NH Inland Bays Exempt	2	1 to 100	0.00%	0.00%	0.00%	12.50%	13.80%	12.70%	11.10%	10.30%	8.50%	8.50%	8.00%	10.00%
NH	61	NH Inland Bays Exempt	2	101 to 300	0.00%	0.00%	20.00%	12.50%	3.40%	1.80%	4.80%	3.40%	3.40%	4.30%	0.00%	0.00%
NH	61	NH Inland Bays Exempt	3	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	1.60%	5.20%	5.10%	4.30%	4.00%	0.00%
NH	61	NH Inland Bays Exempt	4 to 5	1 to 100	0.00%	0.00%	0.00%	25.00%	17.20%	16.40%	15.90%	13.80%	15.30%	12.80%	8.00%	0.00%
NH	61	NH Inland Bays Exempt	4 to 5	101 to 300	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NH	61	NH Inland Bays Exempt	4 to 5	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%
NH	61	NH Inland Bays Exempt	6 to 9	301 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NH	61	NH Inland Bays Exempt	6 to 9	501 to 800	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.70%	1.70%	2.10%	4.00%	10.00%
MA	62	Mass State Area 1 Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	27.30%	15.80%	36.70%	25.70%	17.20%	12.00%	7.10%	11.10%
MA	62	Mass State Area 1 Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.30%	2.90%	6.90%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	0.00%	2.90%	3.40%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	1	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	3.30%	2.90%	3.40%	4.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.90%	3.40%	4.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.30%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	3	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	3.30%	2.90%	0.00%	4.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.70%	11.40%	17.20%	12.00%	0.00%	11.10%
MA	62	Mass State Area 1 Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	10 to 14	100 to 299	0.00%	50.00%	33.30%	16.70%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	16.70%	9.10%	5.30%	3.30%	2.90%	3.40%	4.00%	0.00%	11.10%
MA	62	Mass State Area 1 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.90%	3.40%	0.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	10 to 14	800+	33.30%	0.00%	0.00%	0.00%	0.00%	0.00%	3.30%	0.00%	0.00%	0.00%	7.10%	11.10%
MA	62	Mass State Area 1 Exempt	15 to 19	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.90%	0.00%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	16.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	3.30%	2.90%	3.40%	4.00%	7.10%	0.00%
MA	62	Mass State Area 1 Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	9.10%	5.30%	6.70%	0.00%	0.00%	4.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	9.10%	5.30%	0.00%	0.00%	3.40%	4.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	20+	100 to 299	33.30%	50.00%	33.30%	33.30%	18.20%	10.50%	6.70%	5.70%	6.90%	8.00%	14.30%	22.20%
MA	62	Mass State Area 1 Exempt	20+	300 to 499	33.30%	0.00%	0.00%	0.00%	0.00%	5.30%	0.00%	2.90%	3.40%	4.00%	0.00%	11.10%
MA	62	Mass State Area 1 Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	9.10%	15.80%	3.30%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	62	Mass State Area 1 Exempt	20+	800+	0.00%	0.00%	33.30%	16.70%	9.10%	15.80%	16.70%	28.60%	24.10%	24.00%	21.40%	22.20%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	63	Mass State Area 2 Exempt	1	0 to 99	2.30%	0.00%	0.00%	2.30%	1.30%	6.90%	10.30%	11.10%	10.10%	8.10%	5.60%	4.90%
MA	63	Mass State Area 2 Exempt	1	100 to 299	0.00%	0.00%	0.00%	4.70%	5.10%	0.90%	2.80%	2.60%	4.00%	4.40%	1.90%	0.00%
MA	63	Mass State Area 2 Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.70%	0.70%	0.00%	0.00%	0.00%	0.00%
MA	63	Mass State Area 2 Exempt	2	0 to 99	2.30%	0.00%	0.00%	0.00%	2.60%	1.70%	1.40%	1.30%	1.30%	2.90%	0.00%	0.00%
MA	63	Mass State Area 2 Exempt	2	100 to 299	2.30%	0.00%	0.00%	4.70%	5.10%	6.00%	4.80%	3.90%	3.40%	2.90%	2.80%	4.90%
MA	63	Mass State Area 2 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.70%	0.70%	0.70%	0.90%	0.00%
MA	63	Mass State Area 2 Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.70%	0.70%	0.00%	0.00%
MA	63	Mass State Area 2 Exempt	2	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	63	Mass State Area 2 Exempt	3	0 to 99	0.00%	4.00%	4.50%	2.30%	2.60%	1.70%	2.80%	3.30%	3.40%	2.90%	1.90%	0.00%
MA	63	Mass State Area 2 Exempt	3	100 to 299	4.70%	4.00%	0.00%	2.30%	1.30%	3.40%	3.40%	3.90%	5.40%	2.90%	4.60%	7.30%
MA	63	Mass State Area 2 Exempt	3	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	2.80%	2.00%	2.00%	2.20%	1.90%	1.20%
MA	63	Mass State Area 2 Exempt	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%
MA	63	Mass State Area 2 Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	2.00%	2.00%	2.20%	0.90%	1.20%
MA	63	Mass State Area 2 Exempt	6 to 9	100 to 299	7.00%	4.00%	13.60%	4.70%	3.80%	4.30%	3.40%	2.00%	2.00%	2.20%	1.90%	4.90%
MA	63	Mass State Area 2 Exempt	6 to 9	300 to 499	2.30%	4.00%	4.50%	7.00%	2.60%	1.70%	1.40%	0.70%	0.00%	0.00%	0.90%	2.40%
MA	63	Mass State Area 2 Exempt	6 to 9	500 to 799	9.30%	4.00%	4.50%	2.30%	5.10%	0.90%	1.40%	1.30%	1.30%	1.50%	2.80%	1.20%
MA	63	Mass State Area 2 Exempt	10 to 14	0 to 99	4.70%	4.00%	0.00%	2.30%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.90%	0.00%
MA	63	Mass State Area 2 Exempt	10 to 14	100 to 299	14.00%	24.00%	18.20%	14.00%	7.70%	3.40%	2.80%	2.00%	2.70%	2.90%	3.70%	3.70%
MA	63	Mass State Area 2 Exempt	10 to 14	300 to 499	2.30%	0.00%	0.00%	2.30%	5.10%	7.80%	9.00%	9.20%	11.40%	8.80%	9.30%	4.90%
MA	63	Mass State Area 2 Exempt	10 to 14	500 to 799	0.00%	4.00%	4.50%	2.30%	3.80%	7.80%	8.30%	9.20%	8.70%	10.30%	8.30%	8.50%
MA	63	Mass State Area 2 Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	2.60%	6.90%	9.00%	6.50%	6.70%	5.90%	6.50%	6.10%
MA	63	Mass State Area 2 Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	2.30%	0.00%	2.60%	2.80%	2.60%	2.70%	2.20%	0.90%	0.00%
MA	63	Mass State Area 2 Exempt	15 to 19	300 to 499	2.30%	4.00%	4.50%	2.30%	1.30%	1.70%	0.70%	2.00%	0.70%	0.70%	1.90%	4.90%
MA	63	Mass State Area 2 Exempt	15 to 19	500 to 799	4.70%	8.00%	9.10%	2.30%	2.60%	2.60%	1.40%	0.70%	1.30%	2.20%	4.60%	3.70%
MA	63	Mass State Area 2 Exempt	15 to 19	800+	2.30%	8.00%	0.00%	0.00%	1.30%	0.90%	1.40%	2.00%	0.00%	0.00%	0.00%	0.00%
MA	63	Mass State Area 2 Exempt	20+	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.00%	0.00%	0.70%	0.70%	0.90%	1.20%
MA	63	Mass State Area 2 Exempt	20+	100 to 299	9.30%	8.00%	9.10%	9.30%	12.80%	5.20%	4.10%	3.90%	2.70%	3.70%	5.60%	8.50%
MA	63	Mass State Area 2 Exempt	20+	300 to 499	7.00%	4.00%	0.00%	9.30%	10.30%	4.30%	4.10%	3.30%	3.40%	5.10%	6.50%	7.30%
MA	63	Mass State Area 2 Exempt	20+	500 to 799	7.00%	8.00%	13.60%	7.00%	9.00%	9.50%	4.10%	4.60%	4.70%	5.90%	7.40%	9.80%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	63	Mass State Area 2 Exempt	20+	800+	16.30 %	8.00%	13.60 %	16.30 %	14.10 %	14.70 %	14.50 %	17.60 %	17.40 %	17.60 %	17.60 %	13.40 %
MA	64	Mass State Area 3 Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	3.90%	5.90%	6.00%	3.70%	4.10%	2.20%	1.10%	0.00%
MA	64	Mass State Area 3 Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	2.00%	1.20%	3.00%	1.90%	2.00%	2.20%	2.30%	2.00%
MA	64	Mass State Area 3 Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	2.00%	2.40%	2.00%	2.80%	2.00%	2.20%	1.10%	0.00%
MA	64	Mass State Area 3 Exempt	1	800+	5.90%	0.00%	0.00%	0.00%	0.00%	1.20%	0.00%	0.90%	1.00%	1.10%	1.10%	2.00%
MA	64	Mass State Area 3 Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.90%	1.00%	0.00%	0.00%	2.00%
MA	64	Mass State Area 3 Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	2.00%	8.20%	4.00%	3.70%	3.10%	4.30%	2.30%	2.00%
MA	64	Mass State Area 3 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	5.90%	1.20%	2.00%	1.90%	2.00%	1.10%	0.00%	2.00%
MA	64	Mass State Area 3 Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.00%	1.90%	1.00%	1.10%	1.10%	0.00%
MA	64	Mass State Area 3 Exempt	2	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	64	Mass State Area 3 Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	0.00%	0.00%
MA	64	Mass State Area 3 Exempt	3	100 to 299	0.00%	0.00%	0.00%	0.00%	7.80%	2.40%	3.00%	2.80%	1.00%	3.20%	4.60%	6.00%
MA	64	Mass State Area 3 Exempt	3	300 to 499	0.00%	0.00%	0.00%	0.00%	2.00%	2.40%	2.00%	1.90%	2.00%	1.10%	1.10%	0.00%
MA	64	Mass State Area 3 Exempt	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%	1.10%	1.10%	0.00%
MA	64	Mass State Area 3 Exempt	6 to 9	0 to 99	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.90%	1.00%	1.10%	0.00%	0.00%
MA	64	Mass State Area 3 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	1.00%	0.90%	1.00%	0.00%	0.00%	4.00%
MA	64	Mass State Area 3 Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	2.00%	2.40%	2.00%	2.80%	3.10%	2.20%	4.60%	0.00%
MA	64	Mass State Area 3 Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	2.00%	1.90%	2.00%	2.20%	2.30%	0.00%
MA	64	Mass State Area 3 Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	4.80%	0.00%	1.20%	1.00%	1.90%	0.00%	1.10%	1.10%	0.00%
MA	64	Mass State Area 3 Exempt	10 to 14	100 to 299	0.00%	0.00%	0.00%	4.80%	5.90%	3.50%	4.00%	3.70%	5.10%	4.30%	3.40%	4.00%
MA	64	Mass State Area 3 Exempt	10 to 14	300 to 499	11.80 %	0.00%	0.00%	4.80%	2.00%	3.50%	4.00%	5.60%	6.10%	7.50%	5.70%	2.00%
MA	64	Mass State Area 3 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	4.80%	5.90%	4.70%	9.00%	6.50%	10.20 %	9.70%	11.50 %	16.00 %
MA	64	Mass State Area 3 Exempt	10 to 14	800+	0.00%	0.00%	0.00%	4.80%	2.00%	3.50%	3.00%	2.80%	3.10%	3.20%	2.30%	2.00%
MA	64	Mass State Area 3 Exempt	15 to 19	100 to 299	5.90%	14.30 %	14.30 %	4.80%	2.00%	4.70%	3.00%	2.80%	3.10%	2.20%	1.10%	2.00%
MA	64	Mass State Area 3 Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	4.80%	2.00%	4.70%	4.00%	2.80%	4.10%	4.30%	3.40%	2.00%
MA	64	Mass State Area 3 Exempt	15 to 19	500 to 799	11.80 %	14.30 %	14.30 %	9.50%	3.90%	4.70%	2.00%	4.70%	4.10%	3.20%	2.30%	6.00%
MA	64	Mass State Area 3 Exempt	15 to 19	800+	0.00%	0.00%	0.00%	4.80%	3.90%	4.70%	4.00%	3.70%	3.10%	2.20%	2.30%	4.00%
MA	64	Mass State Area 3 Exempt	20+	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	1.10%	1.10%	2.00%
MA	64	Mass State Area 3 Exempt	20+	100 to 299	23.50 %	28.60 %	42.90 %	23.80 %	13.70 %	8.20%	7.00%	7.50%	6.10%	9.70%	10.30 %	10.00 %

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	64	Mass State Area 3 Exempt	20+	300 to 499	5.90%	14.30%	0.00%	9.50%	13.70%	5.90%	8.00%	7.50%	7.10%	6.50%	8.00%	8.00%
MA	64	Mass State Area 3 Exempt	20+	500 to 799	11.80%	0.00%	14.30%	0.00%	0.00%	4.70%	3.00%	1.90%	1.00%	1.10%	3.40%	2.00%
MA	64	Mass State Area 3 Exempt	20+	800+	17.60%	28.60%	14.30%	19.00%	17.60%	12.90%	15.00%	18.70%	17.30%	19.40%	20.70%	20.00%
MA	65	Mass State Area 4 Exempt	1	0 to 99	0.00%	0.00%	10.00%	0.00%	1.80%	3.60%	6.70%	9.00%	6.50%	7.80%	3.30%	1.90%
MA	65	Mass State Area 4 Exempt	1	100 to 299	0.00%	0.00%	0.00%	3.20%	3.60%	3.60%	2.90%	2.70%	1.90%	1.00%	1.10%	1.90%
MA	65	Mass State Area 4 Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.80%	1.90%	0.00%	1.10%	0.00%
MA	65	Mass State Area 4 Exempt	2	100 to 299	0.00%	0.00%	0.00%	3.20%	1.80%	2.40%	1.90%	0.90%	0.90%	1.00%	0.00%	0.00%
MA	65	Mass State Area 4 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.90%	0.90%	1.00%	0.00%	0.00%
MA	65	Mass State Area 4 Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	0.00%	0.00%	0.90%	0.00%	0.00%	0.00%
MA	65	Mass State Area 4 Exempt	3	100 to 299	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	1.00%	1.80%	0.00%	0.00%	1.10%	1.90%
MA	65	Mass State Area 4 Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.00%	0.90%	0.90%	2.00%	1.10%	0.00%
MA	65	Mass State Area 4 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	3.60%	2.40%	4.80%	1.80%	1.90%	1.00%	1.10%	0.00%
MA	65	Mass State Area 4 Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	3.70%
MA	65	Mass State Area 4 Exempt	6 to 9	500 to 799	6.70%	20.00%	10.00%	3.20%	1.80%	1.20%	1.00%	0.90%	0.90%	1.00%	1.10%	1.90%
MA	65	Mass State Area 4 Exempt	10 to 14	0 to 99	6.70%	0.00%	0.00%	3.20%	0.00%	1.20%	1.90%	1.80%	2.80%	2.00%	3.30%	3.70%
MA	65	Mass State Area 4 Exempt	10 to 14	100 to 299	6.70%	0.00%	10.00%	16.10%	5.50%	6.00%	3.80%	6.30%	7.50%	7.80%	4.40%	9.30%
MA	65	Mass State Area 4 Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	5.50%	6.00%	2.90%	1.80%	1.90%	1.00%	1.10%	5.60%
MA	65	Mass State Area 4 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	3.20%	7.30%	7.10%	6.70%	9.00%	9.30%	8.80%	7.80%	3.70%
MA	65	Mass State Area 4 Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	1.90%	0.90%	0.90%	1.00%	1.10%	0.00%
MA	65	Mass State Area 4 Exempt	15 to 19	100 to 299	6.70%	20.00%	10.00%	6.50%	1.80%	1.20%	1.90%	1.80%	1.90%	1.00%	2.20%	3.70%
MA	65	Mass State Area 4 Exempt	15 to 19	300 to 499	0.00%	0.00%	10.00%	0.00%	7.30%	6.00%	6.70%	5.40%	6.50%	7.80%	7.80%	3.70%
MA	65	Mass State Area 4 Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	3.20%	7.30%	3.60%	6.70%	5.40%	7.50%	8.80%	8.90%	9.30%
MA	65	Mass State Area 4 Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.80%	3.60%	3.70%	3.90%	4.40%	3.70%
MA	65	Mass State Area 4 Exempt	20+	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%	1.10%	1.90%
MA	65	Mass State Area 4 Exempt	20+	100 to 299	13.30%	0.00%	0.00%	12.90%	7.30%	3.60%	5.80%	8.10%	5.60%	6.90%	5.60%	9.30%
MA	65	Mass State Area 4 Exempt	20+	300 to 499	6.70%	20.00%	10.00%	16.10%	14.50%	11.90%	5.80%	7.20%	9.30%	8.80%	11.10%	11.10%
MA	65	Mass State Area 4 Exempt	20+	500 to 799	26.70%	20.00%	20.00%	19.40%	12.70%	10.70%	8.70%	8.10%	6.50%	6.90%	13.30%	7.40%
MA	65	Mass State Area 4 Exempt	20+	800+	26.70%	20.00%	10.00%	9.70%	18.20%	20.20%	21.20%	19.80%	18.70%	18.60%	17.80%	16.70%
MA	66	Mass State Area 5 Exempt	1	0 to 99	0.00%	0.00%	16.70%	0.00%	3.80%	5.30%	7.40%	9.10%	8.10%	1.70%	5.70%	2.80%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	66	Mass State Area 5 Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	1.90%	3.50%	2.90%	3.00%	3.20%	3.40%	1.90%	5.60%
MA	66	Mass State Area 5 Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.60%	1.70%	1.90%	2.80%
MA	66	Mass State Area 5 Exempt	2	0 to 99	0.00%	0.00%	0.00%	9.10%	0.00%	0.00%	1.50%	0.00%	0.00%	1.70%	1.90%	2.80%
MA	66	Mass State Area 5 Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	3	0 to 99	14.30 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	3	100 to 299	0.00%	0.00%	0.00%	0.00%	1.90%	1.80%	1.50%	1.50%	1.60%	1.70%	3.80%	5.60%
MA	66	Mass State Area 5 Exempt	3	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.60%	0.00%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	5.70%	8.80%	5.90%	7.60%	8.10%	3.40%	1.90%	8.30%
MA	66	Mass State Area 5 Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	9.40%	8.80%	7.40%	6.10%	6.50%	5.10%	7.50%	5.60%
MA	66	Mass State Area 5 Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	3.80%	5.30%	1.50%	1.50%	1.60%	1.70%	3.80%	0.00%
MA	66	Mass State Area 5 Exempt	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	1.50%	3.00%	1.60%	1.70%	3.80%	2.80%
MA	66	Mass State Area 5 Exempt	10 to 14	100 to 299	0.00%	0.00%	33.30 %	9.10%	9.40%	8.80%	8.80%	6.10%	6.50%	8.50%	7.50%	5.60%
MA	66	Mass State Area 5 Exempt	10 to 14	300 to 499	14.30 %	25.00 %	0.00%	18.20 %	7.50%	8.80%	5.90%	7.60%	9.70%	11.90 %	7.50%	8.30%
MA	66	Mass State Area 5 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	3.80%	3.50%	4.40%	6.10%	6.50%	6.80%	3.80%	2.80%
MA	66	Mass State Area 5 Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	5.70%	7.00%	10.30 %	9.10%	11.30 %	10.20 %	5.70%	8.30%
MA	66	Mass State Area 5 Exempt	15 to 19	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	66	Mass State Area 5 Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	9.10%	0.00%	1.80%	2.90%	3.00%	3.20%	3.40%	3.80%	0.00%
MA	66	Mass State Area 5 Exempt	15 to 19	300 to 499	14.30 %	0.00%	16.70 %	18.20 %	1.90%	0.00%	2.90%	3.00%	3.20%	5.10%	5.70%	2.80%
MA	66	Mass State Area 5 Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	3.80%	1.80%	2.90%	1.50%	0.00%	0.00%	3.80%	5.60%
MA	66	Mass State Area 5 Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	1.90%	3.50%	1.50%	1.50%	1.60%	3.40%	1.90%	2.80%
MA	66	Mass State Area 5 Exempt	20+	100 to 299	0.00%	0.00%	0.00%	9.10%	0.00%	1.80%	1.50%	3.00%	3.20%	3.40%	1.90%	8.30%
MA	66	Mass State Area 5 Exempt	20+	300 to 499	14.30 %	75.00 %	33.30 %	0.00%	3.80%	0.00%	1.50%	1.50%	3.20%	1.70%	3.80%	2.80%
MA	66	Mass State Area 5 Exempt	20+	500 to 799	28.60 %	0.00%	0.00%	18.20 %	13.20 %	5.30%	1.50%	3.00%	1.60%	1.70%	7.50%	5.60%
MA	66	Mass State Area 5 Exempt	20+	800+	14.30 %	0.00%	0.00%	9.10%	17.00 %	22.80 %	23.50 %	19.70 %	16.10 %	16.90 %	15.10 %	11.10 %
MA	67	Mass State Area 6 Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	7.50%	4.10%	6.80%	5.50%	3.40%	7.50%	6.80%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	67	Mass State Area 6 Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	2.50%	8.20%	6.80%	7.30%	6.90%	3.80%	2.30%	7.40%
MA	67	Mass State Area 6 Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	3.60%	3.40%	1.90%	2.30%	0.00%
MA	67	Mass State Area 6 Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	1.80%	1.70%	1.90%	2.30%	0.00%
MA	67	Mass State Area 6 Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	1.70%	1.80%	0.00%	1.90%	4.50%	3.70%
MA	67	Mass State Area 6 Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	3.40%	0.00%	0.00%	3.80%	2.30%	0.00%
MA	67	Mass State Area 6 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%
MA	67	Mass State Area 6 Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	1.70%	0.00%	0.00%	0.00%
MA	67	Mass State Area 6 Exempt	3	100 to 299	0.00%	0.00%	0.00%	0.00%	2.50%	4.10%	3.40%	7.30%	3.40%	5.70%	4.50%	0.00%
MA	67	Mass State Area 6 Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	0.00%	0.00%	3.40%	3.80%	0.00%	3.70%
MA	67	Mass State Area 6 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	5.10%	5.50%	8.60%	0.00%	0.00%	18.50 %
MA	67	Mass State Area 6 Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	7.50%	10.20 %	8.50%	9.10%	8.60%	7.50%	9.10%	3.70%
MA	67	Mass State Area 6 Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	5.00%	14.30 %	6.80%	7.30%	8.60%	5.70%	11.40 %	3.70%
MA	67	Mass State Area 6 Exempt	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	5.00%	4.10%	5.10%	3.60%	3.40%	3.80%	2.30%	3.70%
MA	67	Mass State Area 6 Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	2.50%	0.00%	0.00%	1.80%	0.00%	1.90%	2.30%	0.00%
MA	67	Mass State Area 6 Exempt	10 to 14	100 to 299	50.00 %	50.00 %	50.00 %	50.00 %	7.50%	6.10%	5.10%	5.50%	6.90%	5.70%	4.50%	11.10 %
MA	67	Mass State Area 6 Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	12.50 %	14.30 %	8.50%	7.30%	5.20%	9.40%	6.80%	7.40%
MA	67	Mass State Area 6 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	7.50%	10.20 %	11.90 %	12.70 %	12.10 %	13.20 %	18.20 %	7.40%
MA	67	Mass State Area 6 Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	5.10%	3.60%	6.90%	7.50%	2.30%	3.70%
MA	67	Mass State Area 6 Exempt	15 to 19	300 to 499	50.00 %	50.00 %	50.00 %	50.00 %	5.00%	2.00%	3.40%	3.60%	5.20%	5.70%	6.80%	3.70%
MA	67	Mass State Area 6 Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	2.50%	0.00%	1.70%	1.80%	0.00%	1.90%	0.00%	0.00%
MA	67	Mass State Area 6 Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	67	Mass State Area 6 Exempt	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	0.00%	0.00%	0.00%	0.00%	3.70%
MA	67	Mass State Area 6 Exempt	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	5.00%	2.00%	1.70%	0.00%	0.00%	0.00%	2.30%	3.70%
MA	67	Mass State Area 6 Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	1.70%	1.80%	1.70%	1.90%	2.30%	0.00%
MA	67	Mass State Area 6 Exempt	20+	800+	0.00%	0.00%	0.00%	0.00%	5.00%	6.10%	8.50%	9.10%	8.60%	5.70%	6.80%	11.10 %
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	13.00 %	7.80%	8.10%	7.00%	7.90%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	16.70 %	14.30 %	13.00 %	15.60 %	16.10 %	15.80 %	18.40 %	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	16.70 %	9.50%	13.00 %	9.40%	9.70%	8.80%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	12.50 %	9.50%	3.70%	4.70%	4.80%	5.30%	5.30%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	1	800+	0.00%	0.00%	0.00%	0.00%	4.20%	4.80%	3.70%	3.10%	3.20%	1.80%	0.00%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	0.00%	0.00%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%	0.00%	1.80%	0.00%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	0.00%	1.80%	2.60%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	2	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	1.80%	0.00%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	1.60%	0.00%	0.00%	0.00%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	3	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	3	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	0.00%	1.80%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.70%	1.60%	3.20%	1.80%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	3	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	0.00%	0.00%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	1.60%	1.80%	0.00%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	3.70%	1.60%	1.60%	1.80%	0.00%	18.80 %
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	1.60%	3.20%	1.80%	2.60%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	5.60%	3.10%	0.00%	1.80%	2.60%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	1.80%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	10 to 14	100 to 299	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	7.40%	7.80%	8.10%	8.80%	5.30%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	4.80%	5.30%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	1.60%	3.20%	1.80%	0.00%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	1.80%	5.30%	0.00%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	20+	100 to 299	100.00 %	100.00 %	100.00 %	100.00 %	4.20%	4.80%	3.70%	1.60%	1.60%	0.00%	0.00%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	3.10%	0.00%	1.80%	2.60%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	3.70%	3.10%	3.20%	5.30%	5.30%	6.30%
MA	68	Mass State Area 7 - LMA 1 (0 -3) Exempt	20+	800+	0.00%	0.00%	0.00%	0.00%	4.20%	7.10%	7.40%	9.40%	12.90 %	12.30 %	15.80 %	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	13.00 %	7.80%	8.10%	7.00%	7.90%	6.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	16.70 %	14.30 %	13.00 %	15.60 %	16.10 %	15.80 %	18.40 %	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	16.70 %	9.50%	13.00 %	9.40%	9.70%	8.80%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	12.50 %	9.50%	3.70%	4.70%	4.80%	5.30%	5.30%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	1	800+	0.00%	0.00%	0.00%	0.00%	4.20%	4.80%	3.70%	3.10%	3.20%	1.80%	0.00%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	0.00%	0.00%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%	0.00%	1.80%	0.00%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	0.00%	1.80%	2.60%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	2	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	1.80%	0.00%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	1.60%	0.00%	0.00%	0.00%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	3	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	3	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	0.00%	1.80%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.70%	1.60%	3.20%	1.80%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	3	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	0.00%	0.00%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	1.60%	1.80%	0.00%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	3.70%	1.60%	1.60%	1.80%	0.00%	18.80 %
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	1.60%	3.20%	1.80%	2.60%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	5.60%	3.10%	0.00%	1.80%	2.60%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	1.80%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	10 to 14	100 to 299	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	7.40%	7.80%	8.10%	8.80%	5.30%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	4.80%	5.30%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	1.60%	3.20%	1.80%	0.00%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	1.80%	5.30%	0.00%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	20+	100 to 299	100.00 %	100.00 %	100.00 %	100.00 %	4.20%	4.80%	3.70%	1.60%	1.60%	0.00%	0.00%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	3.10%	0.00%	1.80%	2.60%	6.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	3.70%	3.10%	3.20%	5.30%	5.30%	6.30%
MA	69	Mass State Area 7 - LMA 1/OC (0-3) Exempt	20+	800+	0.00%	0.00%	0.00%	0.00%	4.20%	7.10%	7.40%	9.40%	12.90 %	12.30 %	15.80 %	6.30%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	16.70 %	16.00 %	21.20 %	16.70 %	12.20 %	5.40%	9.10%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	4.90%	2.70%	9.10%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	12.00 %	6.10%	7.10%	4.90%	5.40%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	2.40%	2.40%	2.70%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	3.00%	2.40%	0.00%	2.70%	0.00%	4.50%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	8.00%	6.10%	4.80%	4.90%	0.00%	0.00%	4.50%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	3	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	2.40%	2.40%	2.70%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	2.40%	5.40%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	3.00%	2.40%	7.30%	5.40%	0.00%	4.50%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	3.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	10 to 14	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	10 to 14	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	4.00%	0.00%	0.00%	2.40%	0.00%	6.10%	4.50%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	7.10%	4.90%	5.40%	3.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	2.40%	2.70%	3.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	15 to 19	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	4.00%	3.00%	2.40%	7.30%	8.10%	6.10%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%	0.00%	6.10%	9.10%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	20+	0 to 99	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	20+	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	8.30%	8.00%	9.10%	2.40%	2.40%	0.00%	0.00%	4.50%
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	20+	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	8.30%	8.00%	3.00%	7.10%	2.40%	5.40%	9.10%	13.60 %
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	4.80%	4.90%	5.40%	6.10%	18.20 %
MA	70	Mass State Area 8 - LMA 1 (0-3) Exempt	20+	800+	12.50 %	12.50 %	12.50 %	12.50 %	16.70 %	16.00 %	18.20 %	26.20 %	29.30 %	35.10 %	36.40 %	31.80 %
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	16.70 %	16.00 %	21.20 %	16.70 %	12.20 %	5.40%	9.10%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	4.90%	2.70%	9.10%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	12.00 %	6.10%	7.10%	4.90%	5.40%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	2.40%	2.40%	2.70%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	3.00%	2.40%	0.00%	2.70%	0.00%	4.50%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	8.00%	6.10%	4.80%	4.90%	0.00%	0.00%	4.50%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	3	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	2.40%	2.40%	2.70%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	2.40%	5.40%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	3.00%	2.40%	7.30%	5.40%	0.00%	4.50%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	3.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	10 to 14	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	10 to 14	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	4.00%	0.00%	0.00%	2.40%	0.00%	6.10%	4.50%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	7.10%	4.90%	5.40%	3.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	2.40%	2.70%	3.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	15 to 19	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	4.00%	3.00%	2.40%	7.30%	8.10%	6.10%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%	0.00%	6.10%	9.10%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	20+	0 to 99	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	20+	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	8.30%	8.00%	9.10%	2.40%	2.40%	0.00%	0.00%	4.50%
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	20+	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	8.30%	8.00%	3.00%	7.10%	2.40%	5.40%	9.10%	13.60 %
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	4.80%	4.90%	5.40%	6.10%	18.20 %
MA	71	Mass State Area 8 - LMA 1/OC (0-3) Exempt	20+	800+	12.50 %	12.50 %	12.50 %	12.50 %	16.70 %	16.00 %	18.20 %	26.20 %	29.30 %	35.10 %	36.40 %	31.80 %
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	16.70 %	16.00 %	21.20 %	16.70 %	12.20 %	5.40%	9.10%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	4.90%	2.70%	9.10%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	12.00 %	6.10%	7.10%	4.90%	5.40%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	2.40%	2.40%	2.70%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	3.00%	2.40%	0.00%	2.70%	0.00%	4.50%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	2	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	8.00%	6.10%	4.80%	4.90%	0.00%	0.00%	4.50%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	3	100 to 299	12.50%	12.50%	12.50%	12.50%	0.00%	0.00%	0.00%	2.40%	2.40%	2.70%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	2.40%	5.40%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	3.00%	2.40%	7.30%	5.40%	0.00%	4.50%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	3.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	10 to 14	100 to 299	12.50%	12.50%	12.50%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	10 to 14	300 to 499	12.50%	12.50%	12.50%	12.50%	0.00%	4.00%	0.00%	0.00%	2.40%	0.00%	6.10%	4.50%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	7.10%	4.90%	5.40%	3.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	2.40%	2.70%	3.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	15 to 19	300 to 499	12.50%	12.50%	12.50%	12.50%	0.00%	4.00%	3.00%	2.40%	7.30%	8.10%	6.10%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%	0.00%	6.10%	9.10%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	20+	0 to 99	12.50%	12.50%	12.50%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	20+	100 to 299	12.50%	12.50%	12.50%	12.50%	8.30%	8.00%	9.10%	2.40%	2.40%	0.00%	0.00%	4.50%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	20+	300 to 499	12.50%	12.50%	12.50%	12.50%	8.30%	8.00%	3.00%	7.10%	2.40%	5.40%	9.10%	13.60%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	4.80%	4.90%	5.40%	6.10%	18.20%
MA	72	Mass State Area 8 - LMA OC (0-3) Exempt	20+	800+	12.50%	12.50%	12.50%	12.50%	16.70%	16.00%	18.20%	26.20%	29.30%	35.10%	36.40%	31.80%
MA	73	Mass State Area 9 Exempt	1	0 to 99	13.30%	13.30%	13.30%	13.30%	13.30%	14.30%	14.30%	15.90%	10.80%	9.70%	40.90%	50.00%
MA	73	Mass State Area 9 Exempt	1	100 to 299	46.70%	46.70%	46.70%	46.70%	46.70%	17.10%	19.00%	15.90%	13.50%	19.40%	27.30%	25.00%
MA	73	Mass State Area 9 Exempt	1	300 to 499	20.00%	20.00%	20.00%	20.00%	20.00%	25.70%	19.00%	18.20%	27.00%	25.80%	4.50%	0.00%
MA	73	Mass State Area 9 Exempt	1	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	8.60%	7.10%	9.10%	8.10%	6.50%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.70%	4.50%	0.00%
MA	73	Mass State Area 9 Exempt	2	500 to 799	6.70%	6.70%	6.70%	6.70%	6.70%	8.60%	9.50%	9.10%	8.10%	0.00%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	3.20%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	73	Mass State Area 9 Exempt	3	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.30%	2.70%	3.20%	4.50%	0.00%
MA	73	Mass State Area 9 Exempt	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	0.00%
MA	73	Mass State Area 9 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	5.70%	2.40%	4.50%	5.40%	3.20%	4.50%	0.00%
MA	73	Mass State Area 9 Exempt	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.90%	2.40%	2.30%	2.70%	3.20%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	10 to 14	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%	25.00 %
MA	73	Mass State Area 9 Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	5.70%	4.80%	4.50%	5.40%	3.20%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	3.20%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	2.30%	2.70%	3.20%	4.50%	0.00%
MA	73	Mass State Area 9 Exempt	20+	100 to 299	6.70%	6.70%	6.70%	6.70%	6.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	20+	300 to 499	6.70%	6.70%	6.70%	6.70%	6.70%	0.00%	0.00%	0.00%	2.70%	3.20%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	11.40 %	9.50%	11.40 %	2.70%	0.00%	0.00%	0.00%
MA	73	Mass State Area 9 Exempt	20+	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	4.50%	5.40%	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	1	0 to 99	20.00 %	0.00%	0.00%	10.00 %	7.70%	21.40 %	17.60 %	15.40 %	10.00 %	25.00 %	33.30 %	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	25.00 %	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.80 %	0.00%	0.00%	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	3	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	25.00 %
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	3	100 to 299	0.00%	25.00 %	0.00%	0.00%	7.70%	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	6 to 9	0 to 99	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	6 to 9	100 to 299	0.00%	25.00 %	0.00%	0.00%	15.40 %	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	10 to 14	100 to 299	20.00 %	0.00%	20.00 %	20.00 %	15.40 %	7.10%	5.90%	7.70%	0.00%	25.00 %	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	10 to 14	300 to 499	0.00%	25.00 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	15 to 19	100 to 299	20.00 %	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	10.00 %	15.40 %	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	20+	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	20+	100 to 299	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	17.60 %	15.40 %	10.00 %	0.00%	0.00%	25.00 %
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	20+	300 to 499	20.00 %	25.00 %	20.00 %	20.00 %	23.10 %	21.40 %	23.50 %	23.10 %	30.00 %	0.00%	0.00%	25.00 %

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	74	Mass State Area 10 - LMA 2 (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	20.00 %	15.40 %	21.40 %	23.50 %	23.10 %	10.00 %	25.00 %	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	1	0 to 99	20.00 %	0.00%	0.00%	10.00 %	7.70%	21.40 %	17.60 %	15.40 %	10.00 %	25.00 %	33.30 %	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	25.00 %	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.80 %	0.00%	0.00%	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	3	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	25.00 %
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	3	100 to 299	0.00%	25.00 %	0.00%	0.00%	7.70%	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	6 to 9	0 to 99	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	6 to 9	100 to 299	0.00%	25.00 %	0.00%	0.00%	15.40 %	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	10 to 14	100 to 299	20.00 %	0.00%	20.00 %	20.00 %	15.40 %	7.10%	5.90%	7.70%	0.00%	25.00 %	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	10 to 14	300 to 499	0.00%	25.00 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	15 to 19	100 to 299	20.00 %	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	10.00 %	15.40 %	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	20+	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	20+	100 to 299	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	17.60 %	15.40 %	10.00 %	0.00%	0.00%	25.00 %
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	20+	300 to 499	20.00 %	25.00 %	20.00 %	20.00 %	23.10 %	21.40 %	23.50 %	23.10 %	30.00 %	0.00%	0.00%	25.00 %
MA	75	Mass State Area 10 - LMA OC (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	20.00 %	15.40 %	21.40 %	23.50 %	23.10 %	10.00 %	25.00 %	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	1	0 to 99	20.00 %	0.00%	0.00%	10.00 %	7.70%	21.40 %	17.60 %	15.40 %	10.00 %	25.00 %	33.30 %	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	25.00 %	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.80 %	0.00%	0.00%	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	3	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	25.00 %
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	3	100 to 299	0.00%	25.00 %	0.00%	0.00%	7.70%	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	6 to 9	0 to 99	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	6 to 9	100 to 299	0.00%	25.00 %	0.00%	0.00%	15.40 %	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	10 to 14	100 to 299	20.00 %	0.00%	20.00 %	20.00 %	15.40 %	7.10%	5.90%	7.70%	0.00%	25.00 %	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	10 to 14	300 to 499	0.00%	25.00 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	15 to 19	100 to 299	20.00 %	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	10.00 %	15.40 %	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	20+	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	20+	100 to 299	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	17.60 %	15.40 %	10.00 %	0.00%	0.00%	25.00 %
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	20+	300 to 499	20.00 %	25.00 %	20.00 %	20.00 %	23.10 %	21.40 %	23.50 %	23.10 %	30.00 %	0.00%	0.00%	25.00 %
MA	76	Mass State Area 11 - LMA 2 (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	20.00 %	15.40 %	21.40 %	23.50 %	23.10 %	10.00 %	25.00 %	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	1	0 to 99	20.00 %	0.00%	0.00%	10.00 %	7.70%	21.40 %	17.60 %	15.40 %	10.00 %	25.00 %	33.30 %	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	25.00 %	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	2	0 to 99	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.80 %	0.00%	0.00%	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	3	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	25.00 %
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	3	100 to 299	0.00%	25.00 %	0.00%	0.00%	7.70%	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	6 to 9	0 to 99	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	6 to 9	100 to 299	0.00%	25.00 %	0.00%	0.00%	15.40 %	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	10 to 14	100 to 299	20.00 %	0.00%	20.00 %	20.00 %	15.40 %	7.10%	5.90%	7.70%	0.00%	25.00 %	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	10 to 14	300 to 499	0.00%	25.00 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	15 to 19	100 to 299	20.00 %	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	10.00 %	15.40 %	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	20+	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	20+	100 to 299	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	17.60 %	15.40 %	10.00 %	0.00%	0.00%	25.00 %
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	20+	300 to 499	20.00 %	25.00 %	20.00 %	20.00 %	23.10 %	21.40 %	23.50 %	23.10 %	30.00 %	0.00%	0.00%	25.00 %
MA	77	Mass State Area 11 - LMA OC (0-3) Exempt	20+	500 to 799	0.00%	0.00%	0.00%	20.00 %	15.40 %	21.40 %	23.50 %	23.10 %	10.00 %	25.00 %	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	1	0 to 99	20.00 %	0.00%	0.00%	10.00 %	7.70%	21.40 %	17.60 %	15.40 %	10.00 %	25.00 %	33.30 %	0.00%
MA	78	Mass State Area 12 Exempt	1	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00 %	25.00 %	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	2	0 to 99	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	2	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.80 %	0.00%	0.00%	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	3	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	25.00 %
MA	78	Mass State Area 12 Exempt	3	100 to 299	0.00%	25.00 %	0.00%	0.00%	7.70%	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	78	Mass State Area 12 Exempt	6 to 9	0 to 99	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00 %
MA	78	Mass State Area 12 Exempt	6 to 9	100 to 299	0.00%	25.00 %	0.00%	0.00%	15.40 %	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30 %	0.00%
MA	78	Mass State Area 12 Exempt	10 to 14	100 to 299	20.00 %	0.00%	20.00 %	20.00 %	15.40 %	7.10%	5.90%	7.70%	0.00%	25.00 %	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	10 to 14	300 to 499	0.00%	25.00 %	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	15 to 19	100 to 299	20.00 %	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	15 to 19	300 to 499	0.00%	0.00%	0.00%	10.00 %	15.40 %	7.10%	0.00%	7.70%	0.00%	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	20+	0 to 99	0.00%	0.00%	20.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	78	Mass State Area 12 Exempt	20+	100 to 299	0.00%	0.00%	0.00%	10.00 %	0.00%	0.00%	17.60 %	15.40 %	10.00 %	0.00%	0.00%	25.00 %
MA	78	Mass State Area 12 Exempt	20+	300 to 499	20.00 %	25.00 %	20.00 %	20.00 %	23.10 %	21.40 %	23.50 %	23.10 %	30.00 %	0.00%	0.00%	25.00 %
MA	78	Mass State Area 12 Exempt	20+	500 to 799	0.00%	0.00%	0.00%	20.00 %	15.40 %	21.40 %	23.50 %	23.10 %	10.00 %	25.00 %	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	1	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	11.10 %	21.10 %	18.80 %	16.70 %	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	1	100 to 299	0.00%	0.00%	0.00%	10.00 %	20.00 %	22.20 %	10.50 %	12.50 %	0.00%	20.00 %	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	1	300 to 499	0.00%	0.00%	0.00%	10.00 %	10.00 %	5.60%	5.30%	6.30%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	2	0 to 99	0.00%	0.00%	12.50 %	10.00 %	0.00%	0.00%	0.00%	0.00%	16.70 %	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	2	100 to 299	0.00%	20.00 %	0.00%	0.00%	20.00 %	11.10 %	21.10 %	12.50 %	16.70 %	0.00%	0.00%	16.70 %
MA	79	Mass State Area 13 Exempt	2	300 to 499	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	3	0 to 99	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00 %	33.30 %	16.70 %
MA	79	Mass State Area 13 Exempt	3	100 to 299	25.00 %	0.00%	0.00%	0.00%	10.00 %	5.60%	0.00%	6.30%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	6 to 9	0 to 99	0.00%	40.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.70 %
MA	79	Mass State Area 13 Exempt	6 to 9	100 to 299	25.00 %	0.00%	0.00%	10.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	10.00 %	10.00 %	5.60%	5.30%	6.30%	0.00%	20.00 %	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	10 to 14	100 to 299	0.00%	0.00%	12.50 %	10.00 %	10.00 %	5.60%	5.30%	6.30%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	10 to 14	300 to 499	0.00%	20.00 %	25.00 %	10.00 %	10.00 %	5.60%	5.30%	6.30%	16.70 %	20.00 %	66.70 %	33.30 %
MA	79	Mass State Area 13 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	16.70 %	20.00 %	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	15 to 19	100 to 299	25.00 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	20+	0 to 99	0.00%	0.00%	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	20+	100 to 299	0.00%	0.00%	0.00%	10.00 %	0.00%	5.60%	5.30%	6.30%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	20+	300 to 499	25.00 %	20.00 %	12.50 %	10.00 %	10.00 %	11.10 %	10.50 %	12.50 %	16.70 %	0.00%	0.00%	16.70 %

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	79	Mass State Area 13 Exempt	20+	500 to 799	0.00%	0.00%	0.00%	10.00%	0.00%	5.60%	10.50%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	79	Mass State Area 13 Exempt	20+	800+	0.00%	0.00%	0.00%	0.00%	0.00%	5.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	1	0 to 99	20.00%	25.00%	25.00%	25.00%	23.10%	15.80%	15.80%	14.30%	12.50%	0.00%	0.00%	16.70%
MA	80	Mass State Area 14 Exempt	1	100 to 299	0.00%	0.00%	0.00%	16.70%	23.10%	31.60%	31.60%	28.60%	25.00%	25.00%	0.00%	16.70%
MA	80	Mass State Area 14 Exempt	1	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30%	16.70%
MA	80	Mass State Area 14 Exempt	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	2	100 to 299	20.00%	50.00%	25.00%	0.00%	7.70%	5.30%	0.00%	7.10%	12.50%	25.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	0.00%	12.50%	0.00%	33.30%	16.70%
MA	80	Mass State Area 14 Exempt	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	5.30%	7.10%	12.50%	25.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	3	100 to 299	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	3	500 to 799	0.00%	0.00%	0.00%	0.00%	7.70%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	6 to 9	100 to 299	0.00%	0.00%	0.00%	8.30%	0.00%	5.30%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	6 to 9	300 to 499	0.00%	0.00%	0.00%	16.70%	15.40%	10.50%	10.50%	7.10%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	10 to 14	100 to 299	0.00%	0.00%	25.00%	8.30%	7.70%	5.30%	5.30%	14.30%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.30%	16.70%
MA	80	Mass State Area 14 Exempt	10 to 14	500 to 799	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	15 to 19	100 to 299	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.70%
MA	80	Mass State Area 14 Exempt	15 to 19	300 to 499	20.00%	25.00%	25.00%	0.00%	7.70%	5.30%	5.30%	14.30%	12.50%	25.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	20+	300 to 499	0.00%	0.00%	0.00%	8.30%	0.00%	5.30%	0.00%	7.10%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	20+	500 to 799	0.00%	0.00%	0.00%	8.30%	0.00%	5.30%	5.30%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	80	Mass State Area 14 Exempt	20+	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50%	0.00%	0.00%	0.00%
MA	81	Mass State Area 2	2	0 to 99	4.70%	0.00%	0.00%	2.30%	3.80%	8.60%	11.70%	12.40%	11.40%	11.00%	5.60%	4.90%
MA	81	Mass State Area 2	2	100 to 299	2.30%	0.00%	0.00%	9.30%	10.30%	6.90%	7.60%	6.50%	7.40%	7.40%	4.60%	4.90%
MA	81	Mass State Area 2	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.40%	1.30%	0.70%	0.70%	0.90%	0.00%
MA	81	Mass State Area 2	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.70%	0.70%	0.00%	0.00%
MA	81	Mass State Area 2	2	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	81	Mass State Area 2	3	0 to 99	0.00%	4.00%	4.50%	2.30%	2.60%	1.70%	2.80%	3.30%	3.40%	2.90%	1.90%	0.00%
MA	81	Mass State Area 2	3	100 to 299	4.70%	4.00%	0.00%	2.30%	1.30%	3.40%	3.40%	3.90%	5.40%	2.90%	4.60%	7.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	81	Mass State Area 2	3	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%	2.80%	2.00%	2.00%	2.20%	1.90%	1.20%
MA	81	Mass State Area 2	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.00%
MA	81	Mass State Area 2	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.40%	2.00%	2.00%	2.20%	0.90%	1.20%
MA	81	Mass State Area 2	6 to 9	100 to 299	7.00%	4.00%	13.60 %	4.70%	3.80%	4.30%	3.40%	2.00%	2.00%	2.20%	1.90%	4.90%
MA	81	Mass State Area 2	6 to 9	300 to 499	2.30%	4.00%	4.50%	7.00%	2.60%	1.70%	1.40%	0.70%	0.00%	0.00%	0.90%	2.40%
MA	81	Mass State Area 2	6 to 9	500 to 799	9.30%	4.00%	4.50%	2.30%	5.10%	0.90%	1.40%	1.30%	1.30%	1.50%	2.80%	1.20%
MA	81	Mass State Area 2	10 to 14	0 to 99	4.70%	4.00%	0.00%	2.30%	0.00%	0.00%	0.00%	0.70%	0.00%	0.00%	0.90%	0.00%
MA	81	Mass State Area 2	10 to 14	100 to 299	14.00 %	24.00 %	18.20 %	14.00 %	7.70%	3.40%	2.80%	2.00%	2.70%	2.90%	3.70%	3.70%
MA	81	Mass State Area 2	10 to 14	300 to 499	2.30%	0.00%	0.00%	2.30%	5.10%	7.80%	9.00%	9.20%	11.40 %	8.80%	9.30%	4.90%
MA	81	Mass State Area 2	10 to 14	500 to 799	0.00%	4.00%	4.50%	2.30%	3.80%	7.80%	8.30%	9.20%	8.70%	10.30 %	8.30%	8.50%
MA	81	Mass State Area 2	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	2.60%	6.90%	9.00%	6.50%	6.70%	5.90%	6.50%	6.10%
MA	81	Mass State Area 2	15 to 19	100 to 299	0.00%	0.00%	0.00%	2.30%	0.00%	2.60%	2.80%	2.60%	2.70%	2.20%	0.90%	0.00%
MA	81	Mass State Area 2	15 to 19	300 to 499	2.30%	4.00%	4.50%	2.30%	1.30%	1.70%	0.70%	2.00%	0.70%	0.70%	1.90%	4.90%
MA	81	Mass State Area 2	15 to 19	500 to 799	4.70%	8.00%	9.10%	2.30%	2.60%	2.60%	1.40%	0.70%	1.30%	2.20%	4.60%	3.70%
MA	81	Mass State Area 2	15 to 19	800+	2.30%	8.00%	0.00%	0.00%	1.30%	0.90%	1.40%	2.00%	0.00%	0.00%	0.00%	0.00%
MA	81	Mass State Area 2	20+	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.00%	0.00%	0.70%	0.70%	0.90%	1.20%
MA	81	Mass State Area 2	20+	100 to 299	9.30%	8.00%	9.10%	9.30%	12.80 %	5.20%	4.10%	3.90%	2.70%	3.70%	5.60%	8.50%
MA	81	Mass State Area 2	20+	300 to 499	7.00%	4.00%	0.00%	9.30%	10.30 %	4.30%	4.10%	3.30%	3.40%	5.10%	6.50%	7.30%
MA	81	Mass State Area 2	20+	500 to 799	7.00%	8.00%	13.60 %	7.00%	9.00%	9.50%	4.10%	4.60%	4.70%	5.90%	7.40%	9.80%
MA	81	Mass State Area 2	20+	800+	16.30 %	8.00%	13.60 %	16.30 %	14.10 %	14.70 %	14.50 %	17.60 %	17.40 %	17.60 %	17.60 %	13.40 %
MA	82	Mass State Area 3	2	0 to 99	0.00%	0.00%	0.00%	0.00%	3.90%	5.90%	7.00%	4.70%	5.10%	2.20%	1.10%	2.00%
MA	82	Mass State Area 3	2	100 to 299	0.00%	0.00%	0.00%	0.00%	3.90%	9.40%	7.00%	5.60%	5.10%	6.50%	4.60%	4.00%
MA	82	Mass State Area 3	2	300 to 499	0.00%	0.00%	0.00%	0.00%	7.80%	3.50%	4.00%	4.70%	4.10%	3.20%	1.10%	2.00%
MA	82	Mass State Area 3	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.00%	1.90%	1.00%	1.10%	1.10%	0.00%
MA	82	Mass State Area 3	2	800+	5.90%	0.00%	0.00%	0.00%	0.00%	1.20%	1.00%	0.90%	1.00%	1.10%	1.10%	2.00%
MA	82	Mass State Area 3	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	0.00%	0.00%
MA	82	Mass State Area 3	3	100 to 299	0.00%	0.00%	0.00%	0.00%	7.80%	2.40%	3.00%	2.80%	1.00%	3.20%	4.60%	6.00%
MA	82	Mass State Area 3	3	300 to 499	0.00%	0.00%	0.00%	0.00%	2.00%	2.40%	2.00%	1.90%	2.00%	1.10%	1.10%	0.00%
MA	82	Mass State Area 3	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%	1.10%	1.10%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	82	Mass State Area 3	6 to 9	0 to 99	5.90%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.90%	1.00%	1.10%	0.00%	0.00%
MA	82	Mass State Area 3	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	1.00%	0.90%	1.00%	0.00%	0.00%	4.00%
MA	82	Mass State Area 3	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	2.00%	2.40%	2.00%	2.80%	3.10%	2.20%	4.60%	0.00%
MA	82	Mass State Area 3	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	2.00%	1.90%	2.00%	2.20%	2.30%	0.00%
MA	82	Mass State Area 3	10 to 14	0 to 99	0.00%	0.00%	0.00%	4.80%	0.00%	1.20%	1.00%	1.90%	0.00%	1.10%	1.10%	0.00%
MA	82	Mass State Area 3	10 to 14	100 to 299	0.00%	0.00%	0.00%	4.80%	5.90%	3.50%	4.00%	3.70%	5.10%	4.30%	3.40%	4.00%
MA	82	Mass State Area 3	10 to 14	300 to 499	11.80%	0.00%	0.00%	4.80%	2.00%	3.50%	4.00%	5.60%	6.10%	7.50%	5.70%	2.00%
MA	82	Mass State Area 3	10 to 14	500 to 799	0.00%	0.00%	0.00%	4.80%	5.90%	4.70%	9.00%	6.50%	10.20%	9.70%	11.50%	16.00%
MA	82	Mass State Area 3	10 to 14	800+	0.00%	0.00%	0.00%	4.80%	2.00%	3.50%	3.00%	2.80%	3.10%	3.20%	2.30%	2.00%
MA	82	Mass State Area 3	15 to 19	100 to 299	5.90%	14.30%	14.30%	4.80%	2.00%	4.70%	3.00%	2.80%	3.10%	2.20%	1.10%	2.00%
MA	82	Mass State Area 3	15 to 19	300 to 499	0.00%	0.00%	0.00%	4.80%	2.00%	4.70%	4.00%	2.80%	4.10%	4.30%	3.40%	2.00%
MA	82	Mass State Area 3	15 to 19	500 to 799	11.80%	14.30%	14.30%	9.50%	3.90%	4.70%	2.00%	4.70%	4.10%	3.20%	2.30%	6.00%
MA	82	Mass State Area 3	15 to 19	800+	0.00%	0.00%	0.00%	4.80%	3.90%	4.70%	4.00%	3.70%	3.10%	2.20%	2.30%	4.00%
MA	82	Mass State Area 3	20+	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	1.10%	1.10%	2.00%
MA	82	Mass State Area 3	20+	100 to 299	23.50%	28.60%	42.90%	23.80%	13.70%	8.20%	7.00%	7.50%	6.10%	9.70%	10.30%	10.00%
MA	82	Mass State Area 3	20+	300 to 499	5.90%	14.30%	0.00%	9.50%	13.70%	5.90%	8.00%	7.50%	7.10%	6.50%	8.00%	8.00%
MA	82	Mass State Area 3	20+	500 to 799	11.80%	0.00%	14.30%	0.00%	0.00%	4.70%	3.00%	1.90%	1.00%	1.10%	3.40%	2.00%
MA	82	Mass State Area 3	20+	800+	17.60%	28.60%	14.30%	19.00%	17.60%	12.90%	15.00%	18.70%	17.30%	19.40%	20.70%	20.00%
MA	83	Mass State Area 4	2	0 to 99	0.00%	0.00%	10.00%	0.00%	1.80%	6.00%	8.70%	10.80%	8.40%	7.80%	4.40%	1.90%
MA	83	Mass State Area 4	2	100 to 299	0.00%	0.00%	0.00%	6.50%	5.50%	6.00%	4.80%	3.60%	2.80%	2.00%	1.10%	1.90%
MA	83	Mass State Area 4	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.90%	0.90%	1.00%	0.00%	0.00%
MA	83	Mass State Area 4	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	0.00%	0.00%	0.90%	0.00%	0.00%	0.00%
MA	83	Mass State Area 4	3	100 to 299	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	1.00%	1.80%	0.00%	0.00%	1.10%	1.90%
MA	83	Mass State Area 4	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.00%	0.90%	0.90%	2.00%	1.10%	0.00%
MA	83	Mass State Area 4	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	3.60%	2.40%	4.80%	1.80%	1.90%	1.00%	1.10%	0.00%
MA	83	Mass State Area 4	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	0.00%	3.70%
MA	83	Mass State Area 4	6 to 9	500 to 799	6.70%	20.00%	10.00%	3.20%	1.80%	1.20%	1.00%	0.90%	0.90%	1.00%	1.10%	1.90%
MA	83	Mass State Area 4	10 to 14	0 to 99	6.70%	0.00%	0.00%	3.20%	0.00%	1.20%	1.90%	1.80%	2.80%	2.00%	3.30%	3.70%
MA	83	Mass State Area 4	10 to 14	100 to 299	6.70%	0.00%	10.00%	16.10%	5.50%	6.00%	3.80%	6.30%	7.50%	7.80%	4.40%	9.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	83	Mass State Area 4	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	5.50%	6.00%	2.90%	1.80%	1.90%	1.00%	1.10%	5.60%
MA	83	Mass State Area 4	10 to 14	500 to 799	0.00%	0.00%	0.00%	3.20%	7.30%	7.10%	6.70%	9.00%	9.30%	8.80%	7.80%	3.70%
MA	83	Mass State Area 4	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	1.90%	0.90%	0.90%	1.00%	1.10%	0.00%
MA	83	Mass State Area 4	15 to 19	100 to 299	6.70%	20.00%	10.00%	6.50%	1.80%	1.20%	1.90%	1.80%	1.90%	1.00%	2.20%	3.70%
MA	83	Mass State Area 4	15 to 19	300 to 499	0.00%	0.00%	10.00%	0.00%	7.30%	6.00%	6.70%	5.40%	6.50%	7.80%	7.80%	3.70%
MA	83	Mass State Area 4	15 to 19	500 to 799	0.00%	0.00%	0.00%	3.20%	7.30%	3.60%	6.70%	5.40%	7.50%	8.80%	8.90%	9.30%
MA	83	Mass State Area 4	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.80%	3.60%	3.70%	3.90%	4.40%	3.70%
MA	83	Mass State Area 4	20+	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%	1.10%	1.90%
MA	83	Mass State Area 4	20+	100 to 299	13.30%	0.00%	0.00%	12.90%	7.30%	3.60%	5.80%	8.10%	5.60%	6.90%	5.60%	9.30%
MA	83	Mass State Area 4	20+	300 to 499	6.70%	20.00%	10.00%	16.10%	14.50%	11.90%	5.80%	7.20%	9.30%	8.80%	11.10%	11.10%
MA	83	Mass State Area 4	20+	500 to 799	26.70%	20.00%	20.00%	19.40%	12.70%	10.70%	8.70%	8.10%	6.50%	6.90%	13.30%	7.40%
MA	83	Mass State Area 4	20+	800+	26.70%	20.00%	10.00%	9.70%	18.20%	20.20%	21.20%	19.80%	18.70%	18.60%	17.80%	16.70%
MA	84	Mass State Area 5	2	0 to 99	0.00%	0.00%	16.70%	9.10%	3.80%	5.30%	8.80%	9.10%	8.10%	3.40%	7.50%	5.60%
MA	84	Mass State Area 5	2	100 to 299	0.00%	0.00%	0.00%	0.00%	3.80%	3.50%	2.90%	3.00%	3.20%	3.40%	1.90%	5.60%
MA	84	Mass State Area 5	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.50%	1.60%	1.70%	1.90%	2.80%
MA	84	Mass State Area 5	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	0.00%	0.00%
MA	84	Mass State Area 5	3	0 to 99	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	84	Mass State Area 5	3	100 to 299	0.00%	0.00%	0.00%	0.00%	1.90%	1.80%	1.50%	1.50%	1.60%	1.70%	3.80%	5.60%
MA	84	Mass State Area 5	3	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.60%	0.00%	0.00%	0.00%
MA	84	Mass State Area 5	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	3.40%	0.00%	0.00%
MA	84	Mass State Area 5	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	5.70%	8.80%	5.90%	7.60%	8.10%	3.40%	1.90%	8.30%
MA	84	Mass State Area 5	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	9.40%	8.80%	7.40%	6.10%	6.50%	5.10%	7.50%	5.60%
MA	84	Mass State Area 5	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	3.80%	5.30%	1.50%	1.50%	1.60%	1.70%	3.80%	0.00%
MA	84	Mass State Area 5	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	84	Mass State Area 5	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	1.50%	3.00%	1.60%	1.70%	3.80%	2.80%
MA	84	Mass State Area 5	10 to 14	100 to 299	0.00%	0.00%	33.30%	9.10%	9.40%	8.80%	8.80%	6.10%	6.50%	8.50%	7.50%	5.60%
MA	84	Mass State Area 5	10 to 14	300 to 499	14.30%	25.00%	0.00%	18.20%	7.50%	8.80%	5.90%	7.60%	9.70%	11.90%	7.50%	8.30%
MA	84	Mass State Area 5	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	3.80%	3.50%	4.40%	6.10%	6.50%	6.80%	3.80%	2.80%
MA	84	Mass State Area 5	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	5.70%	7.00%	10.30%	9.10%	11.30%	10.20%	5.70%	8.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	84	Mass State Area 5	15 to 19	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	84	Mass State Area 5	15 to 19	100 to 299	0.00%	0.00%	0.00%	9.10%	0.00%	1.80%	2.90%	3.00%	3.20%	3.40%	3.80%	0.00%
MA	84	Mass State Area 5	15 to 19	300 to 499	14.30 %	0.00%	16.70 %	18.20 %	1.90%	0.00%	2.90%	3.00%	3.20%	5.10%	5.70%	2.80%
MA	84	Mass State Area 5	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	3.80%	1.80%	2.90%	1.50%	0.00%	0.00%	3.80%	5.60%
MA	84	Mass State Area 5	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	1.90%	3.50%	1.50%	1.50%	1.60%	3.40%	1.90%	2.80%
MA	84	Mass State Area 5	20+	100 to 299	0.00%	0.00%	0.00%	9.10%	0.00%	1.80%	1.50%	3.00%	3.20%	3.40%	1.90%	8.30%
MA	84	Mass State Area 5	20+	300 to 499	14.30 %	75.00 %	33.30 %	0.00%	3.80%	0.00%	1.50%	1.50%	3.20%	1.70%	3.80%	2.80%
MA	84	Mass State Area 5	20+	500 to 799	28.60 %	0.00%	0.00%	18.20 %	13.20 %	5.30%	1.50%	3.00%	1.60%	1.70%	7.50%	5.60%
MA	84	Mass State Area 5	20+	800+	14.30 %	0.00%	0.00%	9.10%	17.00 %	22.80 %	23.50 %	19.70 %	16.10 %	16.90 %	15.10 %	11.10 %
MA	85	Mass State Area 6	2	0 to 99	0.00%	0.00%	0.00%	0.00%	10.00 %	6.10%	8.50%	7.30%	3.40%	9.40%	11.40 %	3.70%
MA	85	Mass State Area 6	2	100 to 299	0.00%	0.00%	0.00%	0.00%	5.00%	10.20 %	10.20 %	7.30%	6.90%	7.50%	4.50%	7.40%
MA	85	Mass State Area 6	2	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	3.60%	3.40%	1.90%	2.30%	3.70%
MA	85	Mass State Area 6	2	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	1.80%	1.70%	1.90%	2.30%	0.00%
MA	85	Mass State Area 6	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	1.70%	0.00%	0.00%	0.00%
MA	85	Mass State Area 6	3	100 to 299	0.00%	0.00%	0.00%	0.00%	2.50%	4.10%	3.40%	7.30%	3.40%	5.70%	4.50%	0.00%
MA	85	Mass State Area 6	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	0.00%	0.00%	3.40%	3.80%	0.00%	3.70%
MA	85	Mass State Area 6	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	5.10%	5.50%	8.60%	0.00%	0.00%	18.50 %
MA	85	Mass State Area 6	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	7.50%	10.20 %	8.50%	9.10%	8.60%	7.50%	9.10%	3.70%
MA	85	Mass State Area 6	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	5.00%	14.30 %	6.80%	7.30%	8.60%	5.70%	11.40 %	3.70%
MA	85	Mass State Area 6	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	5.00%	4.10%	5.10%	3.60%	3.40%	3.80%	2.30%	3.70%
MA	85	Mass State Area 6	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	2.50%	0.00%	0.00%	1.80%	0.00%	1.90%	2.30%	0.00%
MA	85	Mass State Area 6	10 to 14	100 to 299	50.00 %	50.00 %	50.00 %	50.00 %	7.50%	6.10%	5.10%	5.50%	6.90%	5.70%	4.50%	11.10 %
MA	85	Mass State Area 6	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	12.50 %	14.30 %	8.50%	7.30%	5.20%	9.40%	6.80%	7.40%
MA	85	Mass State Area 6	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	7.50%	10.20 %	11.90 %	12.70 %	12.10 %	13.20 %	18.20 %	7.40%
MA	85	Mass State Area 6	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	5.10%	3.60%	6.90%	7.50%	2.30%	3.70%
MA	85	Mass State Area 6	15 to 19	300 to 499	50.00 %	50.00 %	50.00 %	50.00 %	5.00%	2.00%	3.40%	3.60%	5.20%	5.70%	6.80%	3.70%
MA	85	Mass State Area 6	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	2.50%	0.00%	1.70%	1.80%	0.00%	1.90%	0.00%	0.00%
MA	85	Mass State Area 6	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	2.50%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	85	Mass State Area 6	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.70%	0.00%	0.00%	0.00%	0.00%	3.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	85	Mass State Area 6	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	5.00%	2.00%	1.70%	0.00%	0.00%	0.00%	2.30%	3.70%
MA	85	Mass State Area 6	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	10.00 %	0.00%	1.70%	1.80%	1.70%	1.90%	2.30%	0.00%
MA	85	Mass State Area 6	20+	800+	0.00%	0.00%	0.00%	0.00%	5.00%	6.10%	8.50%	9.10%	8.60%	5.70%	6.80%	11.10 %
MA	86	Mass State Area 7 - LMA 1 (0 -3)	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	9.50%	14.80 %	9.40%	9.70%	7.00%	7.90%	12.50 %
MA	86	Mass State Area 7 - LMA 1 (0 -3)	2	100 to 299	0.00%	0.00%	0.00%	0.00%	16.70 %	14.30 %	13.00 %	18.80 %	16.10 %	17.50 %	18.40 %	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	2	300 to 499	0.00%	0.00%	0.00%	0.00%	16.70 %	9.50%	13.00 %	9.40%	9.70%	8.80%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	2	500 to 799	0.00%	0.00%	0.00%	0.00%	12.50 %	11.90 %	5.60%	6.30%	4.80%	7.00%	7.90%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	2	800+	0.00%	0.00%	0.00%	0.00%	4.20%	7.10%	5.60%	4.70%	4.80%	3.50%	0.00%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	1.60%	0.00%	0.00%	0.00%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	3	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	3	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	0.00%	1.80%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.70%	1.60%	3.20%	1.80%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	3	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	0.00%	0.00%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	1.60%	1.80%	0.00%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	3.70%	1.60%	1.60%	1.80%	0.00%	18.80 %
MA	86	Mass State Area 7 - LMA 1 (0 -3)	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	1.60%	3.20%	1.80%	2.60%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	5.60%	3.10%	0.00%	1.80%	2.60%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	1.80%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	10 to 14	100 to 299	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	7.40%	7.80%	8.10%	8.80%	5.30%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	4.80%	5.30%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	1.60%	3.20%	1.80%	0.00%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	1.80%	5.30%	0.00%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	20+	100 to 299	100.00 %	100.00 %	100.00 %	100.00 %	4.20%	4.80%	3.70%	1.60%	1.60%	0.00%	0.00%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	3.10%	0.00%	1.80%	2.60%	6.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	86	Mass State Area 7 - LMA 1 (0 -3)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	3.70%	3.10%	3.20%	5.30%	5.30%	6.30%
MA	86	Mass State Area 7 - LMA 1 (0 -3)	20+	800+	0.00%	0.00%	0.00%	0.00%	4.20%	7.10%	7.40%	9.40%	12.90 %	12.30 %	15.80 %	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	2	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	9.50%	14.80 %	9.40%	9.70%	7.00%	7.90%	12.50 %
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	2	100 to 299	0.00%	0.00%	0.00%	0.00%	16.70 %	14.30 %	13.00 %	18.80 %	16.10 %	17.50 %	18.40 %	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	2	300 to 499	0.00%	0.00%	0.00%	0.00%	16.70 %	9.50%	13.00 %	9.40%	9.70%	8.80%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	2	500 to 799	0.00%	0.00%	0.00%	0.00%	12.50 %	11.90 %	5.60%	6.30%	4.80%	7.00%	7.90%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	2	800+	0.00%	0.00%	0.00%	0.00%	4.20%	7.10%	5.60%	4.70%	4.80%	3.50%	0.00%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	3	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	1.60%	0.00%	0.00%	0.00%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	3	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	3	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	0.00%	1.80%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	3	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	3.70%	1.60%	3.20%	1.80%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	3	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	0.00%	0.00%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	1.60%	1.60%	1.80%	0.00%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.80%	3.70%	1.60%	1.60%	1.80%	0.00%	18.80 %
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	1.60%	3.20%	1.80%	2.60%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	5.60%	3.10%	0.00%	1.80%	2.60%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	6 to 9	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%	1.60%	1.80%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	10 to 14	100 to 299	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	0.00%	3.10%	3.20%	3.50%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	7.40%	7.80%	8.10%	8.80%	5.30%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	4.80%	5.30%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	0.00%	0.00%	2.60%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	0.00%	0.00%	0.00%	0.00%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	1.60%	3.20%	1.80%	0.00%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.90%	1.60%	1.60%	1.80%	5.30%	0.00%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	20+	100 to 299	100.00 %	100.00 %	100.00 %	100.00 %	4.20%	4.80%	3.70%	1.60%	1.60%	0.00%	0.00%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	4.20%	0.00%	1.90%	3.10%	0.00%	1.80%	2.60%	6.30%
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	7.10%	3.70%	3.10%	3.20%	5.30%	5.30%	6.30%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	87	Mass State Area 7 - LMA 1/OC (0-3)	20+	800+	0.00%	0.00%	0.00%	0.00%	4.20%	7.10%	7.40%	9.40%	12.90 %	12.30 %	15.80 %	6.30%
MA	88	Mass State Area 8 - LMA 1 (0-3)	2	0 to 99	0.00%	0.00%	0.00%	0.00%	16.70 %	16.00 %	21.20 %	16.70 %	14.60 %	5.40%	9.10%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	2	100 to 299	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	9.10%	7.10%	4.90%	5.40%	9.10%	4.50%
MA	88	Mass State Area 8 - LMA 1 (0-3)	2	300 to 499	0.00%	0.00%	0.00%	0.00%	8.30%	12.00 %	6.10%	7.10%	4.90%	8.10%	0.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	2	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	12.00 %	12.10 %	7.10%	7.30%	2.70%	0.00%	4.50%
MA	88	Mass State Area 8 - LMA 1 (0-3)	3	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	2.40%	2.40%	2.70%	0.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	6 to 9	0 to 99	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	0.00%	2.40%	5.40%	0.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	6 to 9	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	3.00%	2.40%	7.30%	5.40%	0.00%	4.50%
MA	88	Mass State Area 8 - LMA 1 (0-3)	6 to 9	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.50%
MA	88	Mass State Area 8 - LMA 1 (0-3)	6 to 9	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.70%	0.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	0.00%	0.00%	3.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	10 to 14	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	10 to 14	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	4.00%	0.00%	0.00%	2.40%	0.00%	6.10%	4.50%
MA	88	Mass State Area 8 - LMA 1 (0-3)	10 to 14	800+	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	7.10%	4.90%	5.40%	3.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	6.10%	4.80%	2.40%	2.70%	3.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	15 to 19	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	4.00%	3.00%	2.40%	7.30%	8.10%	6.10%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%	0.00%	6.10%	9.10%
MA	88	Mass State Area 8 - LMA 1 (0-3)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	20+	0 to 99	12.50 %	12.50 %	12.50 %	12.50 %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	88	Mass State Area 8 - LMA 1 (0-3)	20+	100 to 299	12.50 %	12.50 %	12.50 %	12.50 %	8.30%	8.00%	9.10%	2.40%	2.40%	0.00%	0.00%	4.50%
MA	88	Mass State Area 8 - LMA 1 (0-3)	20+	300 to 499	12.50 %	12.50 %	12.50 %	12.50 %	8.30%	8.00%	3.00%	7.10%	2.40%	5.40%	9.10%	13.60 %
MA	88	Mass State Area 8 - LMA 1 (0-3)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	8.30%	4.00%	3.00%	4.80%	4.90%	5.40%	6.10%	18.20 %
MA	88	Mass State Area 8 - LMA 1 (0-3)	20+	800+	12.50 %	12.50 %	12.50 %	12.50 %	16.70 %	16.00 %	18.20 %	26.20 %	29.30 %	35.10 %	36.40 %	31.80 %
MA	89	Mass Nearshore Area 17 - LMA 2 (3-12)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	50.00 %	33.30 %	33.30 %	33.30 %	33.30 %	25.00 %	33.30 %	0.00%
MA	89	Mass Nearshore Area 17 - LMA 2 (3-12)	20+	800+	100.00 %	100.00 %	100.00 %	100.00 %	50.00 %	66.70 %	66.70 %	66.70 %	66.70 %	75.00 %	66.70 %	100.00 %
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	10 to 14	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	6.90%	12.50 %	5.00%	0.00%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	10 to 14	100 to 299	0.00%	0.00%	0.00%	16.70 %	21.40 %	4.30%	7.40%	9.70%	10.30 %	4.20%	0.00%	5.90%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	8.70%	7.40%	6.50%	3.40%	4.20%	0.00%	0.00%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	4.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	7.10%	8.70%	3.70%	6.50%	6.90%	4.20%	10.00%	0.00%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	4.30%	7.40%	6.50%	3.40%	8.30%	10.00%	11.80%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	15 to 19	500 to 799	9.10%	11.10%	10.00%	8.30%	7.10%	4.30%	7.40%	9.70%	13.80%	4.20%	5.00%	5.90%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	20+	0 to 99	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	20+	100 to 299	0.00%	0.00%	0.00%	8.30%	0.00%	4.30%	11.10%	3.20%	6.90%	4.20%	5.00%	17.60%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	20+	300 to 499	9.10%	11.10%	10.00%	0.00%	14.30%	13.00%	7.40%	12.90%	10.30%	4.20%	0.00%	0.00%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	20+	500 to 799	27.30%	33.30%	20.00%	33.30%	28.60%	13.00%	22.20%	16.10%	17.20%	29.20%	30.00%	17.60%
MA	90	Mass Nearshore Area 16 - LMA 2 (3-12)	20+	800+	54.50%	44.40%	50.00%	33.30%	21.40%	34.80%	25.90%	25.80%	20.70%	25.00%	35.00%	41.20%
MA	91	Mass Nearshore Area 17 - LMA OC (3-12)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	50.00%	33.30%	33.30%	33.30%	33.30%	25.00%	33.30%	0.00%
MA	91	Mass Nearshore Area 17 - LMA OC (3-12)	20+	800+	100.00%	100.00%	100.00%	100.00%	50.00%	66.70%	66.70%	66.70%	66.70%	75.00%	66.70%	100.00%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	10 to 14	100 to 299	50.00%	0.00%	0.00%	0.00%	14.30%	0.00%	0.00%	0.00%	0.00%	5.90%	0.00%	9.10%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	10 to 14	100 to 299	50.00%	0.00%	0.00%	0.00%	14.30%	0.00%	0.00%	0.00%	0.00%	5.90%	0.00%	9.10%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60%	9.10%	7.10%	7.70%	0.00%	0.00%	0.00%	9.10%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60%	9.10%	7.10%	7.70%	0.00%	0.00%	0.00%	9.10%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	7.10%	5.90%	7.70%	0.00%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	7.10%	5.90%	7.70%	0.00%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30%	7.70%	7.10%	5.90%	0.00%	0.00%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30%	7.70%	7.10%	5.90%	0.00%	0.00%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	7.70%	14.30%	11.80%	15.40%	18.20%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	7.70%	14.30%	11.80%	15.40%	18.20%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	18.20%	14.30%	15.40%	14.30%	5.90%	7.70%	0.00%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	18.20%	14.30%	15.40%	14.30%	5.90%	7.70%	0.00%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60%	0.00%	0.00%	7.70%	0.00%	5.90%	0.00%	18.20%
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60%	0.00%	0.00%	7.70%	0.00%	5.90%	0.00%	18.20%
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	20+	500 to 799	25.00%	0.00%	0.00%	0.00%	28.60%	45.50%	35.70%	30.80%	28.60%	29.40%	38.50%	18.20%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	20+	500 to 799	25.00 %	0.00%	0.00%	0.00%	28.60 %	45.50 %	35.70 %	30.80 %	28.60 %	29.40 %	38.50 %	18.20 %
MA	920	Mass Nearshore Area 18 - LMA 1 (3-6)	20+	800+	25.00 %	100.00 %	100.00 %	100.00 %	0.00%	18.20 %	21.40 %	23.10 %	28.60 %	29.40 %	23.10 %	18.20 %
MA	921	Mass Nearshore Area 18 - LMA 1 (6-12)	20+	800+	25.00 %	100.00 %	100.00 %	100.00 %	0.00%	18.20 %	21.40 %	23.10 %	28.60 %	29.40 %	23.10 %	18.20 %
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	10 to 14	100 to 299	50.00 %	0.00%	0.00%	0.00%	14.30 %	0.00%	0.00%	0.00%	0.00%	5.90%	0.00%	9.10%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60 %	9.10%	7.10%	7.70%	0.00%	0.00%	0.00%	9.10%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	7.10%	5.90%	7.70%	0.00%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	7.70%	7.10%	5.90%	0.00%	0.00%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	7.70%	14.30 %	11.80 %	15.40 %	18.20 %
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	18.20 %	14.30 %	15.40 %	14.30 %	5.90%	7.70%	0.00%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60 %	0.00%	0.00%	7.70%	0.00%	5.90%	0.00%	18.20 %
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	20+	500 to 799	25.00 %	0.00%	0.00%	0.00%	28.60 %	45.50 %	35.70 %	30.80 %	28.60 %	29.40 %	38.50 %	18.20 %
MA	93	Mass Nearshore Area 18 - LMA 2 (3-12)	20+	800+	25.00 %	100.00 %	100.00 %	100.00 %	0.00%	18.20 %	21.40 %	23.10 %	28.60 %	29.40 %	23.10 %	18.20 %
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	10 to 14	100 to 299	50.00 %	0.00%	0.00%	0.00%	14.30 %	0.00%	0.00%	0.00%	0.00%	5.90%	0.00%	9.10%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60 %	9.10%	7.10%	7.70%	0.00%	0.00%	0.00%	9.10%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	7.10%	5.90%	7.70%	0.00%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	7.70%	7.10%	5.90%	0.00%	0.00%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	7.70%	14.30 %	11.80 %	15.40 %	18.20 %
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	18.20 %	14.30 %	15.40 %	14.30 %	5.90%	7.70%	0.00%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60 %	0.00%	0.00%	7.70%	0.00%	5.90%	0.00%	18.20 %
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	20+	500 to 799	25.00 %	0.00%	0.00%	0.00%	28.60 %	45.50 %	35.70 %	30.80 %	28.60 %	29.40 %	38.50 %	18.20 %
MA	94	Mass Nearshore Area 18 - LMA 3 (3-12)	20+	800+	25.00 %	100.00 %	100.00 %	100.00 %	0.00%	18.20 %	21.40 %	23.10 %	28.60 %	29.40 %	23.10 %	18.20 %
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	10 to 14	100 to 299	50.00 %	0.00%	0.00%	0.00%	14.30 %	0.00%	0.00%	0.00%	0.00%	5.90%	0.00%	9.10%
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60 %	9.10%	7.10%	7.70%	0.00%	0.00%	0.00%	9.10%
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.10%	0.00%	7.10%	5.90%	7.70%	0.00%
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	15 to 19	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.30 %	7.70%	7.10%	5.90%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%	0.00%	7.70%	14.30 %	11.80 %	15.40 %	18.20 %
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	18.20 %	14.30 %	15.40 %	14.30 %	5.90%	7.70%	0.00%
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60 %	0.00%	0.00%	7.70%	0.00%	5.90%	0.00%	18.20 %
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	20+	500 to 799	25.00 %	0.00%	0.00%	0.00%	28.60 %	45.50 %	35.70 %	30.80 %	28.60 %	29.40 %	38.50 %	18.20 %
MA	95	Mass Nearshore Area 18 - LMA OC (3-12)	20+	800+	25.00 %	100.00 %	100.00 %	100.00 %	0.00%	18.20 %	21.40 %	23.10 %	28.60 %	29.40 %	23.10 %	18.20 %
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	10 to 14	0 to 99	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	2.50%	2.10%	1.00%	1.90%	1.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	10 to 14	0 to 99	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	2.50%	2.10%	1.00%	1.90%	1.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	10 to 14	100 to 299	2.90%	7.70%	5.90%	4.50%	7.10%	4.70%	4.80%	3.80%	3.10%	5.90%	4.70%	2.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	10 to 14	100 to 299	2.90%	7.70%	5.90%	4.50%	7.10%	4.70%	4.80%	3.80%	3.10%	5.90%	4.70%	2.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	10 to 14	300 to 499	5.90%	0.00%	0.00%	0.00%	5.70%	7.80%	11.30 %	8.80%	10.30 %	6.90%	5.70%	5.10%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	10 to 14	300 to 499	5.90%	0.00%	0.00%	0.00%	5.70%	7.80%	11.30 %	8.80%	10.30 %	6.90%	5.70%	5.10%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	10 to 14	500 to 799	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%	1.60%	1.30%	0.00%	0.00%	0.90%	0.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%	1.60%	1.30%	0.00%	0.00%	0.90%	0.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	10 to 14	800+	1.50%	5.10%	5.90%	2.30%	1.40%	0.00%	1.60%	0.00%	1.00%	1.00%	0.90%	1.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	10 to 14	800+	1.50%	5.10%	5.90%	2.30%	1.40%	0.00%	1.60%	0.00%	1.00%	1.00%	0.90%	1.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	15 to 19	100 to 299	1.50%	2.60%	2.90%	2.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	15 to 19	100 to 299	1.50%	2.60%	2.90%	2.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	15 to 19	300 to 499	2.90%	7.70%	8.80%	6.80%	0.00%	4.70%	4.80%	2.50%	4.10%	4.00%	2.80%	2.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	15 to 19	300 to 499	2.90%	7.70%	8.80%	6.80%	0.00%	4.70%	4.80%	2.50%	4.10%	4.00%	2.80%	2.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	15 to 19	500 to 799	2.90%	5.10%	2.90%	2.30%	2.90%	1.60%	0.00%	1.30%	1.00%	1.00%	1.90%	3.10%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	15 to 19	500 to 799	2.90%	5.10%	2.90%	2.30%	2.90%	1.60%	0.00%	1.30%	1.00%	1.00%	1.90%	3.10%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	15 to 19	800+	5.90%	0.00%	2.90%	4.50%	1.40%	0.00%	0.00%	2.50%	1.00%	3.00%	3.80%	4.10%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	15 to 19	800+	5.90%	0.00%	2.90%	4.50%	1.40%	0.00%	0.00%	2.50%	1.00%	3.00%	3.80%	4.10%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	20+	0 to 99	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	20+	0 to 99	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	20+	100 to 299	5.90%	5.10%	2.90%	4.50%	8.60%	4.70%	3.20%	3.80%	1.00%	3.00%	1.90%	2.00%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	20+	100 to 299	5.90%	5.10%	2.90%	4.50%	8.60%	4.70%	3.20%	3.80%	1.00%	3.00%	1.90%	2.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	20+	300 to 499	8.80%	5.10%	5.90%	11.40%	8.60%	10.90%	3.20%	7.50%	6.20%	6.90%	5.70%	9.20%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	20+	300 to 499	8.80%	5.10%	5.90%	11.40%	8.60%	10.90%	3.20%	7.50%	6.20%	6.90%	5.70%	9.20%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	20+	500 to 799	7.40%	10.30%	14.70%	9.10%	14.30%	7.80%	11.30%	3.80%	8.20%	7.90%	6.60%	9.20%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	20+	500 to 799	7.40%	10.30%	14.70%	9.10%	14.30%	7.80%	11.30%	3.80%	8.20%	7.90%	6.60%	9.20%
MA	960	Mass Nearshore Area 19 - LMA 1 (3-6)	20+	800+	51.50%	51.30%	47.10%	50.00%	50.00%	57.80%	54.80%	62.50%	61.90%	59.40%	62.30%	60.20%
MA	961	Mass Nearshore Area 19 - LMA 1 (6-12)	20+	800+	51.50%	51.30%	47.10%	50.00%	50.00%	57.80%	54.80%	62.50%	61.90%	59.40%	62.30%	60.20%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	10 to 14	0 to 99	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	2.50%	2.10%	1.00%	1.90%	1.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	10 to 14	100 to 299	2.90%	7.70%	5.90%	4.50%	7.10%	4.70%	4.80%	3.80%	3.10%	5.90%	4.70%	2.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	10 to 14	300 to 499	5.90%	0.00%	0.00%	0.00%	5.70%	7.80%	11.30%	8.80%	10.30%	6.90%	5.70%	5.10%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	2.30%	0.00%	0.00%	1.60%	1.30%	0.00%	0.00%	0.90%	0.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	10 to 14	800+	1.50%	5.10%	5.90%	2.30%	1.40%	0.00%	1.60%	0.00%	1.00%	1.00%	0.90%	1.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	15 to 19	100 to 299	1.50%	2.60%	2.90%	2.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	1.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	15 to 19	300 to 499	2.90%	7.70%	8.80%	6.80%	0.00%	4.70%	4.80%	2.50%	4.10%	4.00%	2.80%	2.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	15 to 19	500 to 799	2.90%	5.10%	2.90%	2.30%	2.90%	1.60%	0.00%	1.30%	1.00%	1.00%	1.90%	3.10%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	15 to 19	800+	5.90%	0.00%	2.90%	4.50%	1.40%	0.00%	0.00%	2.50%	1.00%	3.00%	3.80%	4.10%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	20+	0 to 99	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	20+	100 to 299	5.90%	5.10%	2.90%	4.50%	8.60%	4.70%	3.20%	3.80%	1.00%	3.00%	1.90%	2.00%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	20+	300 to 499	8.80%	5.10%	5.90%	11.40%	8.60%	10.90%	3.20%	7.50%	6.20%	6.90%	5.70%	9.20%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	20+	500 to 799	7.40%	10.30%	14.70%	9.10%	14.30%	7.80%	11.30%	3.80%	8.20%	7.90%	6.60%	9.20%
MA	97	Mass Nearshore Area 19 - LMA OC (3-12)	20+	800+	51.50%	51.30%	47.10%	50.00%	50.00%	57.80%	54.80%	62.50%	61.90%	59.40%	62.30%	60.20%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	10 to 14	100 to 299	8.30%	10.00%	0.00%	11.10%	14.30%	10.00%	0.00%	0.00%	0.00%	0.00%	11.10%	14.30%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	10 to 14	100 to 299	8.30%	10.00%	0.00%	11.10%	14.30%	10.00%	0.00%	0.00%	0.00%	0.00%	11.10%	14.30%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	25.00%	16.70%	20.00%	12.50%	0.00%	0.00%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	10 to 14	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	25.00%	16.70%	20.00%	12.50%	0.00%	0.00%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	10 to 14	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	10 to 14	800+	0.00%	0.00%	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	10 to 14	800+	0.00%	0.00%	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	20+	100 to 299	8.30%	10.00%	14.30%	11.10%	14.30%	10.00%	25.00%	16.70%	0.00%	0.00%	0.00%	0.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	20+	100 to 299	8.30%	10.00%	14.30%	11.10%	14.30%	10.00%	25.00%	16.70%	0.00%	0.00%	0.00%	0.00%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.70%	20.00%	25.00%	0.00%	0.00%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.70%	20.00%	25.00%	0.00%	0.00%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	20+	500 to 799	16.70%	10.00%	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	22.20%	0.00%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	20+	500 to 799	16.70%	10.00%	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	22.20%	0.00%
MA	980	Mass Nearshore Area 20 LMA 1 (3-6)	20+	800+	66.70%	70.00%	57.10%	77.80%	71.40%	60.00%	50.00%	50.00%	60.00%	62.50%	66.70%	85.70%
MA	981	Mass Nearshore Area 20 LMA 1 (6-12)	20+	800+	66.70%	70.00%	57.10%	77.80%	71.40%	60.00%	50.00%	50.00%	60.00%	62.50%	66.70%	85.70%
MA	99	Mass Nearshore Area 17 - LMA 2 (12+)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	50.00%	33.30%	33.30%	33.30%	33.30%	25.00%	33.30%	0.00%
MA	99	Mass Nearshore Area 17 - LMA 2 (12+)	20+	800+	100.00%	100.00%	100.00%	100.00%	50.00%	66.70%	66.70%	66.70%	66.70%	75.00%	66.70%	100.00%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	15 to 19	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	6.90%	12.50%	5.00%	0.00%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	15 to 19	100 to 299	0.00%	0.00%	0.00%	16.70%	28.60%	13.00%	11.10%	16.10%	17.20%	8.30%	10.00%	5.90%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	13.00%	14.80%	12.90%	6.90%	12.50%	10.00%	11.80%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	15 to 19	500 to 799	9.10%	11.10%	10.00%	8.30%	7.10%	8.70%	7.40%	9.70%	13.80%	4.20%	5.00%	5.90%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	20+	0 to 99	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	20+	100 to 299	0.00%	0.00%	0.00%	8.30%	0.00%	4.30%	11.10%	3.20%	6.90%	4.20%	5.00%	17.60%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	20+	300 to 499	9.10%	11.10%	10.00%	0.00%	14.30%	13.00%	7.40%	12.90%	10.30%	4.20%	0.00%	0.00%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	20+	500 to 799	27.30%	33.30%	20.00%	33.30%	28.60%	13.00%	22.20%	16.10%	17.20%	29.20%	30.00%	17.60%
MA	100	Mass Nearshore Area 16 - LMA 2 (12+)	20+	800+	54.50%	44.40%	50.00%	33.30%	21.40%	34.80%	25.90%	25.80%	20.70%	25.00%	35.00%	41.20%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	15 to 19	0 to 99	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	6.90%	12.50%	5.00%	0.00%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	15 to 19	100 to 299	0.00%	0.00%	0.00%	16.70%	28.60%	13.00%	11.10%	16.10%	17.20%	8.30%	10.00%	5.90%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	13.00%	14.80%	12.90%	6.90%	12.50%	10.00%	11.80%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	15 to 19	500 to 799	9.10%	11.10%	10.00%	8.30%	7.10%	8.70%	7.40%	9.70%	13.80%	4.20%	5.00%	5.90%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	20+	0 to 99	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	20+	100 to 299	0.00%	0.00%	0.00%	8.30%	0.00%	4.30%	11.10%	3.20%	6.90%	4.20%	5.00%	17.60%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	20+	300 to 499	9.10%	11.10%	10.00%	0.00%	14.30%	13.00%	7.40%	12.90%	10.30%	4.20%	0.00%	0.00%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	20+	500 to 799	27.30%	33.30%	20.00%	33.30%	28.60%	13.00%	22.20%	16.10%	17.20%	29.20%	30.00%	17.60%
MA	101	Mass Nearshore Area 16 - LMA 2/3 (12+)	20+	800+	54.50%	44.40%	50.00%	33.30%	21.40%	34.80%	25.90%	25.80%	20.70%	25.00%	35.00%	41.20%
MA	102	Mass Nearshore Area 17 - LMA 2/3 Overlap (12+)	20+	500 to 799	0.00%	0.00%	0.00%	0.00%	50.00%	33.30%	33.30%	33.30%	33.30%	25.00%	33.30%	0.00%
MA	102	Mass Nearshore Area 17 - LMA 2/3 Overlap (12+)	20+	800+	100.00%	100.00%	100.00%	100.00%	50.00%	66.70%	66.70%	66.70%	66.70%	75.00%	66.70%	100.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MA	103	Mass Nearshore Area 18 - LMA 1 (12+)	20+	100 to 299	50.00%	0.00%	0.00%	0.00%	14.30%	0.00%	14.30%	7.70%	7.10%	11.80%	7.70%	9.10%
MA	103	Mass Nearshore Area 18 - LMA 1 (12+)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	57.10%	9.10%	7.10%	15.40%	0.00%	5.90%	0.00%	36.40%
MA	103	Mass Nearshore Area 18 - LMA 1 (12+)	20+	500 to 799	25.00%	0.00%	0.00%	0.00%	28.60%	54.50%	42.90%	38.50%	50.00%	47.10%	61.50%	36.40%
MA	103	Mass Nearshore Area 18 - LMA 1 (12+)	20+	800+	25.00%	100.00%	100.00%	100.00%	0.00%	36.40%	35.70%	38.50%	42.90%	35.30%	30.80%	18.20%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	15 to 19	100 to 299	50.00%	0.00%	0.00%	0.00%	14.30%	0.00%	14.30%	7.70%	7.10%	11.80%	0.00%	9.10%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	15 to 19	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60%	9.10%	7.10%	7.70%	0.00%	0.00%	0.00%	18.20%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	15 to 19	500 to 799	0.00%	0.00%	0.00%	0.00%	0.00%	9.10%	7.10%	7.70%	21.40%	17.60%	23.10%	18.20%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	15 to 19	800+	0.00%	0.00%	0.00%	0.00%	0.00%	18.20%	14.30%	15.40%	14.30%	5.90%	7.70%	0.00%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	20+	100 to 299	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.70%	0.00%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	28.60%	0.00%	0.00%	7.70%	0.00%	5.90%	0.00%	18.20%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	20+	500 to 799	25.00%	0.00%	0.00%	0.00%	28.60%	45.50%	35.70%	30.80%	28.60%	29.40%	38.50%	18.20%
MA	104	Mass Nearshore Area 18 - LMA 2 (12+)	20+	800+	25.00%	100.00%	100.00%	100.00%	0.00%	18.20%	21.40%	23.10%	28.60%	29.40%	23.10%	18.20%
MA	105	Mass Nearshore Area 18 - LMA 2/3 (12+)	20+	100 to 299	50.00%	0.00%	0.00%	0.00%	14.30%	0.00%	14.30%	7.70%	7.10%	11.80%	7.70%	9.10%
MA	105	Mass Nearshore Area 18 - LMA 2/3 (12+)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	57.10%	9.10%	7.10%	15.40%	0.00%	5.90%	0.00%	36.40%
MA	105	Mass Nearshore Area 18 - LMA 2/3 (12+)	20+	500 to 799	25.00%	0.00%	0.00%	0.00%	28.60%	54.50%	42.90%	38.50%	50.00%	47.10%	61.50%	36.40%
MA	105	Mass Nearshore Area 18 - LMA 2/3 (12+)	20+	800+	25.00%	100.00%	100.00%	100.00%	0.00%	36.40%	35.70%	38.50%	42.90%	35.30%	30.80%	18.20%
MA	106	Mass Nearshore Area 18 - LMA OC (12+)	20+	100 to 299	50.00%	0.00%	0.00%	0.00%	14.30%	0.00%	14.30%	7.70%	7.10%	11.80%	7.70%	9.10%
MA	106	Mass Nearshore Area 18 - LMA OC (12+)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	57.10%	9.10%	7.10%	15.40%	0.00%	5.90%	0.00%	36.40%
MA	106	Mass Nearshore Area 18 - LMA OC (12+)	20+	500 to 799	25.00%	0.00%	0.00%	0.00%	28.60%	54.50%	42.90%	38.50%	50.00%	47.10%	61.50%	36.40%
MA	106	Mass Nearshore Area 18 - LMA OC (12+)	20+	800+	25.00%	100.00%	100.00%	100.00%	0.00%	36.40%	35.70%	38.50%	42.90%	35.30%	30.80%	18.20%
MA	107	Mass Nearshore Area 19 - LMA 1 (12+)	20+	0 to 99	2.90%	0.00%	0.00%	0.00%	0.00%	0.00%	3.20%	2.50%	2.10%	1.00%	1.90%	1.00%
MA	107	Mass Nearshore Area 19 - LMA 1 (12+)	20+	100 to 299	10.30%	15.40%	11.80%	11.40%	15.70%	9.40%	8.10%	7.50%	4.10%	8.90%	7.50%	5.10%
MA	107	Mass Nearshore Area 19 - LMA 1 (12+)	20+	300 to 499	17.60%	12.80%	14.70%	18.20%	14.30%	23.40%	19.40%	18.80%	20.60%	17.80%	14.20%	16.30%
MA	107	Mass Nearshore Area 19 - LMA 1 (12+)	20+	500 to 799	10.30%	15.40%	17.60%	13.60%	17.10%	9.40%	12.90%	6.30%	9.30%	8.90%	9.40%	12.20%
MA	107	Mass Nearshore Area 19 - LMA 1 (12+)	20+	800+	58.80%	56.40%	55.90%	56.80%	52.90%	57.80%	56.50%	65.00%	63.90%	63.40%	67.00%	65.30%
MA	108	Mass Nearshore Area 20 LMA 1 (12+)	20+	100 to 299	16.70%	20.00%	14.30%	22.20%	28.60%	20.00%	25.00%	16.70%	0.00%	0.00%	11.10%	14.30%
MA	108	Mass Nearshore Area 20 LMA 1 (12+)	20+	300 to 499	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	25.00%	33.30%	40.00%	37.50%	0.00%	0.00%
MA	108	Mass Nearshore Area 20 LMA 1 (12+)	20+	500 to 799	16.70%	10.00%	14.30%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	22.20%	0.00%
MA	108	Mass Nearshore Area 20 LMA 1 (12+)	20+	800+	66.70%	70.00%	71.40%	77.80%	71.40%	60.00%	50.00%	50.00%	60.00%	62.50%	66.70%	85.70%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RI	109	RI 538 / 539 Bays Exempt	1	1 to 100	5.60%	9.10%	6.70%	7.10%	11.80%	23.00%	28.10%	25.70%	12.00%	5.40%	6.30%	3.60%
RI	109	RI 538 / 539 Bays Exempt	5	1 to 100	0.00%	0.00%	6.70%	3.60%	7.80%	12.20%	10.10%	8.10%	10.00%	5.40%	3.10%	3.60%
RI	109	RI 538 / 539 Bays Exempt	5	101 to 500	0.00%	0.00%	0.00%	0.00%	2.00%	1.40%	1.10%	1.40%	2.00%	0.00%	0.00%	0.00%
RI	109	RI 538 / 539 Bays Exempt	10	1 to 100	0.00%	0.00%	0.00%	3.60%	5.90%	6.80%	6.70%	6.80%	4.00%	0.00%	3.10%	0.00%
RI	109	RI 538 / 539 Bays Exempt	10	101 to 500	5.60%	9.10%	13.30%	7.10%	3.90%	4.10%	5.60%	4.10%	4.00%	5.40%	3.10%	3.60%
RI	109	RI 538 / 539 Bays Exempt	15	1 to 100	16.70%	9.10%	6.70%	10.70%	3.90%	2.70%	5.60%	5.40%	6.00%	10.80%	15.60%	17.90%
RI	109	RI 538 / 539 Bays Exempt	15	101 to 500	27.80%	9.10%	40.00%	28.60%	31.40%	21.60%	18.00%	18.90%	22.00%	24.30%	28.10%	35.70%
RI	109	RI 538 / 539 Bays Exempt	15	501 to 800	44.40%	63.60%	26.70%	35.70%	31.40%	28.40%	24.70%	29.70%	40.00%	48.60%	40.60%	35.70%
RI	109	RI 538 / 539 Bays Exempt	15	801+	0.00%	0.00%	0.00%	3.60%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RI	110	RI 538 / 539 Atlantic Exempt	1	1 to 100	5.60%	9.10%	6.70%	7.10%	11.80%	23.00%	28.10%	25.70%	12.00%	5.40%	6.30%	3.60%
RI	110	RI 538 / 539 Atlantic Exempt	5	1 to 100	0.00%	0.00%	6.70%	3.60%	7.80%	12.20%	10.10%	8.10%	10.00%	5.40%	3.10%	3.60%
RI	110	RI 538 / 539 Atlantic Exempt	5	101 to 500	0.00%	0.00%	0.00%	0.00%	2.00%	1.40%	1.10%	1.40%	2.00%	0.00%	0.00%	0.00%
RI	110	RI 538 / 539 Atlantic Exempt	10	1 to 100	0.00%	0.00%	0.00%	3.60%	5.90%	6.80%	6.70%	6.80%	4.00%	0.00%	3.10%	0.00%
RI	110	RI 538 / 539 Atlantic Exempt	10	101 to 500	5.60%	9.10%	13.30%	7.10%	3.90%	4.10%	5.60%	4.10%	4.00%	5.40%	3.10%	3.60%
RI	110	RI 538 / 539 Atlantic Exempt	15	1 to 100	16.70%	9.10%	6.70%	10.70%	3.90%	2.70%	5.60%	5.40%	6.00%	10.80%	15.60%	17.90%
RI	110	RI 538 / 539 Atlantic Exempt	15	101 to 500	27.80%	9.10%	40.00%	28.60%	31.40%	21.60%	18.00%	18.90%	22.00%	24.30%	28.10%	35.70%
RI	110	RI 538 / 539 Atlantic Exempt	15	501 to 800	44.40%	63.60%	26.70%	35.70%	31.40%	28.40%	24.70%	29.70%	40.00%	48.60%	40.60%	35.70%
RI	110	RI 538 / 539 Atlantic Exempt	15	801+	0.00%	0.00%	0.00%	3.60%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RI	111	RI 611 Exempt (Northeast)	1	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	40.00%	42.90%	33.30%	20.00%	20.00%	20.00%	20.00%
RI	111	RI 611 Exempt (Northeast)	5	1 to 100	100.00%	100.00%	100.00%	100.00%	50.00%	20.00%	14.30%	16.70%	20.00%	20.00%	20.00%	20.00%
RI	111	RI 611 Exempt (Northeast)	10	1 to 100	0.00%	0.00%	0.00%	0.00%	50.00%	20.00%	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%
RI	111	RI 611 Exempt (Northeast)	10	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.70%	20.00%	20.00%	20.00%	20.00%
RI	111	RI 611 Exempt (Northeast)	15	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	20.00%	20.00%	20.00%
RI	111	RI 611 Exempt (Northeast)	15	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	28.60%	33.30%	20.00%	20.00%	20.00%	20.00%
RI	112	RI 611 Exempt (Mid-Atlantic)	1	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	40.00%	42.90%	33.30%	20.00%	20.00%	20.00%	20.00%
RI	112	RI 611 Exempt (Mid-Atlantic)	5	1 to 100	100.00%	100.00%	100.00%	100.00%	50.00%	20.00%	14.30%	16.70%	20.00%	20.00%	20.00%	20.00%
RI	112	RI 611 Exempt (Mid-Atlantic)	10	1 to 100	0.00%	0.00%	0.00%	0.00%	50.00%	20.00%	14.30%	0.00%	0.00%	0.00%	0.00%	0.00%
RI	112	RI 611 Exempt (Mid-Atlantic)	10	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.70%	20.00%	20.00%	20.00%	20.00%
RI	112	RI 611 Exempt (Mid-Atlantic)	15	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	20.00%	20.00%	20.00%

State	Region ID	Region_Name	Traps per Trawl	Traps Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RI	112	RI 611 Exempt (Mid-Atlantic)	15	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	28.60%	33.30%	20.00%	20.00%	20.00%	20.00%
RI	113	RI 539 Nearshore - LMA 2 (3-12)	10	1 to 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.20%	4.50%	5.00%	0.00%	7.10%	0.00%
RI	113	RI 539 Nearshore - LMA 2 (3-12)	15	1 to 100	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	4.20%	0.00%	0.00%	11.10%	14.30%	8.30%
RI	113	RI 539 Nearshore - LMA 2 (3-12)	10	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.20%	4.50%	5.00%	5.60%	0.00%	0.00%
RI	113	RI 539 Nearshore - LMA 2 (3-12)	15	101 to 500	50.00%	20.00%	83.30%	41.70%	44.40%	31.60%	29.20%	27.30%	30.00%	27.80%	28.60%	41.70%
RI	113	RI 539 Nearshore - LMA 2 (3-12)	15	501 to 800	50.00%	80.00%	16.70%	41.70%	50.00%	68.40%	58.30%	63.60%	60.00%	55.60%	50.00%	50.00%
RI	113	RI 539 Nearshore - LMA 2 (3-12)	15	801+	0.00%	0.00%	0.00%	8.30%	5.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RI	114	RI 539 Nearshore - LMA 2 (12+)	15	1 to 100	0.00%	0.00%	0.00%	8.30%	0.00%	0.00%	8.30%	4.50%	5.00%	11.10%	21.40%	8.30%
RI	114	RI 539 Nearshore - LMA 2 (12+)	15	101 to 500	50.00%	20.00%	83.30%	41.70%	44.40%	31.60%	33.30%	31.80%	35.00%	33.30%	28.60%	41.70%
RI	114	RI 539 Nearshore - LMA 2 (12+)	15	501 to 800	50.00%	80.00%	16.70%	41.70%	50.00%	68.40%	58.30%	63.60%	60.00%	55.60%	50.00%	50.00%
RI	114	RI 539 Nearshore - LMA 2 (12+)	15	801+	0.00%	0.00%	0.00%	8.30%	5.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RI	115	RI 613 Nearshore LMA 2/3 (12+)	20	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%
RI	115	RI 613 Nearshore LMA 2/3 (12+)	20	801+	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	50.00%	50.00%	100.00%
RI	116	RI 613 LMA 4 (12+)	15	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%
RI	116	RI 613 LMA 4 (12+)	15	801+	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	50.00%	50.00%	100.00%
RI	117	RI Area 613 LMA 2/3 Overlap Mid-Atlantic	15	101 to 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%
RI	117	RI Area 613 LMA 2/3 Overlap Mid-Atlantic	15	801+	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	50.00%	50.00%	100.00%

Appendix 5.2: Co-Occurrence Maps

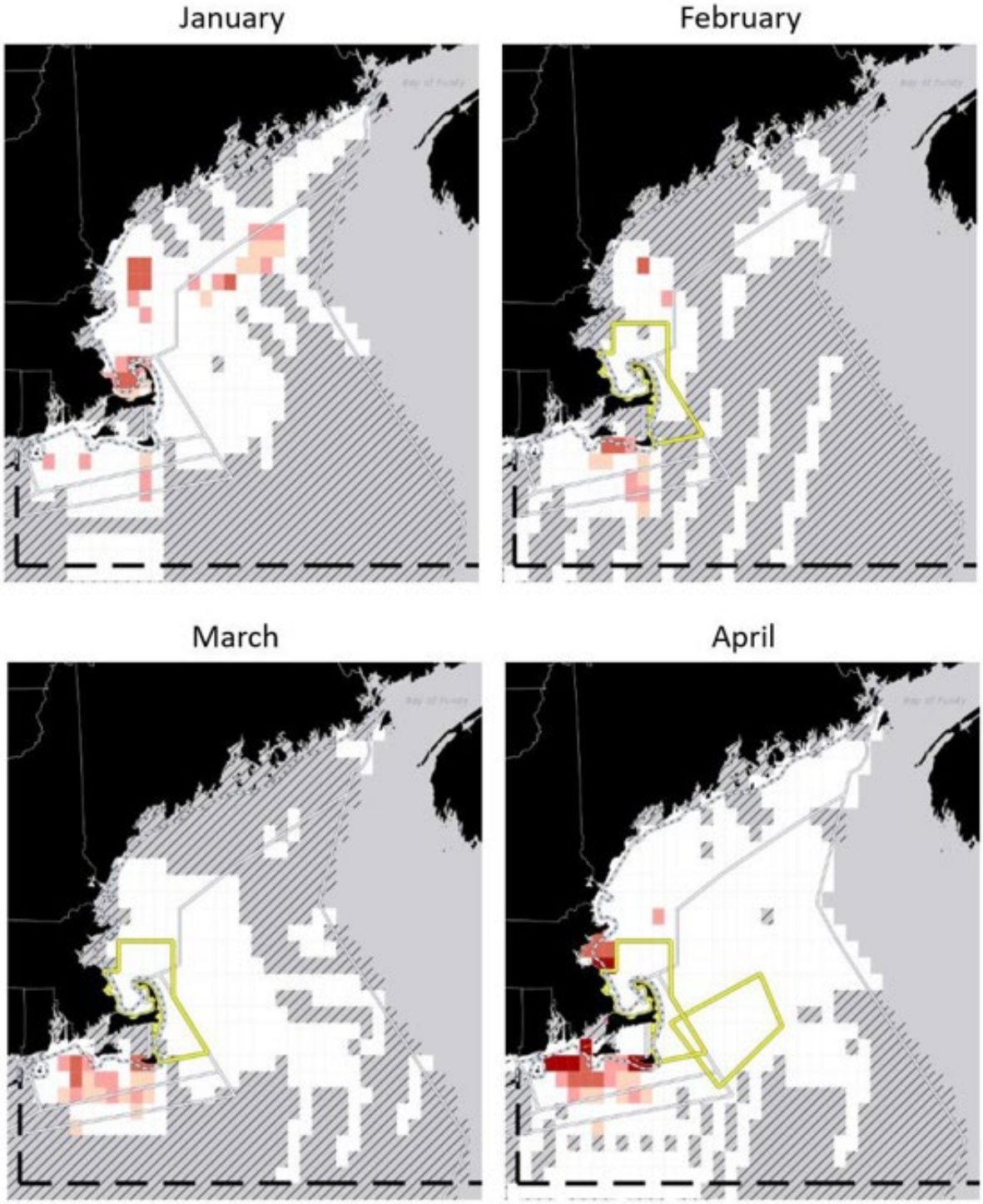
Co-occurrence Score | Buoy Lines and Right Whales 2017 Baseline | Lobster Trap Pot Fishery

Legend

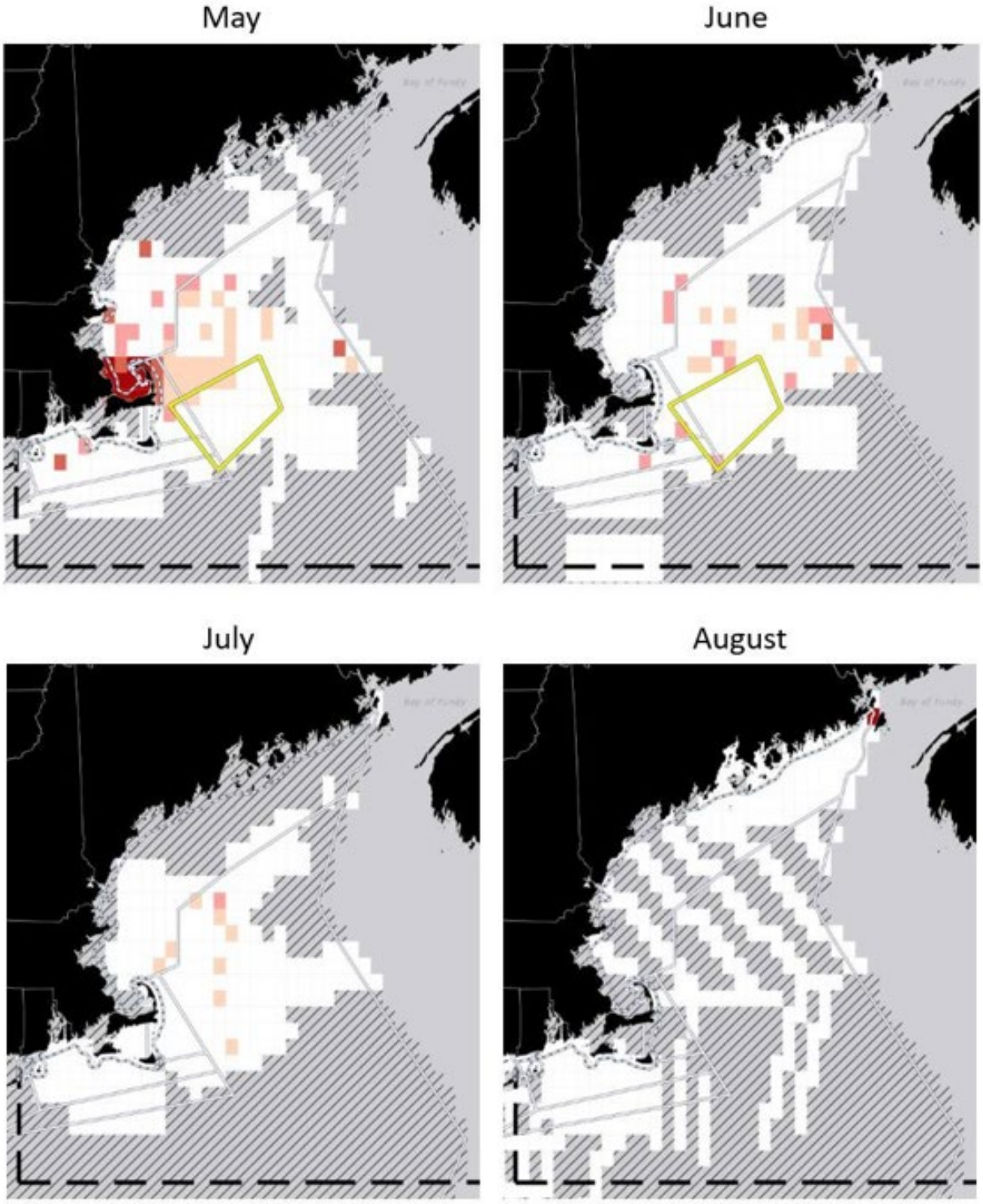
Co-occurrence Score

- Less than 1
- 1 - 10
- 10 - 100
- 100 - 1,000
- Greater Than 1,000
- No Effort in SPUE Data
- Existing Closure
- Lobster Management Area
- ALWTRP Exemption Line (Vertical Lines)
- ALWTRP Northeast Boundary

Co-occurrence Score | Buoy Lines and Right Whales
2017 Baseline | Lobster Trap Pot Fishery

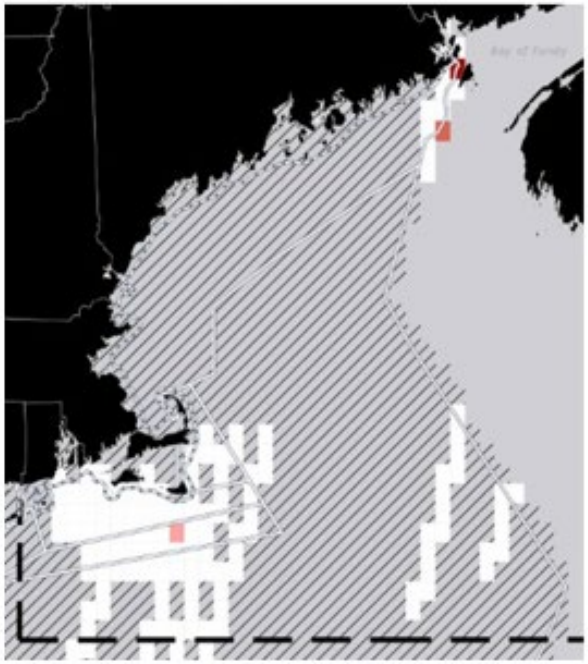


Co-occurrence Score | Buoy Lines and Right Whales
2017 Baseline | Lobster Trap Pot Fishery



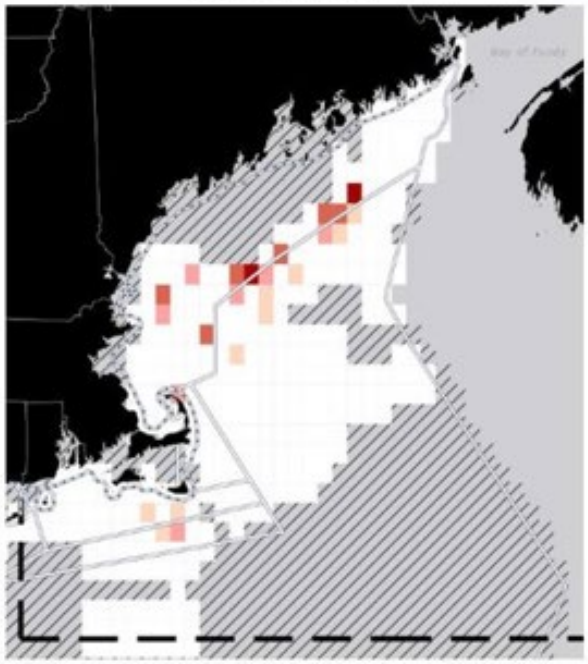
Co-occurrence Score | Buoy Lines and Right Whales
2017 Baseline | Lobster Trap Pot Fishery

September

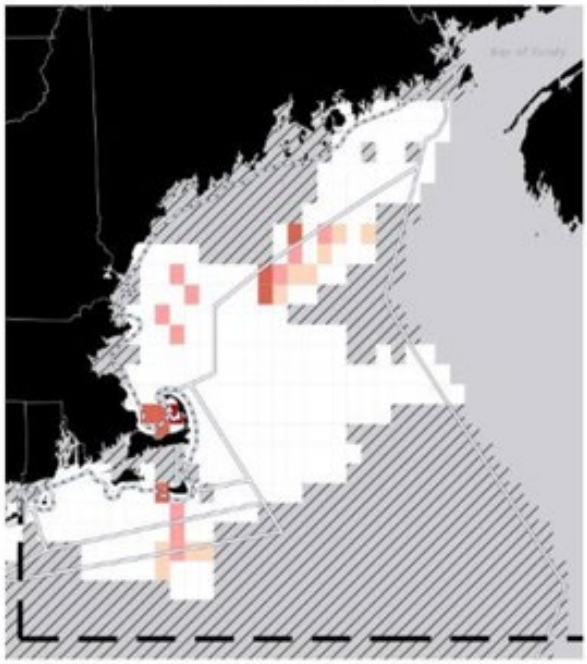


October

November



December



Change in Co-occurrence Score | Buoy Lines and Right Whales Alternative 2 (Preferred) | Lobster Trap Pot Fishery

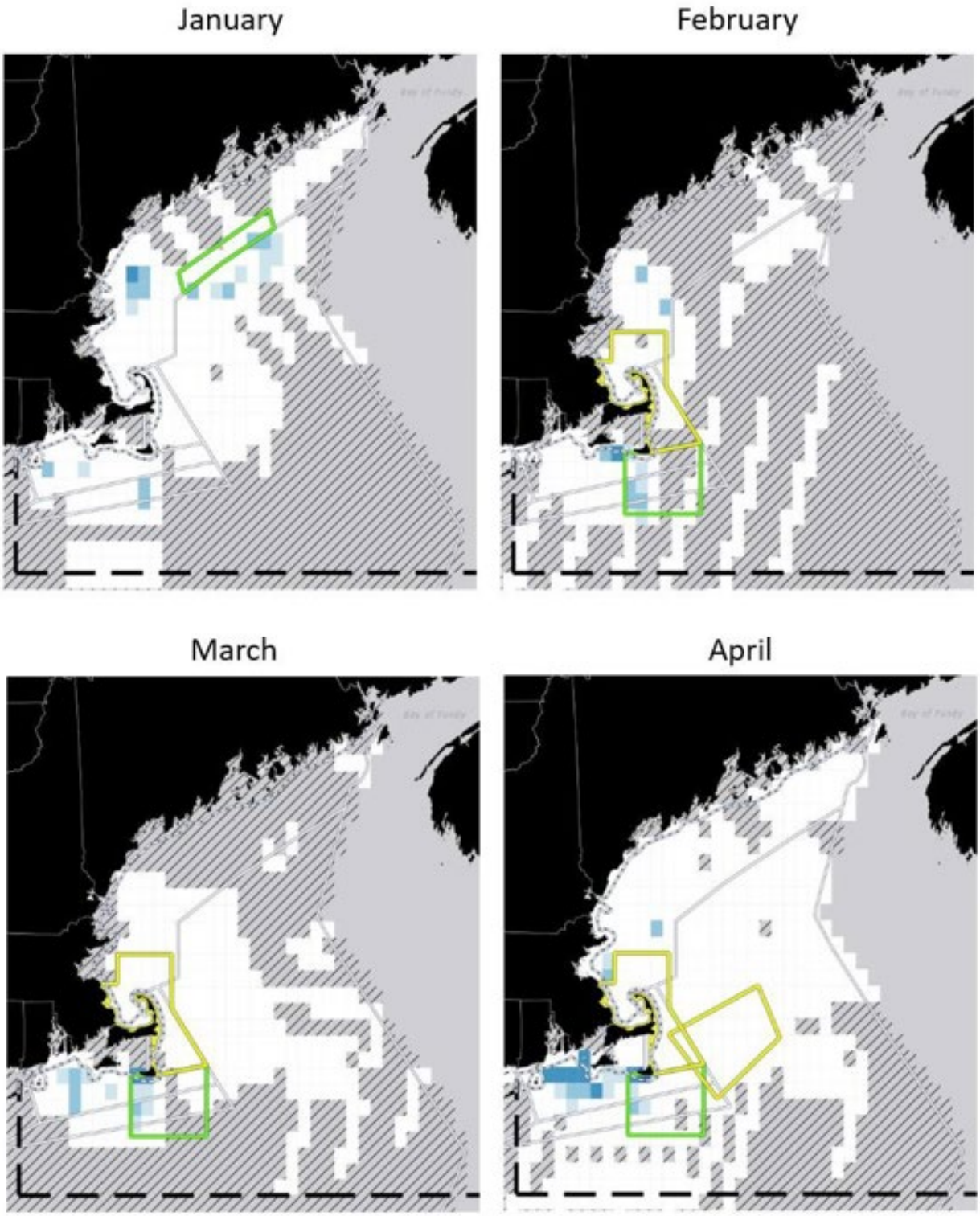
Legend

Change in Co-occurrence Score

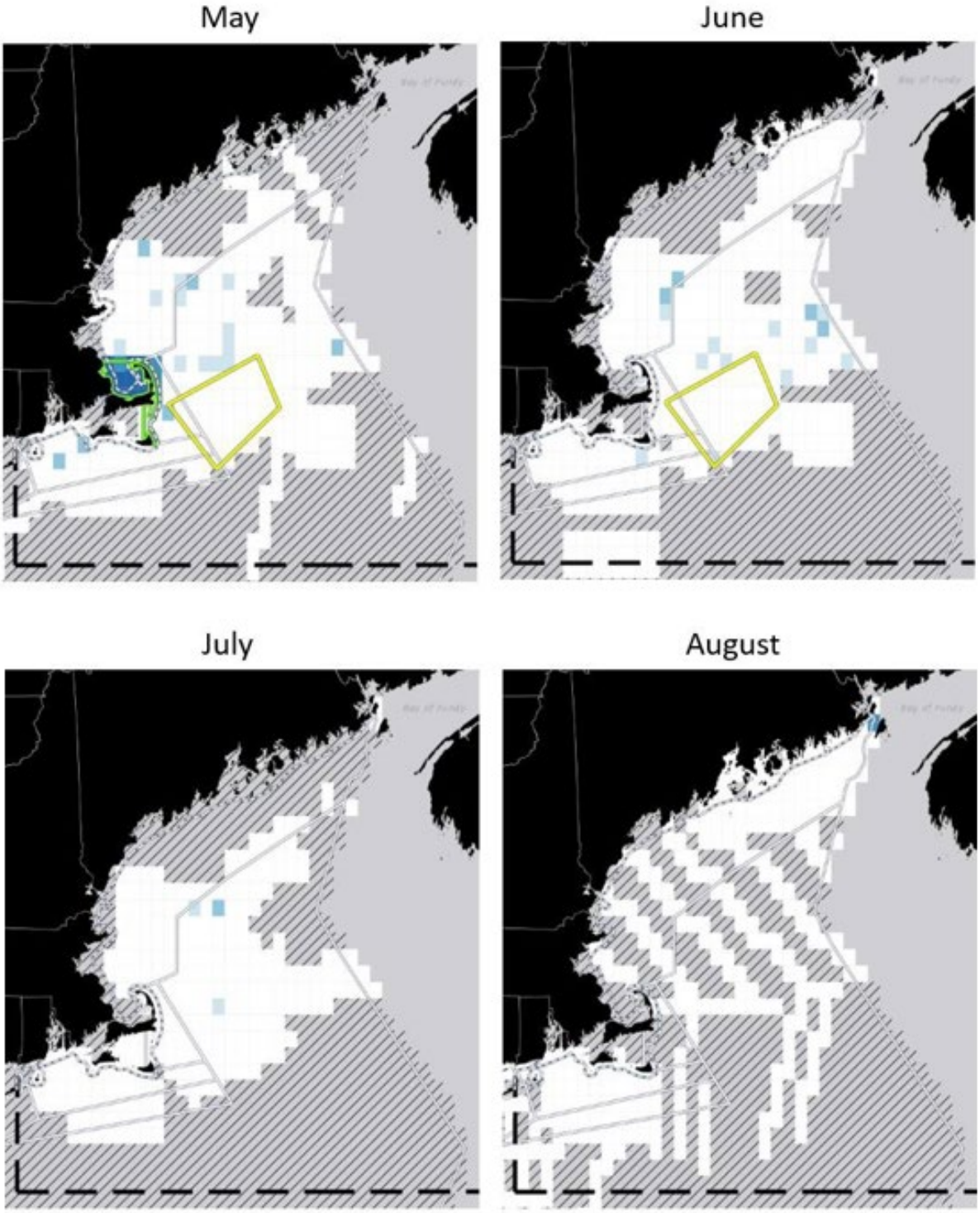
- Greater Than 1,000 Increase
- 100 - 1,000 Increase
- 10 - 100 Increase
- 1 - 10 Increase
- Minimal or No Change
- 1 - 10 Decrease
- 10 - 100 Decrease
- 100 - 1,000 Decrease
- Greater Than 1,000 Decrease
- No Effort in SPUE Data

- Proposed Closure
- Existing Closure
- Lobster Management Area
- ALWTRP Exemption Line (Vertical Lines)
- ALWTRP Northeast Boundary

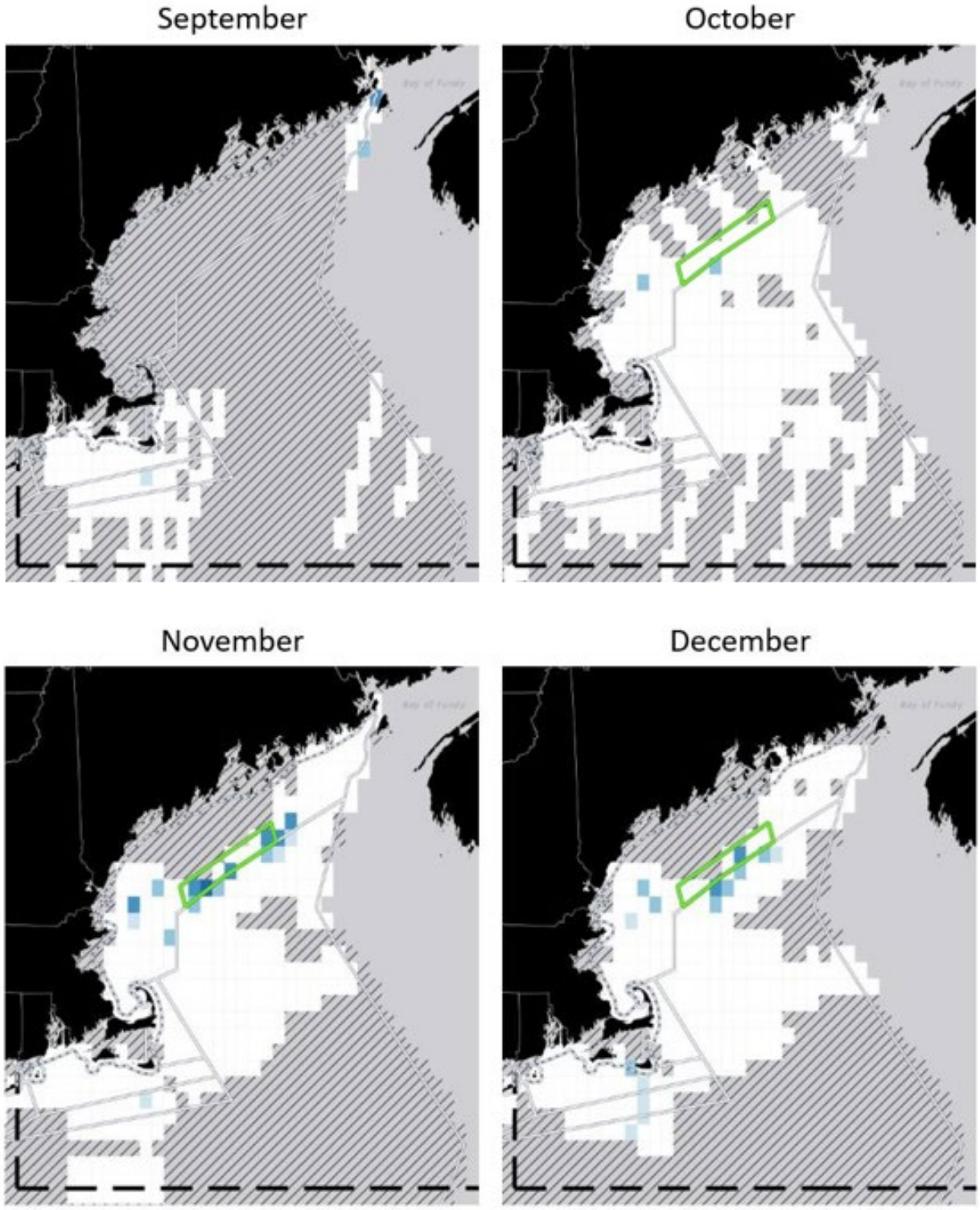
Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 2 (Preferred) | Lobster Trap Pot Fishery



Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 2 (Preferred)| Lobster Trap Pot Fishery



Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 2 (Preferred)| Lobster Trap Pot Fishery



Change in Co-occurrence Score | Buoy Lines and Right Whales Alternative 3a (Non-preferred) | Lobster Trap Pot Fishery

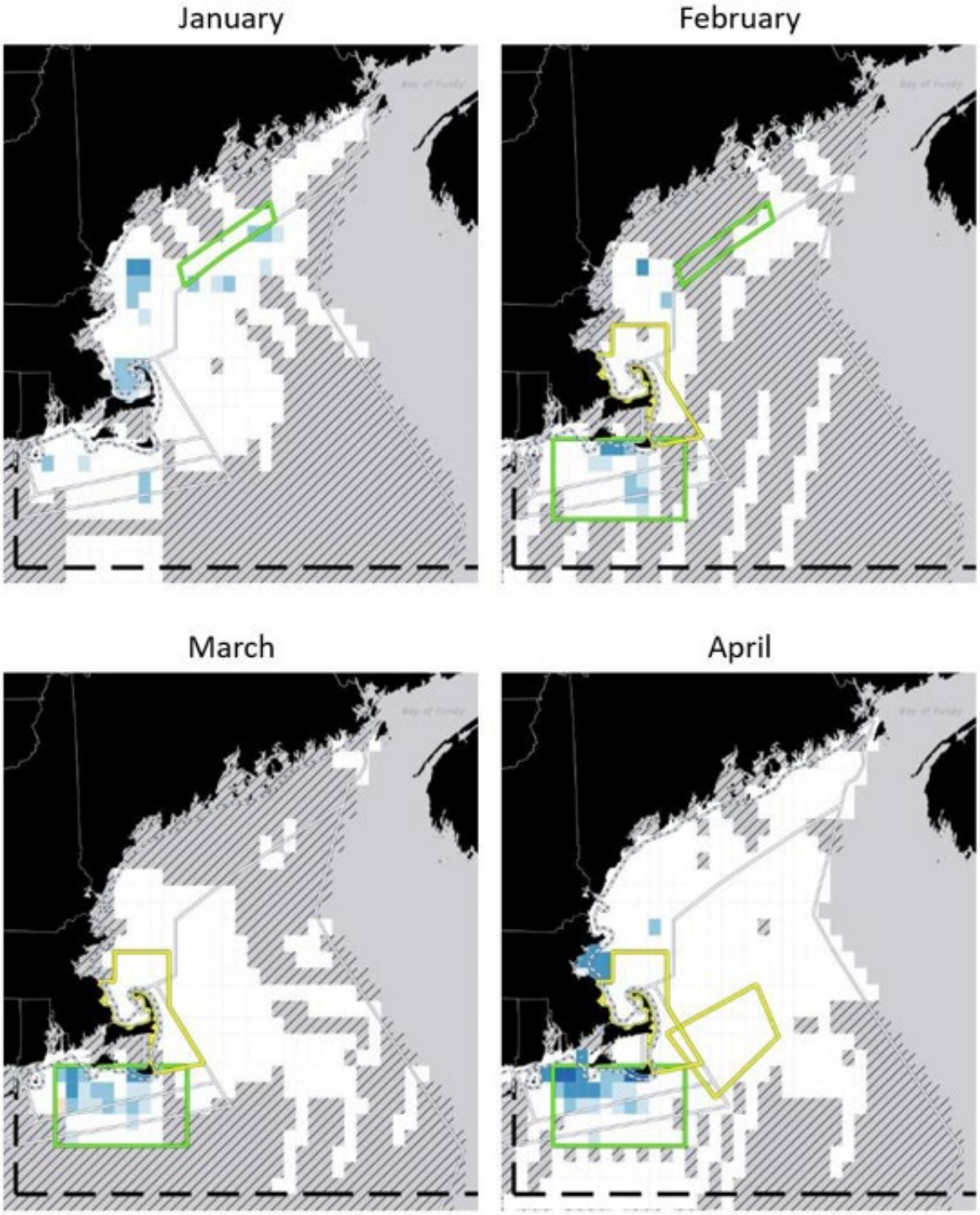
Legend

Change in Co-occurrence Score

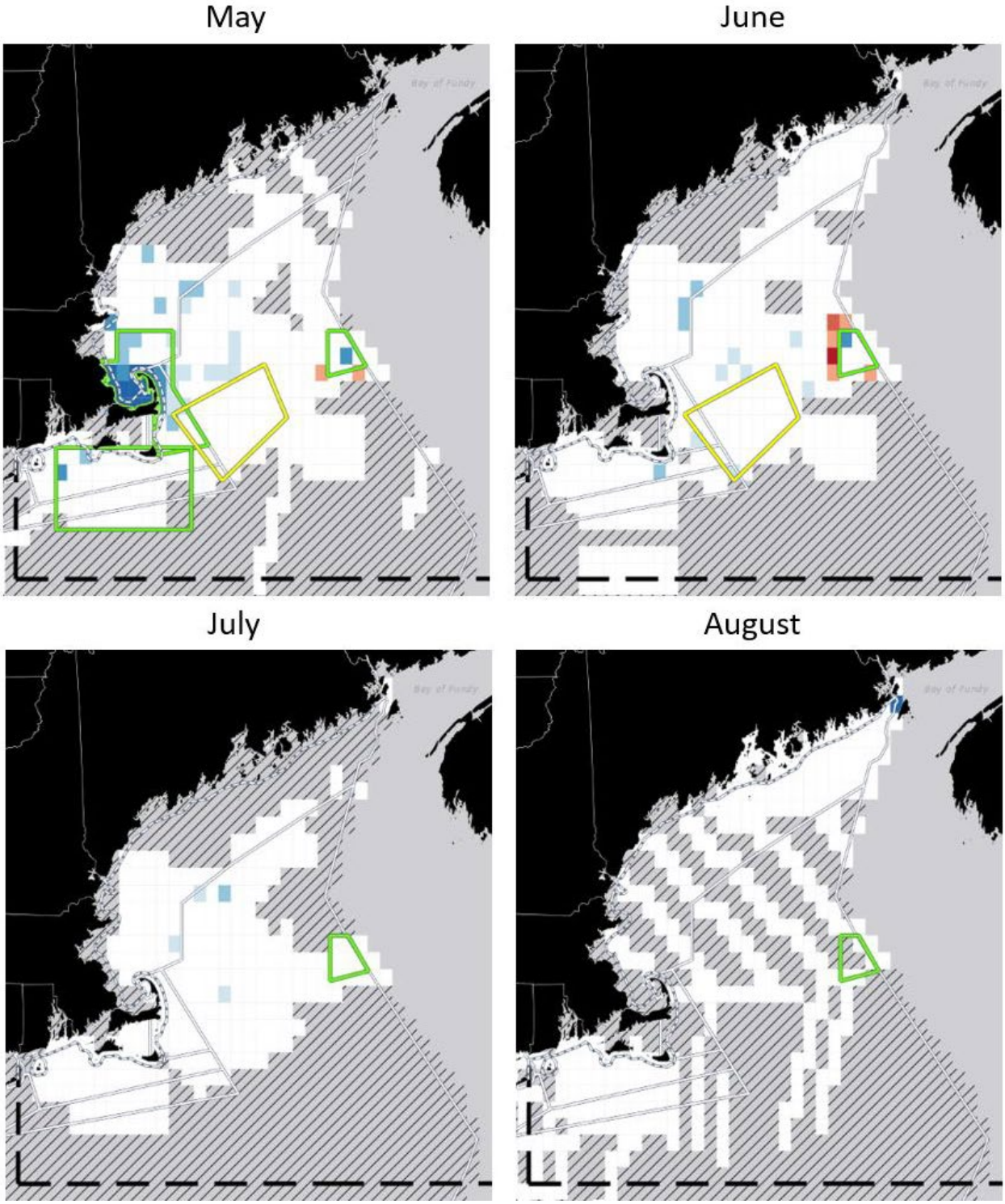
- Greater Than 1,000 Increase
- 100 - 1,000 Increase
- 10 - 100 Increase
- 1 - 10 Increase
- Minimal or No Change
- 1 - 10 Decrease
- 10 - 100 Decrease
- 100 - 1,000 Decrease
- Greater Than 1,000 Decrease
- No Effort in SPUE Data

- Proposed Closure
- Existing Closure
- Lobster Management Area
- ALWTRP Exemption Line (Vertical Lines)
- ALWTRP Northeast Boundary

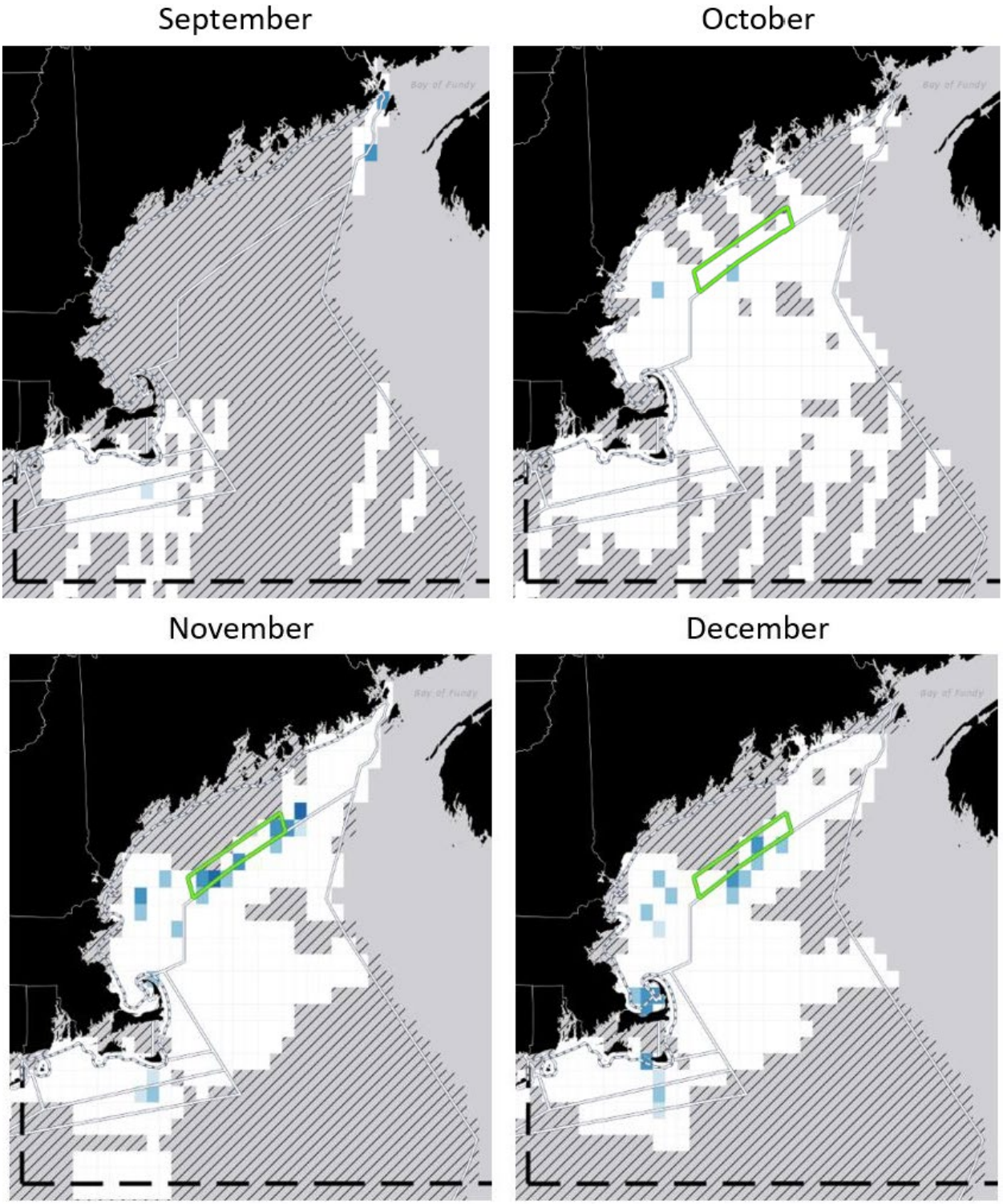
Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 3a (Non-preferred) | Lobster Trap Pot Fishery



Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 3a (Non-preferred)| Lobster Trap Pot Fishery

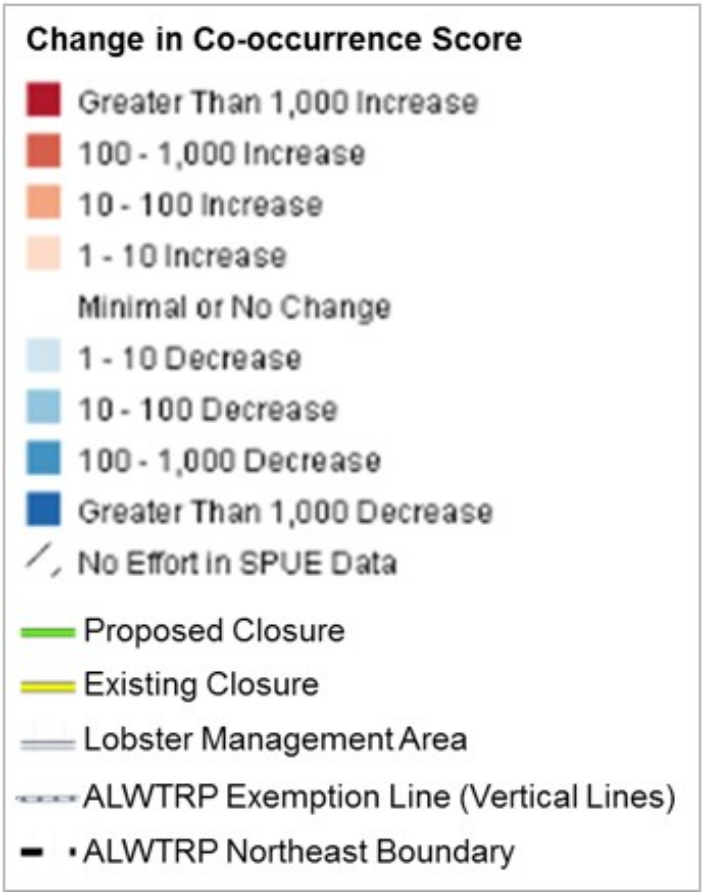


Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 3a (Non-preferred)| Lobster Trap Pot Fishery

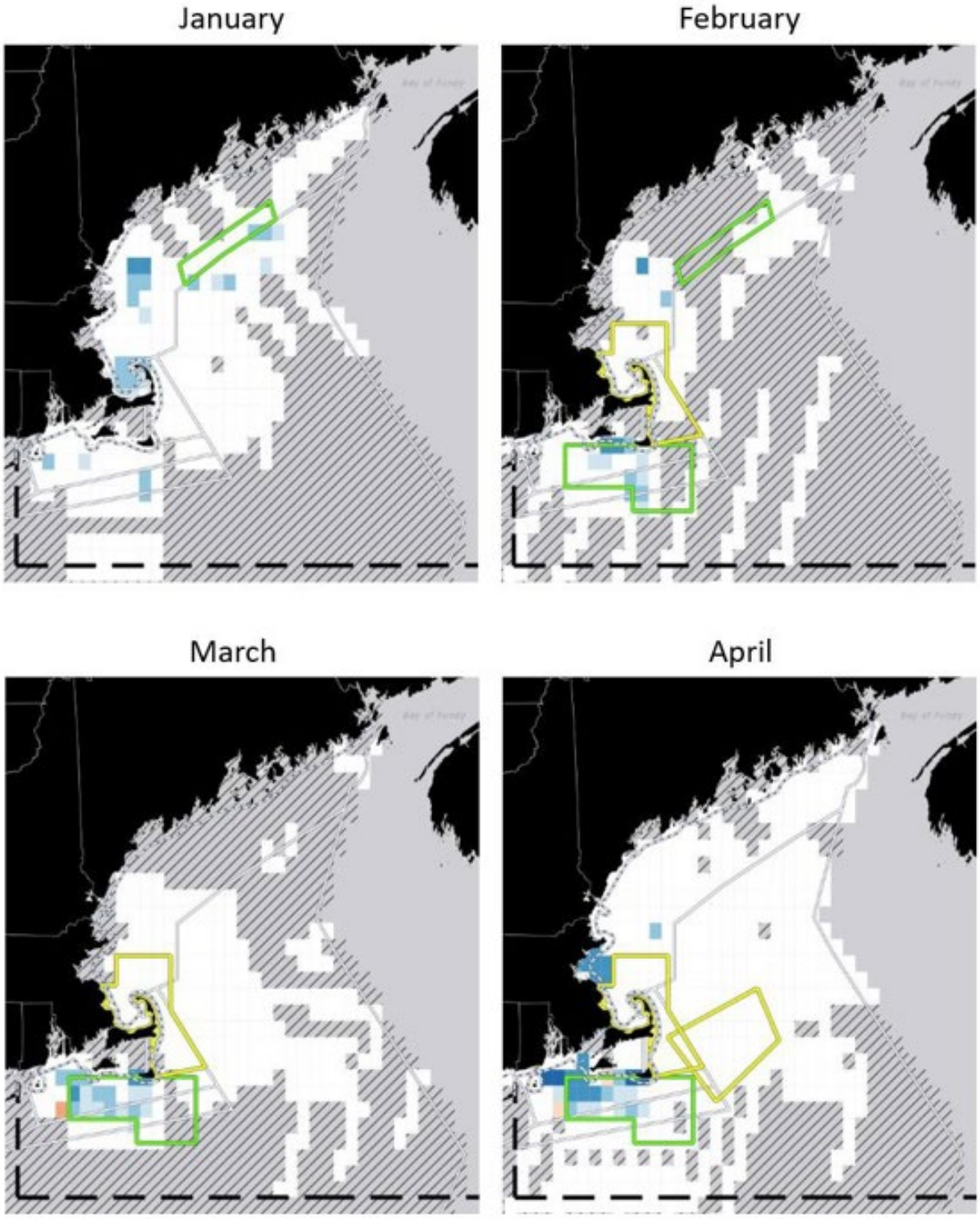


Change in Co-occurrence Score | Buoy Lines and Right Whales Alternative 3b (Non-preferred) | Lobster Trap Pot Fishery

Legend



Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 3b (Non-preferred) | Lobster Trap Pot Fishery



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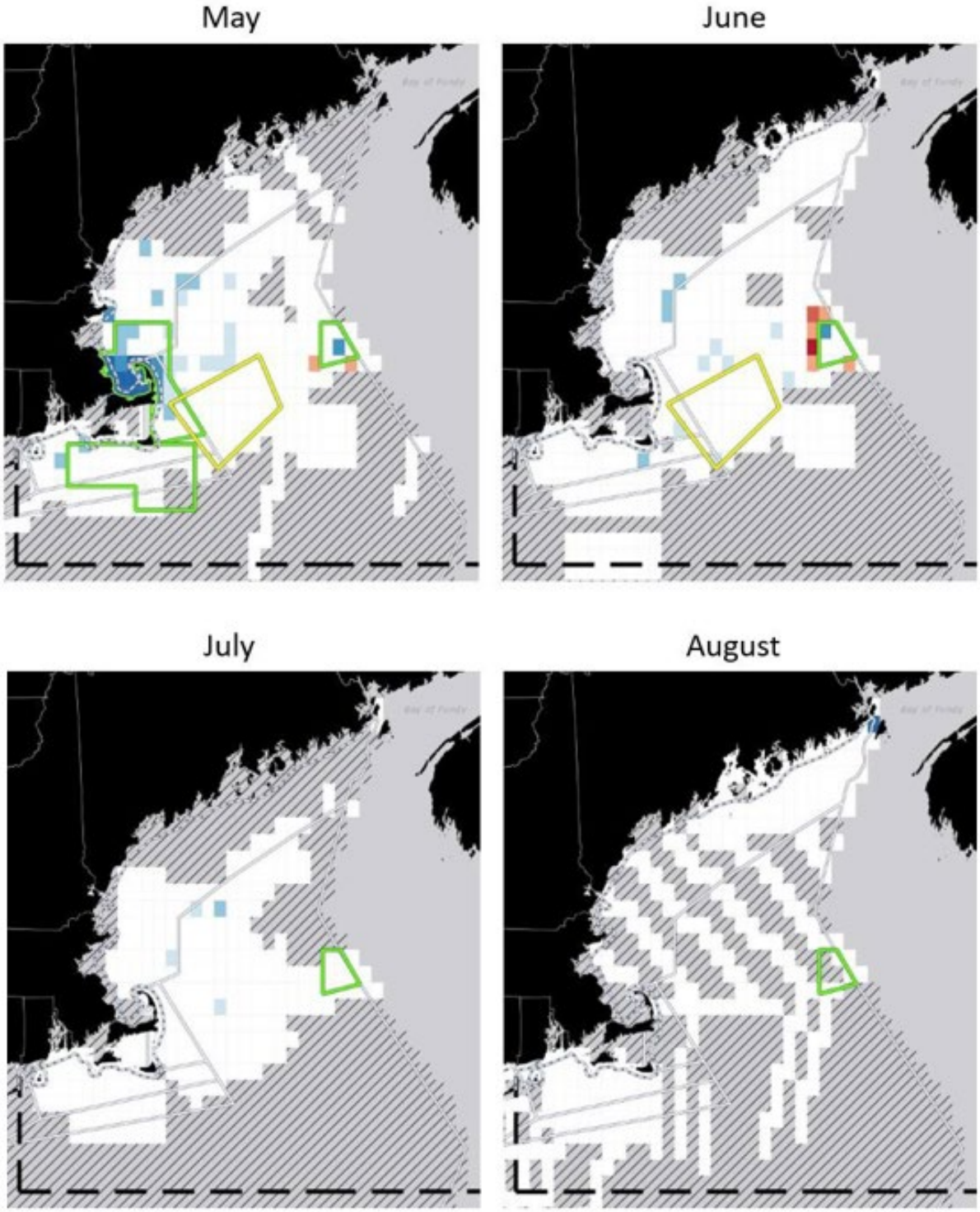
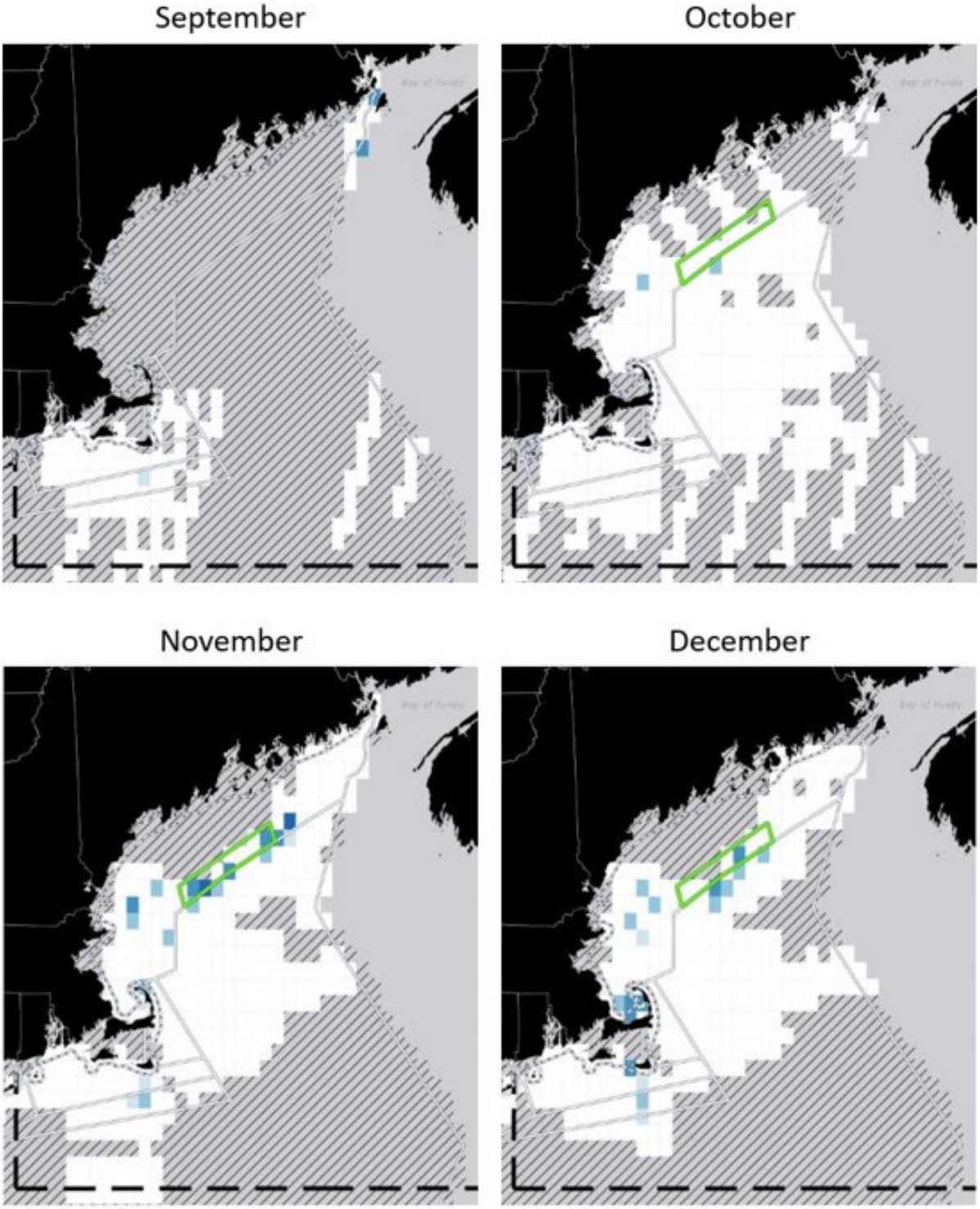
Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 3b (Non-preferred)| Lobster Trap Pot Fishery



Change in Co-occurrence Score | Buoy Lines and Right Whales
Alternative 3b (Non-preferred)| Lobster Trap Pot Fishery



Cumulative Maps
Co-occurrence Score and Change in Co-occurrence Score | Buoy Lines and Right, Humpback, and Fin Whales (separately) | Lobster Trap Pot Fishery

Legends

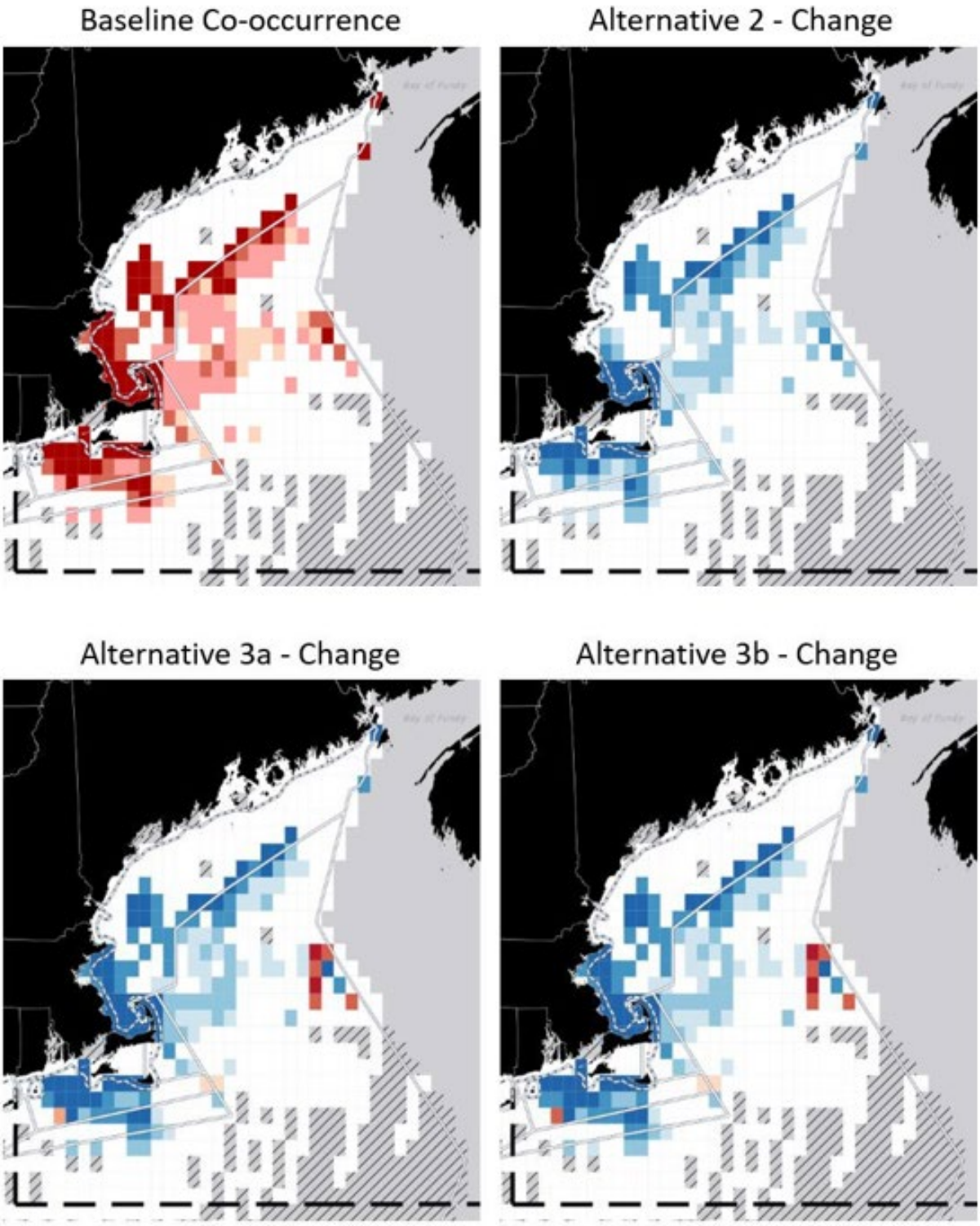
Co-occurrence Score

- Less than 1
- 1 - 10
- 10 - 100
- 100 - 1,000
- Greater Than 1,000
- No Effort in SPUE Data
- Existing Closure
- Lobster Management Area
- ALWTRP Exemption Line (Vertical Lines)
- ALWTRP Northeast Boundary

Change in Co-occurrence Score

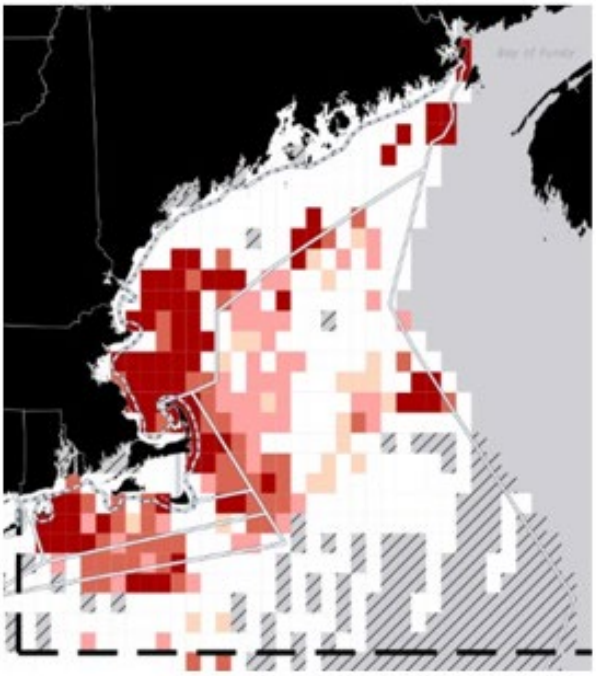
- Greater Than 1,000 Increase
- 100 - 1,000 Increase
- 10 - 100 Increase
- 1 - 10 Increase
- Minimal or No Change
- 1 - 10 Decrease
- 10 - 100 Decrease
- 100 - 1,000 Decrease
- Greater Than 1,000 Decrease
- No Effort in SPUE Data
- Proposed Closure
- Existing Closure
- Lobster Management Area
- ALWTRP Exemption Line (Vertical Lines)
- ALWTRP Northeast Boundary

Co-occurrence Score | Buoy Lines and Right Whales
Cumulative January through December | Lobster Trap Pot Fishery

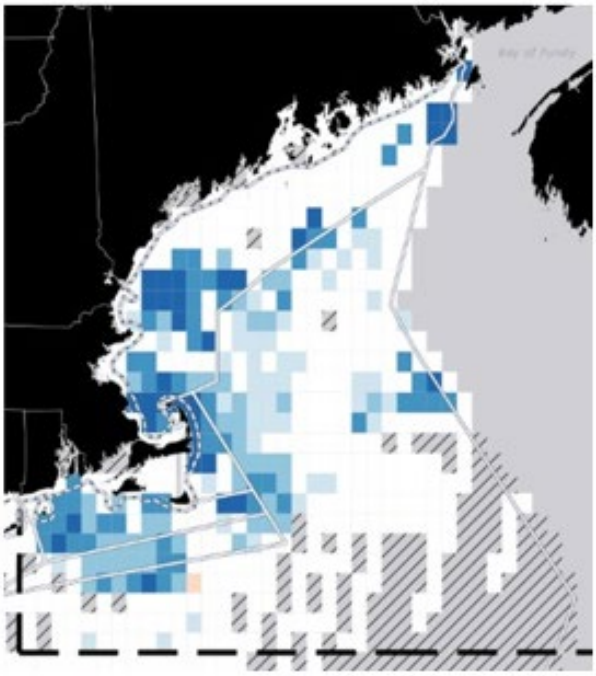


Co-occurrence Score | Buoy Lines and Humpback Whales
Cumulative January through December | Lobster Trap Pot Fishery

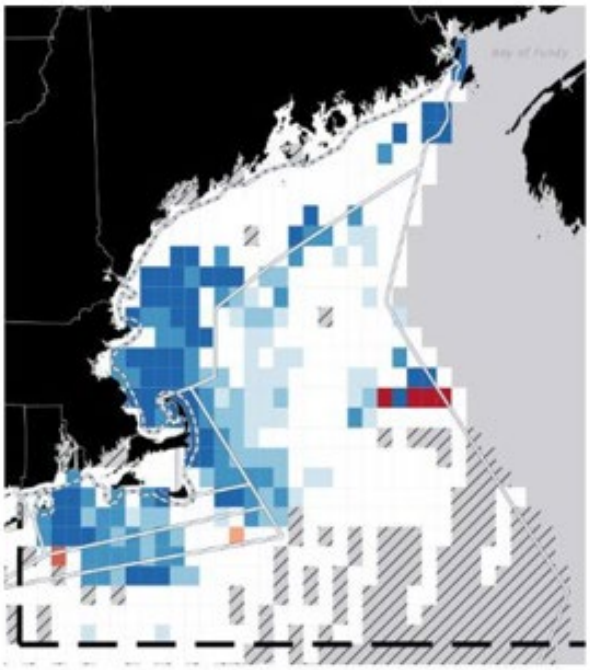
Baseline Co-occurrence



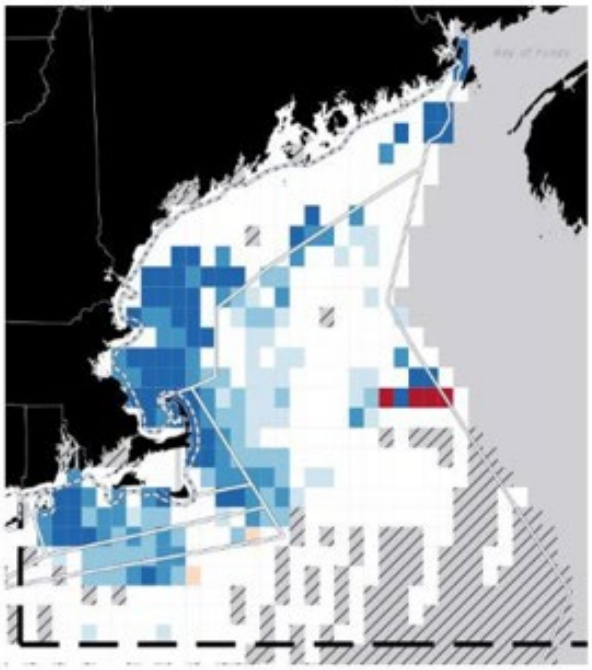
Alternative 2 - Change



Alternative 3a - Change

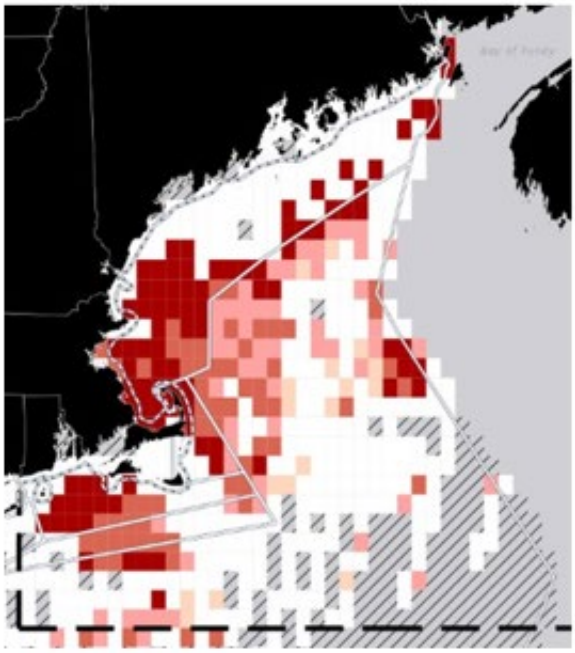


Alternative 3b - Change

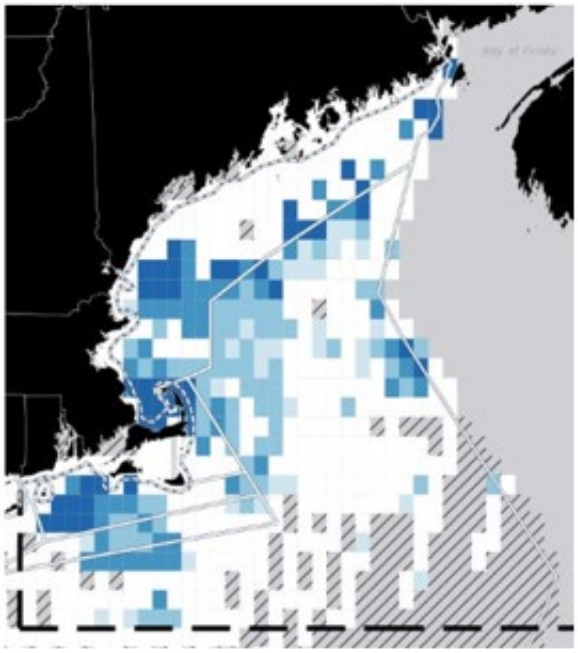


Co-occurrence Score | Buoy Lines and Fin Whales
Cumulative January through December | Lobster Trap Pot Fishery

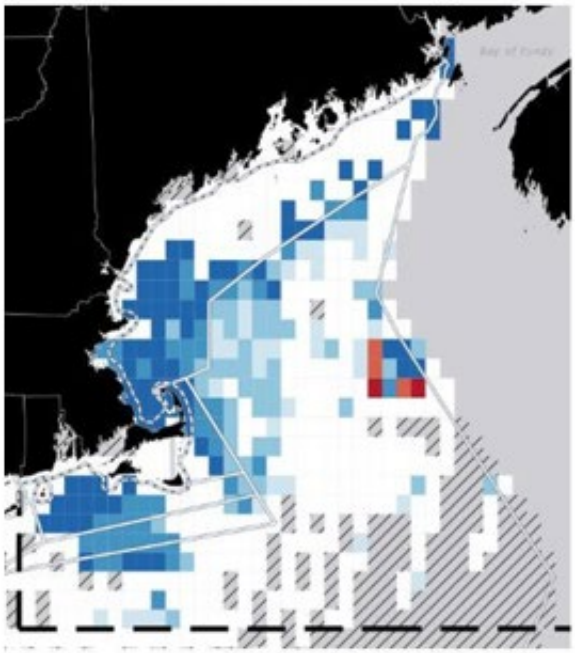
Baseline Co-occurrence



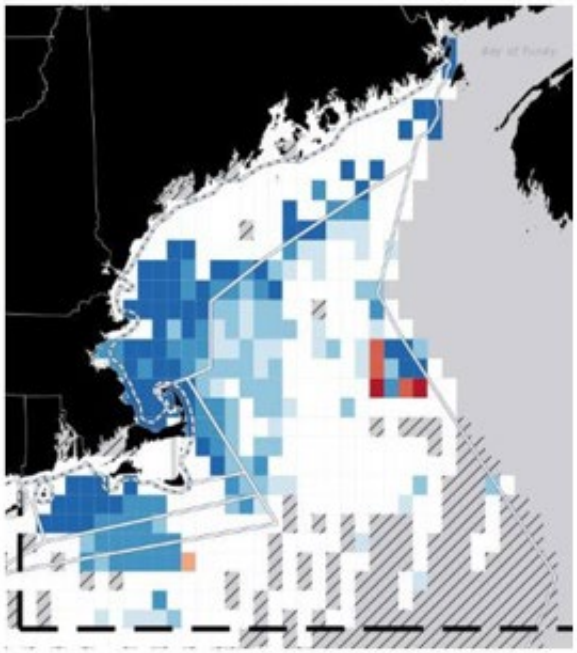
Alternative 2 - Change



Alternative 3a - Change



Alternative 3b - Change



Appendix 6.1 Gear Conversion Cost Methodology

This appendix describes the methods used to estimate the equipment cost associated with configuring gear to comply with minimum trawl length proposals included under Regulatory Alternative Two and Three. Figure 6A.1 summarizes the procedure used to estimate the incremental costs associated with converting to longer trawls. For each set of vessels, the method uses unit cost information and useful life information to estimate the annual costs of employing the baseline configuration of gear and the new configuration. The difference between these two annual costs represents the incremental cost of complying with the trawling requirement under consideration. The calculation of annualized costs is based on a seven percent annual discount rate, consistent with current guidance from the Office of Management and Budget (1992).

The estimation of gear conversion costs requires information on certain gear characteristics that are not specified in the Vertical Line Model. Table 6.1.1 summarizes these parameters.[1] As shown, the typical configuration of gear employed in trap/pot fisheries varies by region; this variation affects the cost of complying with the proposed trawling requirements. For example, Maine Zone A is characterized by strong tidal currents; to counter the potential effect of these currents, lobster vessels fishing in the area frequently use weights or anchors to keep their gear in place. Similarly, vessels in state waters commonly fish at shallower depths than do vessels in Federal waters, and therefore require less line to connect trawls to surface buoys. While highly generalized, the assumptions summarized in the exhibit allow a more detailed estimate of the potential change in annual gear costs associated with the trawling requirements.

Table 6.1.2 summarizes all the essential gear cost data collected from multiple gear manufacturers and equipment suppliers in New England Area. The annualized cost is based on the assumption of gear life span and 7 percent discount rate.

[1] Most of the information in this table is adapted from a recent study developed by the Maine Lobstermen's Association (McCarron and Tetreault, 2012); some supplementary information comes from other sources.

Figure 6.1.1: Methodology for Calculating Costs of Gear Reconfiguration

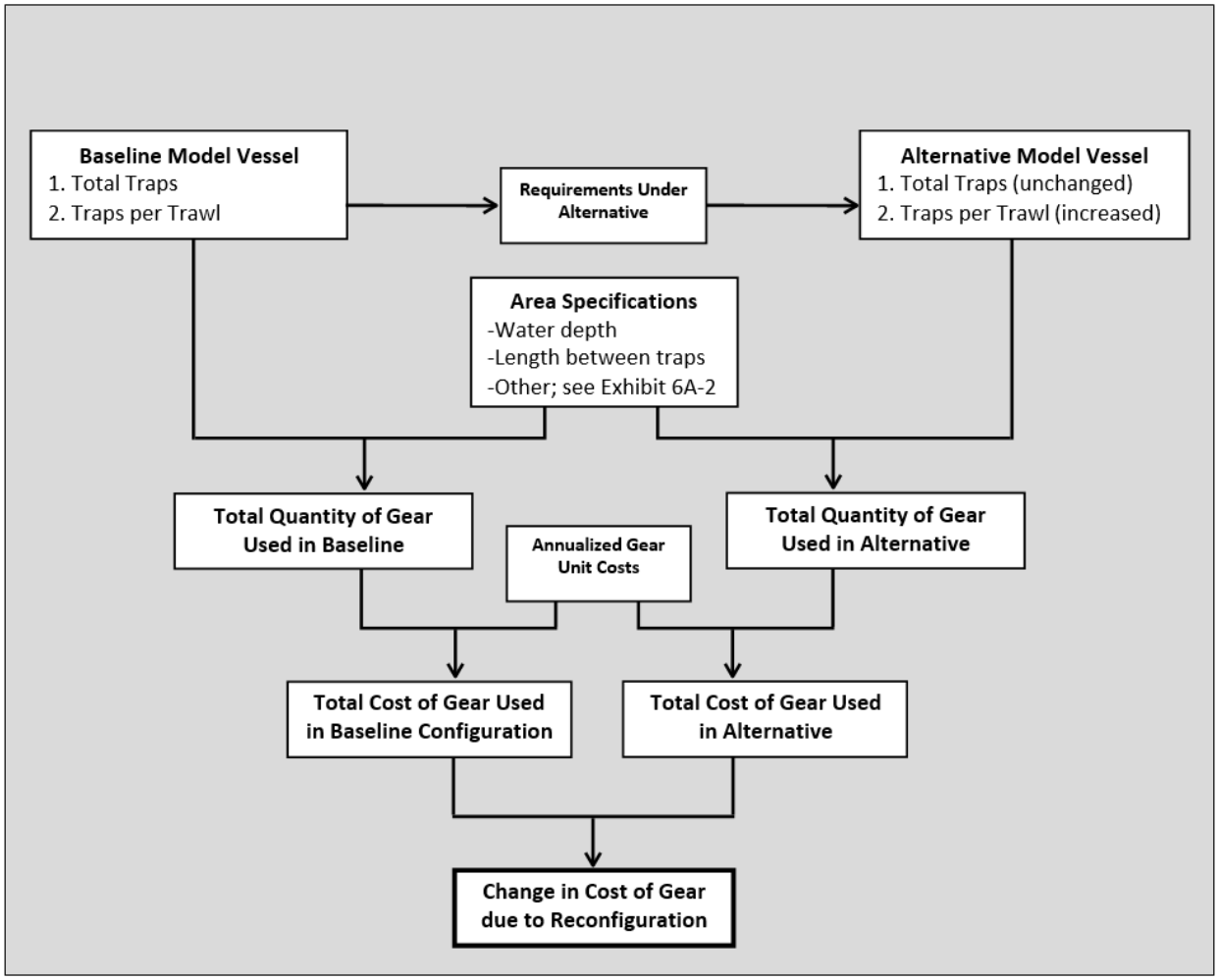


Table 6.1.1: Gear Specifications for Major Areas Affected by Trawling Proposals

State	Zone	Waters	Average Depth (m)	percent of VL that is Sink Line	VL Slack Factor[2]	VL Diam (cm)	Distance Between Traps (m)	Gangion Length (m)	Ground-line Diam. (cm)	First Buoy (cm x cm)	Second Buoy	Length of Line to 2nd Buoy (m)	Anchor (kg)	Length of Anchor Line (m)
ME	A	State	29.4	33%	1.5	1	18	1.8	1	13x28	13x28	18	18.	6
ME	A	Nearshore	135.6	25%	1.5	1	18	1.8	1	152 cm Polyball	13x28	18	18.	6
ME	B	State	34.2	33%	1.25	1	27	1.8	1	13x28	Toggle	18	N/A	N/A
ME	B	Nearshore	137.1	25%	1.25	1	27	1.8	1	16x36	13x28	18	N/A	N/A
ME	C	State	31.2	33%	1.3	1	14.4	1.8	1	13x28	N/A	N/A	N/A	N/A
ME	C	Nearshore	129.9	25%	2	1	27	1.8	1	18x36	13x28	18	N/A	N/A
ME	D	State	29.1	33%	1.2	1.1	13.5	1.8	1.1	13x28	N/A	N/A	N/A	N/A
ME	D	Nearshore	127.5	25%	1.25	1.1	22.5	1.8	1.1	23x41	13x28	18	N/A	N/A
ME	E	State	30.3	33%	1.15	1.1	13.5	1.8	1.1	13x28	N/A	N/A	N/A	N/A
ME	E	Nearshore	143.4	25%	1.15	1.1	27	1.8	1.1	23x41	N/A	N/A	N/A	N/A
ME	F	State	17.7	33%	1.15	1.1	18.9	1.8	1.1	13x28 (double)[3]	N/A	N/A	N/A	N/A
ME	F	Nearshore	154.5	25%	1.5	1.1	27	1.8	1.1	13x28	13x28	18	N/A	N/A
ME	G	State	28.8	33%	1.5	1	27	1.8	1	18x36	N/A	N/A	N/A	N/A
ME	G	Nearshore	124.8	25%	1.68	1	21.6	1.8	1	23x41	9x16	18	N/A	N/A
NH	N/A	State	21	33%	1.2	1	18	1.8	1	13x28	N/A	N/A	N/A	N/A
MA	N/A	State	17.7	33%	1.1	1	28.8	1.8	1	13x28 (double)	13x28	18	N/A	N/A
MA	N/A	Nearshore	62.7	25%	1.1	1	28.8	1.8	1	23x41	13x28	18	N/A	N/A
RI[4]	N/A	State	16.2	33%	1.1	1	30.9	1.8	1	13x28	N/A	N/A	N/A	N/A
RI	N/A	Nearshore	36	25%	1.1	1	30.9	1.8	1	23x41	13x28	18	N/A	N/A

Notes: 1. Average depth data were collected from the NOAA National Environmental Satellite, Data, and Information Service.
2. Slack factor represents the ratio of buoy line length to average water depth (e.g., 100 ft. depth * 1.5 slack factor = 150 ft. buoy line). Buoy line consists of a portion of sinking rope and a portion of floating rope.
3. A double 5x11 is two 5x11 buoys that are attached to the same stick. Correspondingly, the price is twice that of a single 5x11 buoy.
4. Data for Rhode Island vessels were not available. The figures applied are extrapolated from Massachusetts.
Sources: McCarron and Tetreault, 2012

Table 6.1.2: Annualized Gear Price Used in Estimation of Economic Impacts

Equipment Category	Description	2019 Average Price	Unit	Useful Life
Rope	3/8" (1 cm) sink rope, regular	$0.11	per foot (30 cm)	6
	3/8" (1 cm) sink rope, 1700 lb (771 kg)strength	$0.15	per foot (30 cm)	6
	3/4" (2 cm) sink rope, regular	$0.26	per foot (30 cm)	6
	3/4" (2cm) sink rope, 1700 lb (771 kg) strength	$0.34	per foot (30 cm)	6
Weak Links	600 lb (272 kg)light-weight plastic weak link	$1.77	per weak link	2.5
	600 lb (272 kg) plastic swivel weak link	$2.13	per weak link	2.5
	1,100 lb (499 kg) light-weight plastic weak link	$1.53	per weak link	5
	1,500 lb (680 kg) light-weight plastic weak link	$5.00	per weak link	5
Surface System Elements	Toggle	$2.25	per toggle	10
	Polyball 60" (152 cm)	$55.62	per buoy	10
	Bullet Buoy 5x11 (13x28 cm)	$4.77	per buoy	10
	Bullet Buoy 6x14 (16x36 cm)	$7.62	per buoy	10
	Bullet Buoy 7x14 (18x 36 cm)	$10.05	per buoy	10
	Bullet Buoy 9x16 (23x41 cm)	$19.55	per buoy	10
	Acorn Buoy 7x7(18x18 cm)	$4.65	per buoy	10
	High Flyer	$51.00	per flyer	10
Other	22 lb (10 KG)Danforth anchor	$98.54	per anchor	10
	40 lb (18 KG)Danforth anchor	$178.61	per anchor	10
	25 lb (11 KG)Danforth anchor	$119.54	per anchor	12
	43 lb (20 KG)Danforth anchor	$203.32	per anchor	12
	gear mark using duct tape	$0.04	per foot (30 cm)	5
	labor (in 2017 dollars)	$25.15	per hour	6
	gear marking with 1 min labor	$0.46	per foot (30 cm)	6
	South Shore sleeve	$2	per sleeve	6
	Sleeve with 5 min labor	$4.10	per sleeve	6

Appendix 6.2 Vessel Trip Report Data Processing Method

The VTR data used in calculating catching impacts were downloaded from NFMS NEFSC database and processed as following steps:

1. Keep records with gear code "PTL", which is pot/trap lobster;
2. Remove records without "gear size" information. "Gear size" represents total number of traps in the water;
3. Remove records with larger "gear quantity" than "gear size". "Gear quantity" represents trawl size;
4. Keep records only from Rhode Island, Massachusetts, New Hampshire and Maine vessels;
5. Assign Lobster Management Area (LMA) to each record according to the coordinates provided
6. Keep only records in LMA 1, LMA 2, OCC and LMA 3.
7. When there is no coordinates, we use "carea" to assign the LMA. "Carea" represent fishery statistical areas. We assign 511-514 to LMA1, 538 and 539 to LMA 2, 515 and 522 to LMA 3.
8. Calculate total traps fished in one trip by multiply "gear quantity" and "nhaul". "Nhaul" represents the number of hauls in a trip;
9. Collapse data, sum the landing pounds, and average the trawl size by state, LMA, permit, and year. After collapsing, each record contains information of a permitted vessel's yearly landing pounds and average fished traps per trip by state and LMA ;
10. Calculate the catch per trap data by dividing cumulative yearly catch by each trap fished;
11. Remove records with the first and last 1 percent catch per trap.
12. Summarize the catch per trap data by LMA.