

**BIOLOGICAL IMPACTS****CHAPTER 5**

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The National Environmental Policy Act (NEPA) requires that an environmental impact statement for a proposed Federal action evaluate the impacts of the action with respect to the human environment, including its biological, economic, and social components. This chapter addresses the first of these dimensions, evaluating the impact of potential modifications to the Atlantic Large Whale Take Reduction Plan (ALWTRP) on the biological environment.<sup>1</sup> Of foremost concern to this evaluation is the direct effect of the potential regulations on the likelihood that North Atlantic right whales, humpback whales, and fin whales – all of which are federally listed endangered species – will be killed or seriously injured as a result of entanglement in commercial fishing gear. It is also necessary, however, to consider whether new regulations could indirectly affect these species by exposing them to different risks or by altering the habitat upon which they depend. In addition, it is important to consider the potential effect that changes in ALWTRP regulations might have on other aspects of the marine environment.

The discussion that follows presents an evaluation of these impacts. It focuses first on the potential direct and indirect effects of revised ALWTRP regulations on Atlantic large whales, comparing the potential impacts of each of the regulatory alternatives under consideration, including NMFS' preferred alternative (Section 5.1). It then discusses other potential impacts on marine resources – including impacts on other protected species, directed catch, bycatch, and essential fish habitat – and compares the alternatives with respect to these impacts (Section 5.2).<sup>2</sup> The chapter is organized as follows:

- Section 5.1.1 describes the potential direct and indirect effects of new gear modification requirements on Atlantic large whales;
- Section 5.1.2 discusses the potential direct and indirect effects of changes to restricted times and areas on Atlantic large whales;
- Section 5.1.3 summarizes and compares the regulatory alternatives' potential impacts on Atlantic large whales;

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<sup>1</sup> Chapters 6 and 7 evaluate impacts on the economic and social environment, respectively.

<sup>2</sup> In this context, directed catch refers to the catch of species that are the target of commercial fishing effort. Bycatch refers to fish that are harvested but not sold or kept for personal use, including fish that are released because they are not profitable to sell (economic discards) and fish that are released due to catch limits (regulatory discards).

- Section 5.2.1 discusses the potential impacts of the regulatory alternatives on other protected species;
- Section 5.2.2 describes the potential impacts of the regulatory alternatives on essential fish habitat;
- Section 5.2.3 discusses the potential impacts of the regulatory alternatives on directed catch and bycatch; and
- Section 5.2.4 summarizes and compares the potential effects of the regulatory alternatives on marine resources other than Atlantic large whales.

## 5.1 IMPACTS TO ATLANTIC LARGE WHALES

The primary threat that commercial fishing poses to Atlantic large whales is the risk of incidental entanglement in commercial fishing gear. As noted in Chapter 2, such entanglement can cause serious injury or death. The regulatory changes under consideration are designed to reduce harm to large whales by reducing the likelihood of entanglement and/or reducing the severity of an entanglement should one occur. NMFS seeks to achieve these objectives through a combination of two general measures:

- gear modification requirements; and
- restrictions on fishing activity at specified locations and times.

The discussion below examines the impact of these measures on whale entanglement risks, beginning with an evaluation of specific gear modification requirements and then turning to an assessment of other restrictions.<sup>3</sup> It is important to note that the No Action Alternative (Alternative 1) would not achieve the objectives listed above. If Alternative 1 were chosen, there would likely be additional incidents of serious injury and mortality to large whales due to entanglement in commercial fishing gear, rather than a reduction in these interactions. Factors such as serious injury and mortality due to commercial fishing impede the right whale population's ability to recover (Reeves et al., 2001).

The evaluation of the impact of regulatory changes on whale entanglement risks is largely qualitative. This approach is necessary because models that would enable NMFS to conduct a rigorous quantitative assessment of such risks are currently unavailable. To the extent possible, however, the evaluation takes into account quantitative indicators of the impact of alternative regulations. These indicators do not measure changes in entanglement risks, but offer

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<sup>3</sup> The ALWTRP is designed to reduce the risk of serious injury and mortality of strategic stocks of North Atlantic right, humpback, and fin whales as a result of interactions with commercial fishing gear. Although it is not listed as endangered or threatened under the Endangered Species Act, the minke whale (*Balaenoptera acutorostrata*) is protected under the Marine Mammal Protection Act. Due to similarities in distribution, feeding behavior, and other characteristics, minke whales are believed to benefit from ALWTRP measures in much the same manner as the species the plan is designed to protect. Thus, the discussion of impacts to Atlantic large whales applies to minke whales as well as to North Atlantic right whales, humpback whales, and fin whales.

useful information on factors that may partially correlate with such risks. These indicators are presented at the conclusion of the discussion.

### 5.1.1 Impacts of Gear Modification Requirements

The requirements proposed under each regulatory alternative vary by fishery. Exhibits 5-1A through 5-6A summarize the requirements specified by Alternatives 2 through 6 Draft\*.<sup>4</sup> Exhibits 5-1B through 5-6B provide similar information for Alternative 6 Final (Preferred). In each exhibit:

- Solid circles identify modifications that would be newly required.
- Hollow circles identify cases in which a regulatory alternative would eliminate or relax existing ALWTRP measures.
- Shaded cells identify cases in which the ALWTRP had previously established gear modification requirements. Unless specifically modified or eliminated by the regulatory alternative under consideration, these requirements would continue to apply as they would under the No Action Alternative (Alternative 1).

The gear modification requirements under consideration fall generally into five categories: groundline requirements, buoy line requirements, weak link and anchoring requirements, set restrictions and gear stowing requirements, and gear marking requirements. The discussion below examines the impact of each of these measures on whale entanglement risks.<sup>5</sup>

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<sup>4</sup> Under Alternatives 2 through 6 Draft\*, for shark gillnet fisheries, the portion of the Southeast U.S. Restricted Area overlapping the Southeast U.S. Observer Area north of 27°51' N to the South Carolina/Georgia border would be renamed the "Northern Monitoring and Restricted Area," and the portion of the Southeast U.S. Observer Area south of 27°51' N to 26°46.5' N would be renamed the "Southern Monitoring Area." For non-shark gillnet fisheries, the waters north of 27°51' N to the South Carolina/Georgia border would be designated "Other Southeast Gillnet Waters." All these areas would extend east to the eastern edge of the EEZ.

Under Alternative 6 Final (Preferred), the Southeast U.S. Restricted Area would be renamed the "Southeast U.S. Restricted Area (N and S)," using 29°00' N as the dividing line between the northern (to 32°00' N) and southern (to 27°51' N) areas. These areas would include only waters west of 80°00' W, and would be a management area for both shark and non-shark gillnet fisheries. The Southeast U.S. Observer Area would be renamed the "Southeast U.S. Monitoring Area," encompassing the area from 27°51' N south to 26°46.5' N and west of 80°00' W. This management area would be for shark gillnet fisheries only. The "Other Southeast Gillnet Waters" area would encompass the waters south of 32°00' N and east of 80°00' W to the eastern edge of the EEZ. This would be a management area for both shark (north of 26°46.5' N) and non-shark (north of 27°51' N) fisheries.

<sup>5</sup> For additional detail on which gear requirements apply to which vessels under existing regulations (i.e., Alternative 1, No Action), see Chapter 2. For similar details regarding Alternatives 2 through 6 Final (Preferred), see Chapter 3.

**Exhibit 5-1A  
PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVES 2 THROUGH 6 DRAFT\*: LOBSTER TRAP/POT FISHERY<sup>1</sup>**

Vessels Fishing In	Buoy Line Modification					Groundline Modification <sup>2</sup>					Weak Link Modification <sup>3</sup>					Set Restrictions					Gear Marking Modification <sup>4</sup>				
	2 <sup>5</sup>	3 <sup>5*</sup>	4 <sup>5</sup>	5 <sup>6</sup>	6 <sup>6*</sup>	2	3*	4	5	6*	2	3*	4	5	6*	2 <sup>8</sup>	3 <sup>8*</sup>	4 <sup>8</sup>	5 <sup>9</sup>	6 <sup>9*</sup>	2	3*	4	5	6*
Cape Cod Bay: January 1 – May 15											●	●	●	●	●						●	●	●	●	●
Cape Cod Bay: May 16 – December 31						●	●	●		●	●	●	●	●	●	○	○	○	○	○	●	●	●	●	●
Great South Channel: July 1 - March 31						●	●	●		●	●	●	●	●	●						●	●	●	●	●
LMA 6						●	●	●		●	●	●	●	●	●						●	●	●	●	●
Offshore North of 35°30'N							● <sup>10</sup>	●		● <sup>10</sup>	●	○ <sup>10</sup>	●	○ <sup>10</sup>	○ <sup>10</sup>						●	●	●	●	●
Offshore South of 35°30'N						●	● <sup>10</sup>	● <sup>11</sup>		● <sup>10</sup>	●	● <sup>10</sup>	● <sup>11</sup>	● <sup>10</sup>	● <sup>10</sup>						●	●	●	●	●
Northern Inshore						●	●	●		●	●	●	●	●	●						●	●	●	●	●
Northern Nearshore						●	●	●		●	●	●	●	●	●	○	○	○	○	○	●	●	●	●	●
Current SAM: March 1 - July 31	○	○	○	○	○						●	●	●	●	●	○	○	○	○	○	●	●	●	●	●
Revised SAM: March 1 - July 31	■	■	■	■	■	■	■	■	■	■	● <sup>12</sup>	● <sup>12</sup>	●	●	●	■	■	■	■	■	●	●	●	●	●
Stellwagen Bank/Jeffreys Ledge						●	●	●		●	●	●	●	●	●	○	○	○	○	○	●	●	●	●	●
Southern Nearshore North of 35°30'N						●	● <sup>10</sup>	●		● <sup>10</sup>	●	○ <sup>10</sup>	●	○ <sup>10</sup>	○ <sup>10</sup>						●	●	●	●	●
Southern Nearshore South of 35°30'N						●	● <sup>10</sup>	● <sup>11</sup>		● <sup>10</sup>	●	● <sup>10</sup>	● <sup>11</sup>	● <sup>10</sup>	● <sup>10</sup>						●	●	●	●	●

- Key:
- = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).
  - = Addition to Existing Requirements
  - = Relaxation of Existing Requirements
  - = Not Applicable
  - \* = Specified as a Preferred Alternative in the DEIS

Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

- <sup>1</sup> This exhibit does not address the universal gear modification requirements currently established under the ALWTRP. The alternatives under consideration would not alter these provisions.
- <sup>2</sup> All groundline must be made entirely of sinking and/or neutrally buoyant line. Under Alternatives 5 and 6 Draft\*, this provision would become effective in the revised Seasonal Area Management (SAM) zone within six months of the final rule's publication. In all other cases, this provision would take effect 12 months after the final rule is published. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.
- <sup>3</sup> Weak links must be placed on all flotation and weighted devices attached to the buoy line, such as surface buoys and toggles. In nearshore/inshore lobster waters, including the Great South Channel Restricted Area that overlaps with LMA 2 and the Outer Cape LMA, weak links with a breaking strength of 600 pounds would be required. In offshore lobster waters, including the Great South Channel Restricted Area that overlaps with the LMA 2/3 Overlap and LMA 3 between July 1 and March 31, the breaking strength on buoys would be reduced from 2000 pounds to 1500 pounds. For vessels subject to weak link requirements under existing ALWTRP regulations, new weak links would only need to be installed on toggles or similar flotation and weighted devices.
- <sup>4</sup> Alternatives 2 through 6 Draft\* would remove the current ALWTRP gear marking scheme and require all vessels to identify buoy lines with a four-inch mark every ten fathoms, and to mark all surface buoys with either their vessel number or permit number.
- <sup>5</sup> The requirement that vessels fishing in SAM waters use buoy lines made entirely of sinking and/or neutrally buoyant line would be eliminated along with all other SAM provisions, 12 months after the final rule's publication.
- <sup>6</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line. For vessels fishing in SAM waters as currently defined, this provision relaxes existing requirements, allowing the bottom third of the buoy line to be made of floating line. For vessels fishing in areas that would be newly incorporated into the SAM zone, this provision represents a new requirement.
- <sup>7</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in SAM waters until 12 months after the final rule is published, when all SAM provisions would be eliminated.
- <sup>8</sup> Set restrictions in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay (May 16 to December 31) would change from one buoy line for trawls with 5 traps or fewer to one buoy line for trawls of 4 traps or fewer. Restrictions in SAM waters limiting trawls to one buoy line would be eliminated along with the rest of the SAM program, 12 months after the final rule's publication.
- <sup>9</sup> For vessels fishing in SAM waters as currently defined, this provision changes existing set restrictions, allowing two buoy lines for all trawls. Set restrictions in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay (May 16 to December 31) would change from one buoy line for trawls with 5 traps or fewer to one buoy line for trawls of 4 traps or fewer. The existing prohibition on single traps in these areas would remain in effect.
- <sup>10</sup> This provision would apply only from September 1 to May 31 for vessels fishing between 40°00'N and the SC/GA border, from November 15 to April 15 for vessels fishing between the SC/GA border and 29°00'N, and from December 1 to March 31 for vessels fishing between 29°00'N and 27°51'N. The requirement would apply year-round to all other vessels.
- <sup>11</sup> This provision would apply only from November 15 to April 15 for vessels fishing between the SC/GA border and 29°00'N, and from December 1 to March 31 for vessels fishing between 29°00'N and 27°51'N. The requirement would apply year-round to all other vessels.
- <sup>12</sup> This provision is consistent with current SAM requirements, and would represent no change in waters that would remain subject to the SAM program. The proposed revision of the SAM zone's boundaries would release some areas from this requirement but extend it to others.

<b>Exhibit 5-1B</b>					
<b>PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVE 6 FINAL (PREFERRED): LOBSTER TRAP/POT FISHERY<sup>1</sup></b>					
<b>Vessels Fishing In</b>	<b>Buoy Line Modification<sup>2</sup></b>	<b>Groundline Modification<sup>3</sup></b>	<b>Weak Link Modification<sup>4</sup></b>	<b>Set Restrictions<sup>5</sup></b>	<b>Gear Marking Modification<sup>6</sup></b>
Cape Cod Bay: January 1 – May 15			●		
Cape Cod Bay: May 16 – December 31		●	●		
Great South Channel: July 1 - March 31		●	●		
LMA 6		●	●		●
Offshore North of 35°30'N		● <sup>7</sup>	○ <sup>7</sup>		
Offshore South of 35°30'N		● <sup>7</sup>	● <sup>7</sup>		●
Northern Inshore		●	●		●
Northern Nearshore		●	●		
Current SAM: March 1 - July 31	○		●	○	
Revised SAM: March 1 - July 31	●	● <sup>8</sup>	●		●
Stellwagen Bank/Jeffreys Ledge		●	●		
Southern Nearshore North of 35°30'N		●	○ <sup>7</sup>		
Southern Nearshore South of 35°30'N		●	● <sup>7</sup>		●

**Key:**

□ = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).

● = Addition to Existing Requirements

○ = Relaxation of Existing Requirements

**Notes:** For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

<sup>1</sup> This exhibit does not address the universal gear modification requirements currently established under the ALWTRP. The alternatives under consideration would not alter these provisions.

<sup>2</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in SAM waters. This provision would take effect in the revised SAM zone six months after the final rule's publication and would remain in effect for the next six months; thereafter, the SAM program would be eliminated.

<sup>3</sup> All groundline must be made entirely of sinking and/or neutrally buoyant line. This provision would take effect in the revised SAM zone six months after the final rule's publication, and 12 months after the final rule's publication in all other waters. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.

<sup>4</sup> Weak links must be placed on all flotation and weighted devices attached to the buoy line, such as surface buoys and toggles. In nearshore/inshore lobster waters, including the Great South Channel Restricted Area that overlaps with LMA 2 and the Outer Cape LMA, weak links with a breaking strength of 600 pounds would be required. In offshore lobster waters, including the Great South Channel Restricted Area that overlaps with the LMA 2/3 Overlap and LMA 3 between July 1 and March 31, the breaking strength on buoys would be reduced from 2000 pounds to 1500 pounds. For vessels subject to weak link requirements under existing ALWTRP regulations, new weak links would only need to be installed on toggles or similar flotation and weighted devices.

<sup>5</sup> For vessels fishing in SAM waters as currently defined, this provision would change existing set restrictions, allowing two buoy lines for all trawls. Set restrictions in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay (May 16 to December 31) would remain at only one buoy line for trawls with five traps or fewer. The existing prohibition on single traps in these areas would remain in effect.

<sup>6</sup> Alternative 6 Final (Preferred) would expand the waters subject to the current ALWTRP gear marking scheme (one 4-inch colored mark mid-way on the buoy line) and would require vessels to mark all surface buoys with their vessel registration number, vessel documentation number, Federal permit number, or whatever positive identification is required by the state in which the vessel's home port is located.

<sup>7</sup> This provision would apply only from September 1 to May 31 for vessels fishing between 40°00'N and 32°00'N, from November 15 to April 15 for vessels fishing between 32°00'N and 29°00'N, and from December 1 to March 31 for vessels fishing between 29°00'N and 27°51'N. The requirement would apply year-round to all other vessels.

<sup>8</sup> This provision is consistent with current SAM requirements, and would represent no change in waters that would remain subject to the SAM program. The proposed revision of the SAM zone's boundaries would release some areas from this requirement but extend it to others.

**Exhibit 5-2A  
PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVES 2 THROUGH 6 DRAFT\*: OTHER TRAP/POT FISHERIES<sup>1</sup>**

Vessels Fishing In:	Buoy Line Modification					Groundline Modification <sup>2</sup>					Weak Link Modification <sup>3</sup>					Set Restrictions					Dynamic Area Management <sup>4</sup>					Gear Marking Mod. <sup>5</sup>
	2 <sup>6</sup>	3 <sup>6*</sup>	4 <sup>6</sup>	5 <sup>7</sup>	6 <sup>8*</sup>	2	3 <sup>*</sup>	4	5	6 <sup>*</sup>	2	3 <sup>*</sup>	4	5	6 <sup>*</sup>	2 <sup>9</sup>	3 <sup>9*</sup>	4 <sup>9</sup>	5 <sup>10</sup>	6 <sup>10*</sup>	2	3 <sup>*</sup>	4	5	6 <sup>*</sup>	2-6
Cape Cod Bay: January 1 - May 15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
Cape Cod Bay: May 16 – December 31						●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
Great South Channel: July 1 – March 31 <sup>11</sup>						●	●	●		●	●	●	●	●	●						●	●	●			●
LMA 6						●	●	●		●	●	●	●	●	●						●	●	●			●
Offshore						●	● <sup>12</sup>	● <sup>13</sup>		● <sup>12</sup>	●	● <sup>12</sup>	● <sup>13</sup>	● <sup>12</sup>	● <sup>12</sup>						●	●	●			●
Northern Inshore						●	●	●		●	●	●	●	●	●						●	●	●			●
Northern Nearshore						●	●	●		● <sup>12</sup>	●	● <sup>12</sup>	● <sup>13</sup>	● <sup>12</sup>	● <sup>12</sup>	●	●	●	●	●	●	●	●			●
Current SAM: March 1 - July 31	●	●	●	■	■	●	●	●	■	■	●	●	●	■	■	●	●	●	■	■	●	●	●	■	■	●
Revised SAM: March 1 - July 31	■	■	■	●	●	■	■	■	●	●	■	■	■	●	●	■	■	■	■	■	●	●	●			●
Stellwagen Bank/Jeffreys Ledge						●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
Southern Nearshore						●	● <sup>12</sup>	● <sup>13</sup>		● <sup>12</sup>	●	● <sup>12</sup>	● <sup>13</sup>	● <sup>12</sup>	● <sup>12</sup>						●	●	●			●

**Key:**

- = New Requirements
- = Not Applicable
- \* = Specified as a Preferred Alternative in the DEIS

Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

- <sup>1</sup> This exhibit does not address the universal gear modification requirements currently established under the ALWTRP. The alternatives under consideration would not alter these provisions.
- <sup>2</sup> All groundline must be made entirely of sinking and/or neutrally buoyant line. This provision would become effective in Cape Cod Bay (January 1 - May 15) and SAM waters within six months of the final rule's publication, and within 12 months elsewhere. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.
- <sup>3</sup> Weak links must be placed on all flotation and weighted devices attached to the buoy line, such as surface buoys and toggles. Installing weak links at all surface buoys off the buoy line will place vessels fishing in Northern Inshore waters in compliance with the requirement to install at least one option from the Lobster Take Reduction Technology List under Alternative 5.
- <sup>4</sup> All other trap/pot vessels may be temporarily restricted in areas north of 40°00'N latitude when aggregations of right whales are observed under the Dynamic Area Management (DAM) program until 12 months after the final rule's publication, when the DAM program would be eliminated. If a DAM zone is triggered, to continue fishing the following gear modifications may be required: all groundlines and the upper two-thirds of all buoy lines must be made of either sinking and/or neutrally buoyant line, and a weak link with a maximum breaking strength of 600 pounds (1500 pounds in offshore areas and the Great South Channel Restricted Area that overlaps with LMA 3 and the LMA 2/3 Overlap from July 1 to March 31) must be placed at all buoys.
- <sup>5</sup> All vessels are required to identify buoy lines with a four-inch mark every ten fathoms, and to mark all surface buoys with either their vessel number or permit number.
- <sup>6</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in Cape Cod Bay, January 1 - May 15. Requires buoy line to be made entirely of sinking and/or neutrally buoyant line in SAM waters until 12 months after the final rule's publication, when SAM provisions would be eliminated.
- <sup>7</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line.
- <sup>8</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in Cape Cod Bay, January 1 - May 15. Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in SAM waters until 12 months after the final rule's publication, when SAM provisions would be eliminated.
- <sup>9</sup> Set restrictions include: (1) limiting sets in Cape Cod Bay from January 1 to May 15 to pairs or trawls of four or more traps/pots; (2) prohibiting single traps and limiting sets to one buoy line for trawls with four or fewer traps in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay, May 16 to December 31; and (3) limiting sets to one buoy line per trawl in SAM restricted waters until 12 months after the final rule's publication, when SAM provisions would be eliminated.
- <sup>10</sup> Set restrictions include (1) limiting sets in Cape Cod Bay from January 1 to May 15 to pairs or trawls of four or more traps/pots and (2) prohibiting single traps and limiting sets to one buoy line for trawls with four or fewer traps in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay, May 16 to December 31.
- <sup>11</sup> Great South Channel is closed to all trap/pot vessels from April 1 to June 30.
- <sup>12</sup> Provision only applies September 1 to May 31 for vessels fishing between 40°00'N and the SC/GA border, November 15 to April 15 for vessels fishing between the SC/GA border and 29°00'N, and December 1 to March 31 for vessels fishing between 29°00'N and 27°51'N. Requirements apply year-round for all other vessels.
- <sup>13</sup> Provision only applies from November 15 to April 15 for vessels fishing between the SC/GA border and 29°00'N, and from December 1 to March 31 for vessels fishing between 29°00'N and 27°51'N. Requirements apply year-round to all other vessels.

**Exhibit 5-2B**  
**PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVE 6 FINAL (PREFERRED): OTHER TRAP/POT FISHERIES<sup>1</sup>**

Vessels Fishing In	Buoy Line Modification <sup>2</sup>	Groundline Modification <sup>3</sup>	Weak Link Modification <sup>4</sup>	Set Restrictions <sup>5</sup>	Gear Marking Mod. <sup>6</sup>
Cape Cod Bay: January 1 - May 15	●	●	●	●	●
Cape Cod Bay: May 16 – December 31		●	●	●	●
Great South Channel: July 1 – March 31 <sup>7</sup>		●	●		●
LMA 6		●	●		●
Offshore		● <sup>8</sup>	● <sup>8</sup>		●
Northern Inshore		●	●		●
Northern Nearshore		● <sup>8</sup>	● <sup>8</sup>	●	●
Revised SAM: March 1 - July 31	●	●	●		●
Stellwagen Bank/Jeffreys Ledge		●	●	●	●
Southern Nearshore		● <sup>8</sup>	● <sup>8</sup>		●

## Key:

- = New Requirements
- = Not Applicable

Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

- <sup>1</sup> This exhibit does not address the universal gear modification requirements currently established under the ALWTRP. The alternatives under consideration would not alter these provisions.
- <sup>2</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in Cape Cod Bay, January 1 - May 15. In addition, requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in SAM waters. The latter provision would take effect six months after the final rule is published and remain in effect for the next six months; thereafter, the SAM program would be eliminated.
- <sup>3</sup> All groundline must be made entirely of sinking and/or neutrally buoyant line. This provision would take effect in Cape Cod Bay (January 1 - May 15) and in SAM waters six months after the final rule's publication, and 12 months after the final rule's publication in all other waters. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.
- <sup>4</sup> Weak links must be placed on all flotation and weighted devices attached to the buoy line, such as surface buoys and toggles.
- <sup>5</sup> Set restrictions would include (1) limiting sets in Cape Cod Bay from January 1 to May 15 to pairs or trawls of four or more traps/pots, and (2) prohibiting single traps and limiting sets to one buoy line for trawls with five or fewer traps in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay, May 16 to December 31.
- <sup>6</sup> All vessels would be required to identify buoy lines with a 4-inch mark mid-way on the buoy line, and to mark all surface buoys with their vessel registration number, vessel documentation number, Federal permit number, or whatever positive identification is required by the state in which the vessel's home port is located.
- <sup>7</sup> The Great South Channel would be closed to all trap/pot vessels from April 1 to June 30.
- <sup>8</sup> This provision would apply only from September 1 to May 31 for vessels fishing between 40°00'N and 32°00'N, from November 15 to April 15 for vessels fishing between 32°00'N and 29°00'N, and from December 1 to March 31 for vessels fishing between 29°00'N and 27°51'N. The requirement would apply year-round to all other vessels.

**Exhibit 5-3A  
PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVES 2 THROUGH 6 DRAFT\*: NORTHEAST AND MID-ATLANTIC GILLNETS<sup>1</sup>**

Vessels Fishing In	Gear Marking Mod. <sup>2</sup>	Groundline Modification <sup>3</sup>					Flotation and Weighted Device Weak Link Mod. <sup>4</sup>					Net Panel Weak Link Modification <sup>5</sup>					Anchoring Requirement Modification <sup>5</sup>					Buoy Line Modifications				
		2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*	2 <sup>6</sup>	3 <sup>6*</sup>	4 <sup>6</sup>	5 <sup>7</sup>	6 <sup>8*</sup>
<b>Northeast Anchored Gillnets</b>																										
Cape Cod Bay, Great South Channel Area, and Great South Channel Sliver Area <sup>9,10</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
Stellwagen Bank/Jeffreys Ledge and Other Northeast Waters North <sup>11</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
Other Northeast Waters South: Sep 1 – May 31 <sup>11</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
Other Northeast Waters South: Jun 1 – Aug 31 <sup>11</sup>	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
Current SAM: Mar 1 – Jul 31 <sup>12</sup>	●	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	○	○	○	○	○	○
Revised SAM: Mar 1 – Jul 31 <sup>12</sup>	●	■	■	■	■	■	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○
<b>Mid-Atlantic Anchored Gillnets</b>																										
Areas 1 and 2: Sep 1 – May 31 <sup>15</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
Areas 1 and 2: Jun 1 – Aug 31	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
<b>Driftnets</b>																										
Northeast (North) <sup>16</sup>	●																									
Other Northeast Waters South: Sep 1 – May 31 <sup>11</sup>	●																									
Other Northeast Waters South: Jun 1 – Aug 31 <sup>11</sup>	●																									
Mid-Atlantic: Sep 1 – May 31	●																									
Mid-Atlantic: Jun 1 – Aug 31	●																									

- Key:
- = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).
  - = Addition to Existing Requirements
  - = Relaxation of Existing Requirements
  - = Not Applicable
  - \* = Specified as a Preferred Alternative in the DEIS

Area 1 = West of 72°30'W and north of 33°51'N (NC/SC border).  
 Area 2 = South of VA/NC border, west of the Exclusive Economic Zone boundary, north of SC/GA border, and excluding Area 1 (defined above).

Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

<sup>1</sup> This exhibit does not address the universal gear modification requirements currently established under the ALWTRP. The alternatives under consideration would not alter these provisions.

<sup>2</sup> Alternatives 2 through 6 remove current ALWTRP gear marking schemes and require all vessels in the Northeast and Mid-Atlantic to mark surface buoys with either their vessel or permit number, and to identify buoy lines with a four-inch mark every ten fathoms.

<sup>3</sup> Groundlines must be made entirely of sinking and/or neutrally buoyant line within 12 months of the final rule's publication. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.

<sup>4</sup> Weak links required on all flotation and/or weighted devices attached to the buoy line, such as toggles or leaded lines. Existing requirements call for weak links only on buoy lines attached to the main buoy.

<sup>5</sup> Anchored gillnets in the Northeast must increase 1,100-pound weak links from one to five or more per net panel, depending on panel size, and must be secured at each end of the net string with the holding power of at least a 22-pound Danforth-style anchor, consistent with existing SAM regulations. In the Mid-Atlantic, anchored gillnets must either increase the number of 1,100-pound weak links per net panel from one to five or more and be secured at each end with the holding power of a 22-pound Danforth-style anchor, or gear must be stored on board when the vessel returns to port. For driftnet vessels fishing with tended gear at night, one 1,100-pound weak link required per net panel.

<sup>6</sup> The requirements that vessels fishing in SAM waters use only one buoy line per string and that buoy lines be made entirely of sinking and/or neutrally buoyant line are eliminated 12 months after the final rule is published.

<sup>7</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line. The bottom third of the buoy line may be floating line and vessels may use two buoy lines per string. This provision relaxes requirements for vessels fishing in SAM waters as currently defined, but represents a new requirement for vessels fishing in areas newly incorporated into the SAM zone.

<sup>8</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in SAM waters until 12 months after the final rule is published, when SAM provisions are eliminated. The lower third of the buoy line may be floating line and vessels may use two buoy lines per string. This provision relaxes requirements for vessels fishing in SAM waters as currently defined, but represents a new requirement for vessels fishing in areas newly incorporated into the SAM zone.

<sup>9</sup> Provisions apply in Cape Cod Bay from May 16 to December 31, in the Great South Channel Gillnet Area from July 1 to March 31, and in the Great South Channel Sliver Area year-round.

<sup>10</sup> Under Alternatives 5 & 6, the Great South Channel Gillnet Area is closed from April 1 through June 30 (from July 1 to July 31, this area is included in the revised SAM area); area restrictions (as indicated) apply July 1 through March 31. Great South Channel Sliver Area restrictions (as indicated) apply August 1 through April 30; SAM restrictions apply May 1 through July 31.

<sup>11</sup> Other Northeast Waters Area is divided into north and south regions by a line beginning at 41°18.2'N latitude and 71°51.5'W longitude, south to 40°00'N, and east to the Exclusive Economic Zone boundary.

<sup>12</sup> Restrictions in SAM waters are in addition to existing restrictions in overlapping sections of Stellwagen Bank/Jeffreys Ledge and Other Northeast Waters. The Great South Channel Gillnet Area (excluding the Sliver Area) remains closed to gillnetting from April 1 through June 30. Refer also to footnote 10.

<sup>13</sup> Vessels fishing in SAM waters must already use sinking and/or neutrally buoyant groundline.

<sup>14</sup> The proposed revision of the SAM zone's boundaries would release certain areas from some of these requirements but extend them to others.

<sup>15</sup> Existing provisions (shaded) apply to Area 1 only from December 1 through March 31.

<sup>16</sup> Includes all regulated areas north of a line beginning at 41°18.2'N latitude and 71°51.5'W longitude, south to 40°00'N, and east to the Exclusive Economic Zone boundary. Driftnet fishing is prohibited in the Cape Cod Bay Restricted Area from January 1 to May 15 and in the Great South Channel Restricted Gillnet Area (excluding the Sliver Area) from April 1 to June 30.

Exhibit 5-3B PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVE 6 FINAL (PREFERRED): NORTHEAST AND MID-ATLANTIC GILLNETS <sup>4</sup>						
Vessels Fishing In	Gear Marking Mod.	Groundline Modification <sup>2</sup>	Flotation and Weighted Device Weak Link Mod. <sup>3</sup>	Net Panel Weak Link Modification <sup>4</sup>	Anchoring Requirement Modification <sup>4</sup>	Buoy Line Modifications <sup>5</sup>
<b>Northeast Anchored Gillnets</b>						
Cape Cod Bay, Great South Channel Gillnet Area, and Great South Channel Sliver Area <sup>6,7</sup>		●	●	●	●	
Stellwagen Bank/Jeffreys Ledge and Other Northeast Waters North <sup>8</sup>		●	●	●	●	
Other Northeast Waters South: Sep 1 – May 31 <sup>8</sup>		●	●	●	●	
Other Northeast Waters South: Jun 1 – Aug 31 <sup>8</sup>			○	○	○	
Expanded SAM: Mar 1 – Jul 31 <sup>9</sup>		● <sup>10</sup>	●	● <sup>10</sup>	● <sup>10</sup>	●
<b>Mid-Atlantic Anchored Gillnets</b>						
Areas 1 and 2: Sep 1 – May 31 <sup>11</sup>	●	●	●	●		
Areas 1 and 2: Jun 1 – Aug 31	●					
<b>Driftnets</b>						
Northeast (North) <sup>12</sup>	●					
Other Northeast Waters South: Sep 1 – May 31 <sup>8</sup>	●					
Other Northeast Waters South: Jun 1 – Aug 31 <sup>8</sup>	●					
Mid-Atlantic: Sep 1 – May 31	●					
Mid-Atlantic: Jun 1 – Aug 31	●					
Key:						
<p>■ = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).</p> <p>● = Addition to Existing Requirements</p> <p>○ = Relaxation of Existing Requirements</p> <p>Area 1 = West of 72°30'W and north of 33°51'N (NC/SC border).</p> <p>Area 2 = South of VA/NC border, west of the Exclusive Economic Zone boundary, north of 32°00'N, and excluding Area 1 (defined above).</p>						
Notes: For specific details about various provisions, see Chapter 3, Regulatory Alternatives.						
<sup>1</sup> This exhibit does not address the universal gear modification requirements currently established under the ALWTRP. The alternatives under consideration would not alter these provisions.						
<sup>2</sup> Effective 12 months after the final rule's publication, groundlines must be made entirely of sinking and/or neutrally buoyant line. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.						
<sup>3</sup> Weak links required on all flotation and/or weighted devices attached to the buoy line, such as toggles or leaded lines. Existing requirements call for weak links only on buoy lines attached to the main buoy.						
<sup>4</sup> Anchored gillnets in the Northeast must increase 1,100-pound weak links from one to three, five, or more than five per net panel, depending on panel size and weak link configuration used, and be secured with the holding power of at least a 22-pound Danforth-style anchor at each end of the net string, consistent with existing SAM regulations. In the Mid-Atlantic, anchored gillnets must either increase the number of 1,100-pound weak links per net panel from one to three, five, or more per panel, and be secured at each end with the holding power of at least a 22-pound Danforth-style anchor, or gear must be stored on board when the vessel returns to port. Anchored gillnets within 300 yards of the North Carolina coast would have an additional configuration option: three, five, or more than five 600-pound weak links per panel, an anchor on the offshore end of the string with the holding power of at least an 8-pound Danforth-style anchor, and a 31-pound dead weight on the inshore end. Vessels fishing in water deeper than 280 fathoms would be exempt from weak link and anchoring requirements.						
<sup>5</sup> Requires the upper two-thirds of the buoy line to be made of sinking and/or neutrally buoyant line in SAM waters until 12 months after the final rule's publication, when SAM provisions would be eliminated. The lower third of the buoy line may be floating line and vessels may use two buoy lines per string. This provision relaxes requirements for vessels fishing in SAM waters as currently defined, but represents a new requirement for vessels fishing in areas newly incorporated into the SAM zone.						
<sup>6</sup> Provisions apply in Cape Cod Bay from May 16 to December 31, in the Great South Channel Gillnet Area from July 1 to March 31, and in the Great South Channel Sliver Area year-round.						
<sup>7</sup> The Great South Channel Gillnet Area is closed from April 1 through June 30 (from July 1 to July 31, this area is included in the revised SAM area); area restrictions (as indicated) apply July 1 through March 31. The Great South Channel Sliver Area critical habitat restrictions (as indicated) apply August 1 through April 30; SAM restrictions apply May 1 through July 31.						
<sup>8</sup> The Other Northeast Waters Area is divided into north and south regions by a line beginning at 41°18.2'N latitude and 71°51.5'W longitude, south to 40°N, and east to the Exclusive Economic Zone boundary.						
<sup>9</sup> Restrictions in SAM waters are in addition to existing restrictions in overlapping sections of Stellwagen Bank/Jeffreys Ledge and Other Northeast Waters. The Great South Channel Gillnet Area (excluding the Sliver Area) remains closed to gillnetting from April 1 through June 30. Refer also to footnote 7.						
<sup>10</sup> The proposed revision of the SAM zone's boundaries would release certain areas from some of these requirements but extend them to others.						
<sup>11</sup> Existing provisions (shaded) apply to Area 1 only from December 1 through March 31.						
<sup>12</sup> Includes all regulated areas north of a line beginning at 41°18.2'N latitude and 71°51.5'W longitude, south to 40°N, and east to the Exclusive Economic Zone boundary. Driftnet fishing is prohibited in the Cape Cod Bay Restricted Area from January 1 to May 15 and in the Great South Channel Restricted Gillnet Area (excluding the Sliver Area) from April 1 to June 30.						

Exhibit 5-4A

PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVES 2 THROUGH 6 DRAFT\*: SOUTHEAST GILLNETS<sup>1</sup>

Vessels Fishing In	Universal Gear Modifications	Gear Marking Modification <sup>2</sup>	Non-Floating Line Modification <sup>3</sup>						Buoy Line Weak Link Modification <sup>4</sup>						Net Panel Weak Link Modification <sup>5</sup>						Anchoring Requirement Modification <sup>5</sup>					
	2 - 6	2 - 6	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*				
<i>Southeast Atlantic Gillnets</i>																										
Area 1: Nov 15 – Apr 15	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
Area 2: Nov 15 – Apr 15	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
Areas 1 and 2: Apr 16 – Nov 14	●	●	●					●					●					●								
Area 3: Nov 15 – Nov 30	●	●	●					●					●					●								
Areas 3 and 4: Dec 1 – Mar 31	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
Area 3: Apr 1 – Nov 14	●	●	●					●					●					●								
Area 4: Apr 1 – Nov 30	●	●	●					●					●					●								
Areas 5 and 6	●	●																								

<i>Shark Gillnets</i>																						
U.S. Restricted and Observer Areas		○ <sup>6</sup>																				

Key:

- = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).
- = Addition to Existing Requirements
- = Relaxation of Existing Requirements
- = Not Applicable
- \* = Specified as a Preferred Alternative in the DEIS

Area 1 = South of SC/GA border, west of 80°00'W, and north of 29°00'N.  
 Area 2 = South of SC/GA border, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 29°00'N.  
 Area 3 = South of 29°00'N, west of 80°00'W, and north of 27°51'N.  
 Area 4 = South of 29°00'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 27°51'N.  
 Area 5 = South of 27°51'N, west of 80°00'W, and north of 26°46.5'N.  
 Area 6 = South of 27°51'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 26°46.5'N.

Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

<sup>1</sup> Proposed alternatives specify replacement of 100% observer coverage with a vessel monitoring system.

<sup>2</sup> Alternatives 2 through 6 remove current ALWTRP gear marking schemes, with the exception of shark net panel gear marking (which remains the same), and require all vessels (including shark vessels) to mark surface buoys with vessel or permit number, and to identify buoy lines with a four-inch mark every ten fathoms. In addition, shark gear must bear a four-inch blue mark and a four-inch green mark once every 100 yards along both the float line and the leadline of each net panel. If shark vessel buoy lines are less than or equal to four feet in length, no buoy line marking is required.

<sup>3</sup> Groundlines must be made entirely of sinking and/or neutrally buoyant line within 12 months of the final rule's publication. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.

<sup>4</sup> Weak links required on all flotation and/or weighted devices attached to the buoy line, such as toggles or leaded lines.

<sup>5</sup> Under Alternatives 2, 3\*, 4, and 6 Draft\*, gillnets must be anchored at each end with the holding power of a 22-pound Danforth-style anchor and have five or more 1,100-pound weak links per net panel, depending on panel size; gillnets that do not meet these requirements must be removed from the water and stowed on board the vessel before returning to port. Under Alternative 5, only one 1,100-pound weak link per net panel is required.

<sup>6</sup> Gear marking requirements apply to the larger restricted and observer/monitoring areas defined under Alternatives 2 through 6 Draft\*.

<b>Exhibit 5-4B PROPOSED GEAR MODIFICATION REQUIREMENTS UNDER ALTERNATIVE 6 FINAL (PREFERRED): SOUTHEAST GILLNETS<sup>1</sup></b>						
<b>Vessels Fishing In</b>	<b>Universal Gear Modifications</b>	<b>Gear Marking Modification<sup>2</sup></b>	<b>Non-Floating Line Modification<sup>3</sup></b>	<b>Buoy Line Weak Link Modification<sup>4</sup></b>	<b>Net Panel Weak Link Modification<sup>5</sup></b>	<b>Anchoring Requirement Modification<sup>5</sup></b>
<b><i>Southeast Atlantic Gillnets</i></b>						
Area 1: Nov 15 – Apr 15	●	●	●	●	●	●
Area 2: Nov 15 – Apr 15	●	●	●	●	●	●
Areas 1 and 2: Apr 16 – Nov 14	●	●				
Area 3: Nov 15 – Nov 30	●	●				
Areas 3 and 4: Dec 1 – Mar 31	●	●	●	●	●	●
Area 3: Apr 1 – Nov 14	●	●				
Area 4: Apr 1 – Nov 30	●	●				
Areas 5 and 6	●	●				
<b><i>Shark Gillnets</i></b>						
U.S. Restricted and Monitoring Areas		○ <sup>6</sup>				
<p>Key:</p> <ul style="list-style-type: none"> <li>■ = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).</li> <li>● = Addition to Existing Requirements</li> <li>○ = Relaxation of Existing Requirements</li> <li>■ = Not Applicable</li> </ul> <p>Area 1 = South of 32°00'N, west of 80°00'W, and north of 29°00'N.  Area 2 = South of 32°00'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 29°00'N.  Area 3 = South of 29°00'N, west of 80°00'W, and north of 27°51'N.  Area 4 = South of 29°00'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 27°51'N.  Area 5 = South of 27°51'N, west of 80°00'W, and north of 26°46.5'N.  Area 6 = South of 27°51'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 26°46.5'N.</p> <p>Notes: For specific details about various provisions, see Chapter 3, Regulatory Alternatives.</p> <p><sup>1</sup> Final alternative retains existing requirements for 100% observer coverage south of 32°00'N, west of 80°00'W, and north of 27°51'N. A vessel monitoring system would be permitted as a substitute for 100% observer coverage south of 27°51'N, west of 80°00'W, and north of 26°46.5'N.</p> <p><sup>2</sup> Alternative 6 Final (Preferred) would retain the current ALWTRP gear marking scheme (one mark midway on the buoy line) and would require vessels (including shark vessels) to mark all surface buoys with their vessel registration number, vessel documentation number, Federal permit number, or whatever positive identification is required by the state in which the vessel's home port is located. In addition, shark gear would be required to bear a 4-inch blue mark and a 4-inch green mark once every 100 yards along both the float line and the leadline of each net panel. No markings would be required on shark vessel buoy lines or Southeast Atlantic gillnet buoy lines less than or equal to four feet in length.</p> <p><sup>3</sup> Effective 12 months after the final rule is published, groundlines must be made entirely of sinking and/or neutrally buoyant line. Vessels fishing in water deeper than 280 fathoms would be exempt from this requirement.</p> <p><sup>4</sup> Weak links required on all flotation and/or weighted devices attached to the buoy line, such as toggles or leaded lines.</p> <p><sup>5</sup> Requires gillnets to return to port with the vessel or be anchored with a 22-pound Danforth-style anchor and have three, five, or more 1,100-pound weak links per net panel, depending on panel size and weak link configuration option used.</p> <p><sup>6</sup> Gear marking requirements apply to the larger monitoring and restricted areas defined under Alternative 6 Final (Preferred).</p>						

Exhibit 5-5A

**PROPOSED FISHING REQUIREMENTS AND CLOSURES UNDER ALTERNATIVES 2 THROUGH 6 DRAFT\*:  
NORTHEAST AND MID-ATLANTIC DRIFT GILLNETS**

Vessels Fishing In	Closures <sup>1</sup>					Night Set Restriction <sup>2</sup>					Gear Stowing Requirement <sup>3</sup>				
	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*
<b>Northeast</b>															
Cape Cod Bay and Great South Channel Gillnet Area <sup>4</sup>	●	●	●	●	●										
Cape Cod Bay, Great South Channel Gillnet Area, Great South Channel Sliver, Stellwagen Bank/Jeffreys Ledge, and Other Northeast Waters North <sup>5,6</sup>						●	●	●	●	●	●	●	●	●	●
Other Northeast Waters South: Sep 1 – May 31 <sup>6</sup>						●	●	●	●	●	●	●	●	●	●
Other Northeast Waters South: Jun 1 – Aug 31 <sup>6</sup>						●		●	●		●		●	●	
<b>Mid-Atlantic</b>															
Area 1: Sep 1 – Nov 30 and Apr 1 – May 31						●	●	●	●	●	●	●	●	●	●
Area 1: Dec 1 – Mar 31															
Areas 1 and 2: Jun 1 – Aug 31						●		●			●		●		
Area 2: Sep 1 – May 31						●	●	●	●	●	●	●	●	●	●
<p>Key:</p> <p>■ = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).</p> <p>● = Addition to Existing Requirements</p> <p>○ = Change to Existing Requirements</p> <p>■ = Not Applicable</p> <p>* = Specified as a Preferred Alternative in the DEIS</p> <p>Area 1 = West of 72°30'W and north of 33°51'N (NC/SC border).</p> <p>Area 2 = South of VA/NC border, west of the Exclusive Economic Zone boundary, north of SC/GA border, and excluding Area 1 (defined above).</p> <p>Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.</p> <p><sup>1</sup> Inclusion of Northeast driftnets under Alternatives 2 through 6 Draft* will result in closing the Cape Cod Bay driftnet fishery from January 1 through May 15 and closing the Great South Channel Gillnet Area driftnet fishery from April 1 through June 30.</p> <p><sup>2</sup> No fishing with driftnet gear at night unless gear is tended.</p> <p><sup>3</sup> Gear must be removed from the water and stowed on board the vessel before returning to port.</p> <p><sup>4</sup> Provisions apply to Cape Cod Bay from January 1 through May 15 and to the Great South Channel Gillnet Area from April 1 through June 30.</p> <p><sup>5</sup> Provisions apply to Cape Cod Bay from May 16 through December 31 and to the Great South Channel Gillnet Area from July 1 through March 31. In all other areas listed, the provisions apply year-round.</p> <p><sup>6</sup> The Other Northeast Waters Area is divided into north and south regions by a line beginning at 41°18.2'N latitude and 71°51.5'W longitude, south to 40°00'N, and east to the boundary of the Exclusive Economic Zone.</p>															

<b>Exhibit 5-5B PROPOSED FISHING REQUIREMENTS AND CLOSURES UNDER ALTERNATIVE 6 FINAL (PREFERRED): NORTHEAST AND MID-ATLANTIC DRIFT GILLNETS</b>			
<b>Vessels Fishing In</b>	<b>Closures<sup>1</sup></b>	<b>Night Set Restriction<sup>2</sup></b>	<b>Gear Stowing Requirement<sup>3</sup></b>
<b><i>Northeast</i></b>			
Cape Cod Bay and Great South Channel Gillnet Area <sup>4</sup>	●		
Cape Cod Bay, Great South Channel Gillnet Area, Great South Channel Sliver, Stellwagen Bank/Jeffreys Ledge, and Other Northeast Waters North <sup>5,6</sup>		●	●
Other Northeast Waters South: Sep 1 – May 31 <sup>6</sup>		●	●
Other Northeast Waters South: Jun 1 – Aug 31 <sup>6</sup>			
<b><i>Mid-Atlantic</i></b>			
Area 1: Sep 1 – Nov 30 and Apr 1 – May 31		●	●
Area 1: Dec 1 – Mar 31			
Areas 1 and 2: Jun 1 – Aug 31			
Area 2: Sep 1 – May 31		●	●
<p>Key:</p> <p>■ = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).</p> <p>● = Addition to Existing Requirements</p> <p>Area 1 = West of 72°30'W and north of 33°51'N (NC/SC border).</p> <p>Area 2 = South of VA/NC border, west of the Exclusive Economic Zone boundary, north of 32°00'N, and excluding Area 1 (defined above).</p> <p>Notes: For specific details about various provisions, see Chapter 3, Regulatory Alternatives.</p> <p><sup>1</sup> Inclusion of Northeast driftnets under Alternative 6 Final (Preferred) will result in closing the Cape Cod Bay driftnet fishery from January 1 through May 15 and closing the Great South Channel Gillnet Area driftnet fishery from April 1 through June 30.</p> <p><sup>2</sup> No fishing with driftnet gear at night unless gear is tended.</p> <p><sup>3</sup> Gear must be removed from the water and stowed on board the vessel before returning to port.</p> <p><sup>4</sup> Provisions apply to Cape Cod Bay from January 1 through May 15 and to Great South Channel Gillnet Area from April 1 through June 30.</p> <p><sup>5</sup> Provisions apply to Cape Cod Bay from May 16 through December 31 and to Great South Channel Gillnet Area from July 1 through March 31. In all other areas listed, the provisions apply year-round.</p> <p><sup>6</sup> The Other Northeast Waters Area is divided into north and south regions by a line beginning at 41°18.2'N latitude and 71°51.5'W longitude, south to 40°00'N, and east to the boundary of the Exclusive Economic Zone.</p>			

Exhibit 5-6A

PROPOSED FISHING REQUIREMENTS AND CLOSURES UNDER ALTERNATIVES 2 THROUGH 6 DRAFT\*: SOUTHEAST GILLNETS

Vessels Fishing In	Closures <sup>1,2</sup>					Night Set Restrictions <sup>1,3</sup>					Spotter Plane Requirement <sup>1,4</sup>					Whale Approach Requirement <sup>1,5</sup>					Monitoring Requirement <sup>6</sup>				
	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*	2	3*	4	5	6*
<b>Shark Gillnets</b>																									
Area 1: Nov 15 – Mar 31																					○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>
Area 1: Apr 1 – Apr 15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Areas 1 and 2: Apr 16 – Nov 14																●									
Area 2: Nov 15 – Apr 15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Area 3: Nov 15 – Nov 30	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>
Area 3: Dec 1 – Mar 31																					○	○	○	○	○
Area 3: Apr 1 – Nov 14																●									
Area 4: Dec 1 – Mar 31	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Area 4: Apr 1 – Nov 30																●									
Area 5: Nov 15 – Nov 30																					○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>	○ <sup>1</sup>
Area 5: Dec 1 – Mar 31																					○	○	○	○	○
Area 6: Dec 1 – Mar 31																					●	●	●	●	●
<b>Southeast Atlantic Gillnets</b>																									
Area 1: Nov 15 – Mar 31; Area 3: Dec 1 – Mar 31																									
Area 2: Nov 15 – Apr 15; Area 1: Apr 1 - Apr 15; Area 4: Dec 1 - Mar 31						●	●	●	●	●															
Area 3: Nov 15 – Nov 30						○	○	○	○	○															

Key:

- = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).
- = Addition to Existing Requirements
- = Change to Existing Requirements
- = Not Applicable
- \* = Specified as a Preferred Alternative in the DEIS

Area 1 = South of SC/GA border, west of 80°00'W, and north of 29°00'N.  
 Area 2 = South of SC/GA border, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 29°00'N.  
 Area 3 = South of 29°00'N, west of 80°00'W, and north of 27°51'N.  
 Area 4 = South of 29°00'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 27°51'N.  
 Area 5 = South of 27°51'N, west of 80°00'W, and north of 26°46.5'N.  
 Area 6 = South of 27°51'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 26°46.5'N.

Notes: For specific details of various provisions, see Chapter 3, Regulatory Alternatives.

<sup>1</sup> Changes in existing provisions are due to changes in restricted times and areas under Alternatives 2 through 6 Draft\*.  
<sup>2</sup> Area closed to shark gillnet fishing, except for strikenetting.  
<sup>3</sup> No straight sets of gillnet gear at night. Strikenet gear may not be set at night or when visibility is less than 500 yards.  
<sup>4</sup> Restriction is applicable only to vessels strikenetting for sharks.  
<sup>5</sup> If a right, humpback, or fin whale moves within three nautical miles of set gear, the gear must be removed immediately from the water and cannot be reset until the whale is no longer in the area.  
<sup>6</sup> Under Alternative 1, vessel operator must call NMFS' Southeast Regional Office not less than 48 hours prior to departure to arrange for observer coverage. Under Alternatives 2 through 6 Draft\*, vessels must use a Vessel Monitoring System (VMS), as implemented in the Highly Migratory Species (HMS) Fishery Management Plan (FMP) (68 FR 74746).

<b>Exhibit 5-6B</b>					
<b>PROPOSED FISHING REQUIREMENTS AND CLOSURES UNDER ALTERNATIVE 6 FINAL (PREFERRED): SOUTHEAST GILLNETS</b>					
Vessels Fishing In	Closures <sup>1,2</sup>	Night Set Restrictions <sup>1,3</sup>	Spotter Plane Requirement <sup>1,4</sup>	Whale Approach Requirement <sup>1,5</sup>	Monitoring Requirement <sup>6</sup>
<b><i>Shark Gillnets</i></b>					
Area 1: Nov 15 – Mar 31					
Area 1: Apr 1 – Apr 15	●	●	●	●	●
Areas 1 and 2: Apr 16 – Nov 14					
Area 2: Nov 15 – Apr 15				●	
Area 3: Nov 15 – Nov 30	○	○	○	○	○ <sup>1</sup>
Area 3: Dec 1 – Mar 31					
Area 3: Apr 1 – Nov 14					
Area 4: Dec 1 – Mar 31				●	
Area 4: Apr 1 – Nov 30					
Area 5: Nov 15 – Nov 30					○ <sup>1</sup>
Area 5: Dec 1 – Mar 31					○
Area 6: Dec 1 – Mar 31					
<b><i>Southeast Atlantic Gillnets</i></b>					
Area 1: Nov 15 – Mar 31; Area 3: Dec 1 – Mar 31					
Area 2: Nov 15 – Apr 15; Area 1: Apr 1 - Apr 15; Area 4: Dec 1 - Mar 31					
Area 3: Nov 15 – Nov 30		○			
<b>Key:</b>					
■ = Existing Requirements. These requirements would continue to apply under the No Action Alternative (Alternative 1).					
● = Addition to Existing Requirements					
○ = Change to Existing Requirements					
Area 1 = South of 32°00'N, west of 80°00'W, and north of 29°00'N.					
Area 2 = South of 32°00'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 29°00'N.					
Area 3 = South of 29°00'N, west of 80°00'W, and north of 27°51'N.					
Area 4 = South of 29°00'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 27°51'N.					
Area 5 = South of 27°51'N, west of 80°00'W, and north of 26°46.5'N.					
Area 6 = South of 27°51'N, east of 80°00'W, west of the Exclusive Economic Zone boundary, and north of 26°46.5'N.					
Notes: For specific details about various provisions, see Chapter 3, Regulatory Alternatives.					
<sup>1</sup> Changes in existing provisions are due to changes in restricted times and areas under Alternative 6 Final (Preferred).					
<sup>2</sup> Area closed to shark gillnet fishing, except for strikenetting.					
<sup>3</sup> No straight sets of gillnet gear at night. Strikenet gear may not be set at night or when visibility is less than 500 yards.					
<sup>4</sup> Restriction is applicable only to vessels strikenetting for sharks.					
<sup>5</sup> If a right, humpback, or fin whale moves within three nautical miles of set gear, the gear must be removed immediately from the water and cannot be reset until the whale is no longer in the area.					
<sup>6</sup> Under Alternative 6 Final (Preferred), vessels operating in Area 5 would be permitted to use a Vessel Monitoring System (VMS), as implemented in the Highly Migratory Species (HMS) Fishery Management Plan (FMP), as a substitute for 100% observer coverage. Alternative 6 Final (Preferred) would continue to require 100% observer coverage in Area 1 (November 15 through April 15) and Area 3 (December 1 through March 31).					

### 5.1.1.1 Groundline Requirements

Floating groundline has been involved in the entanglement of a number of North Atlantic large whales. Johnson et al. (2005) found that floating groundline was involved in seven of 25 right and humpback whale entanglements in which parts of the entangling gear were identified.<sup>6</sup> The line is designed to float in the water column and avoid contact with the sea floor; however, any slack in the line can allow floating loops of excess line to form. This poses an entanglement threat to large whales, which are known to frequent all portions of the water column. For example, during feeding activities in Cape Cod Bay, three right whales tagged by multi-sensor telemetry units spent between 17 and 31 percent of their time in the lower third of the water column (Wiley and Goodyear, 1998). When not feeding, the percentage of time spent in the lower third of the water column increased to between 27 and 40 percent.

Data on the quantity of floating groundline currently used by the gillnet, lobster trap/pot, and other trap/pot fisheries in waters potentially subject to ALWTRP regulations are unavailable. The economic analysis presented in Chapter 6, however, is based in part on estimates of the amount of groundline typically used by vessels in these fisheries, as well as the number of active vessels in each fishery. Using these figures, it is possible to develop an overall estimate of the amount of groundline these vessels employ. Exhibit 5-7 presents these estimates. As the exhibit indicates, vessels in the fisheries of interest are estimated to employ approximately 36.0 million fathoms of groundline. The vast majority of this groundline – approximately 31.3 million fathoms – is assumed to be floating line. The remainder – approximately 4.7 million fathoms – is assumed to be sinking and/or neutrally buoyant groundline, which is used in certain areas (e.g., by lobster trap/pot vessels in the Cape Cod Bay Restricted Area, and as of 2007 in all Massachusetts state waters) to comply with current ALWTRP or state requirements. The estimate for the lobster trap/pot fishery accounts for approximately 96 percent of the floating groundline currently in use. The remainder is accounted for by gillnet fisheries (1 percent) and other trap/pot fisheries (3 percent).<sup>7</sup>

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<sup>6</sup> The seven floating groundline entanglements involved four right and three humpback whales. Six involved trap/pot gear (three right and three humpback whales); four of these whales are alive and gear-free (one right and all three humpback whales). The fifth animal (a right whale) was entangled in both buoy line and groundline; this animal's outcome is unknown. The sixth animal (another right whale) was deemed potentially dead and is a unique case because it was involved in at least three separate entanglement events; therefore, the gear part that resulted in this whale's outcome is unknown. The last case involved a right whale entangled in floating groundline associated with a sink gillnet. This whale subsequently died.

<sup>7</sup> The DEIS estimated that vessels in the fisheries of interest employed more than 44.5 million fathoms of groundline, and that sinking and/or neutrally buoyant line accounted for only 1.5 million fathoms of this total. The increase in the estimated quantity of sinking and/or neutrally buoyant groundline in use reflects the recent introduction of state regulations that prohibit the use of "positively buoyant" (i.e., floating) groundline in Massachusetts waters. The overall decrease in the estimated quantity of groundline in use is the result of a number of factors, including corrections in the calculations used to estimate the quantity of groundline used by each fishery and a change in the baseline gear configuration specified for anchored gillnet vessels that operate in the Mid-Atlantic (see Chapter 6 for a discussion of the latter change).

<b>Exhibit 5-7</b>			
<b>ESTIMATED QUANTITY OF GROUNDLINE IN USE</b>			
<b>(thousands of fathoms)</b>			
<b>Fishery</b>	<b>Floating Line</b>	<b>Sinking and/or Neutrally Buoyant Line</b>	<b>Total</b>
Lobster trap/pot	29,982	4,660	34,642
Gillnet	351	48	399
Other trap/pot	945	9	954
<b>TOTAL</b>	<b>31,278</b>	<b>4,717</b>	<b>35,995</b>
Note: Columns and rows may not sum to reported totals due to rounding error.			

To reduce the risk of entanglement associated with floating groundline, Alternatives 2 through 6 Final (Preferred) would require the use of sinking and/or neutrally buoyant (i.e., non-floating) groundline in designated areas at specified times. Specifically:

- Alternative 2 would require the lobster trap/pot, other trap/pot, Northeast anchored gillnet, and Mid-Atlantic anchored gillnet fisheries to use sinking and/or neutrally buoyant groundline year-round.<sup>8</sup> This requirement would also apply to the Southeast gillnet fishery north of 27°51' N latitude (see Exhibit 3-3 for Alternative 2 Management Areas). The regulation would take effect 12 months after publication of the final rule.
- Alternative 3\* would require the fisheries identified above to use sinking and/or neutrally buoyant groundline on a year-round basis in waters north and east of a line extending from Watch Hill, Rhode Island (41°18.2' N and 71°51.5' W) south to 40°00' N, then east to the boundary of the Exclusive Economic Zone. From this area south to the South Carolina/Georgia border (i.e., 32°00' N), the requirement would only be in effect from September 1 through May 31. Between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, the requirement would be in effect from November 15 through April 15. Finally, between 29°00' N and 27°51' N, the requirement would apply from December 1 through March 31 (see Exhibit 3-7 for Alternative 3 Management Areas). These regulations would take effect 12 months after publication of the final rule.

<sup>8</sup> In response to comments received on the proposed rule and DEIS, NMFS notes that the definition of groundline does not include line connecting trap/pot gear to an anchor, which trap/pot fishermen sometimes employ (particularly in offshore waters) to prevent extreme tides or sea conditions from moving their gear. Neither Alternative 2 nor the other alternatives considered in this EIS, including Alternative 6 Final (Preferred), would require the use of sinking and/or neutrally buoyant line between an anchor and associated trap/pot gear. NMFS plans to contact fishermen and state fishery management agencies to determine how frequently trap/pot fishermen use this configuration of gear, as well as the type of line employed. If floating line is used, NMFS will evaluate the potential entanglement risk and any issues that may be raised by requiring the use of sinking and/or neutrally buoyant line between an anchor and associated trap/pot gear. NMFS will then discuss the appropriate management response with the Atlantic Large Whale Take Reduction Team.

- Alternative 4 would require the fisheries identified above to use sinking and/or neutrally buoyant groundline on a year-round basis north of the South Carolina/Georgia border (i.e., 32°00' N). South of this area, the seasonal requirements specified under Alternative 3\* would apply (see Exhibit 3-8 for Alternative 4 Management Areas). These regulations would take effect 12 months after publication of the final rule.
- Alternative 5 would maintain existing standards requiring lobster trap/pot gear and anchored gillnet gear to use sinking and/or neutrally buoyant groundline in the Cape Cod Bay Restricted Area from January 1 through May 15, and in the SAM zone from March 1 through July 31. This requirement would be extended to additional areas to be incorporated into the SAM zone, and also would be extended to other trap/pot gear subject to the SAM program. The extension of the regulations would take effect six months after publication of the final rule (see Exhibit 3-10 for Alternative 5 Management Areas).
- Alternative 6 Draft\* and Alternative 6 Final (Preferred) would combine elements of Alternative 3\* and Alternative 5. From six months until 12 months after publication of the final rule, the groundline requirements specified under Alternative 5 for the Cape Cod Bay Restricted Area and the expanded SAM zone would be in effect; thereafter, the groundline requirements specified under Alternative 3\* would become effective (see Exhibit 3-11 for Alternative 6 Draft\* Management Areas; see Exhibits 3-13 and 3-14 for Alternative 6 Final (Preferred) Management Areas).

In all cases, the intent of the requirement to use sinking and/or neutrally buoyant groundline is to reduce entanglement risks. The potential direct and indirect effects of this requirement are discussed below.

*Direct effects:*

The requirement to use non-floating groundline is designed to reduce the likelihood of interactions between large whales and fishing gear by reducing the amount of line in the water column.<sup>9</sup> A recent study of underwater profiles of groundline conducted by the Massachusetts Division of Marine Fisheries demonstrated that non-floating groundline does not form arcs of line in the water column (McKiernan et al., 2002). Video recording of neutrally buoyant line between traps (i.e., groundline) revealed that it did not have the same vertical profile as floating line; rather, it was located on or near the bottom and thus was less of an entanglement risk to large whales.<sup>10</sup> An analysis conducted for the lobster industry determined that requiring the use

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<sup>9</sup> The requirement would be unlikely to affect the total amount of line in use, but would reduce the vertical profile of that line. Excess line would lie flat on the ocean floor, rather than float above it.

<sup>10</sup> The Maine Department of Marine Resources (DMR) has also conducted a variety of field tests with low-profile groundline, in an effort to assist in the development of alternative gear configurations. These tests include

of sinking and/or neutrally buoyant groundline would eliminate approximately 85 percent of the line within the water column (66 FR 59394). Thus, requiring the use of non-floating groundline would directly benefit large whales, reducing the likelihood of entanglement.<sup>11</sup>

Alternatives 2 through 4 and 6 Draft\* would require approximately 31 million fathoms of groundline to be converted to sinking and/or neutrally buoyant line compared to the status quo (Alternative 1).<sup>12</sup> Since Alternative 5 would apply to fishing gear only in areas within the expanded SAM area and does not include broad-based gear modifications, approximately 200,000 fathoms of groundline would be converted under this alternative (see Exhibit 5-11 in section 5.1.3.2). Thus, compared to Alternatives 2 through 4 and 6 Draft\*, reduction of entanglement risks from floating groundline may be less under Alternative 5.

Based on analysis of the location of fishing activity, NMFS estimates that Alternative 6 Final (Preferred) would require approximately 24 million fathoms of groundline to be converted from floating to sinking and/or neutrally buoyant line, roughly 77 percent of the total that would be converted under Alternative 6 Draft\*. The difference between the two alternatives is attributable to differences in the areas designated as exempt from ALWTRP requirements. As discussed in section 5.1.2.4, Alternative 6 Final (Preferred) would expand exempted areas in Maine and Long Island Sound, but only in locations in which whales are unlikely to be found and are at low risk, as suggested by a review of data on large whales. Thus, NMFS believes that Alternative 6 Draft\* and Alternative 6 Final (Preferred) would have a similar impact in reducing the risks of entanglement, despite the difference in the quantity of groundline affected.

Although the broad-based sinking and/or neutrally buoyant groundline requirement would not be fully in effect until 12 months after the final rule's publication, it is NMFS' belief that the changeover to sinking and/or neutrally buoyant groundline is likely to begin sooner, as fishermen replace groundline that has naturally worn out. This would be a logical and economical response to an impending regulatory requirement. An early changeover in the Northeast might also occur in response to the SAM and DAM programs, which require the seasonal or temporary use of non-floating groundline. Some fishermen in the Northeast may already choose to fish with SAM and DAM-compliant gear year round, or at least during the months when the DAM program is most likely to be triggered, rather than risk having to change or remove their gear when a DAM zone is established. If these scenarios come into play, the risk of entanglement in groundline would begin to decline in advance of the effective date of the requirement to employ sinking and/or neutrally buoyant groundline.

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videotaping the profile of groundline between lobster traps in various bottom and tidal conditions along the coast of Maine. A 2004 gear survey employed a remotely operated vehicle to film five specific types of rope: Polysteel Soft-lay Float Rope; a new Hyliner blend; Esterpro Hot Shot sinkrope; Quintas & Quintas leaded core rope; and a custom groundline modification using 1/3 float rope, 1/3 sink rope, and 1/3 float rope between traps. Additional information on this study is available at <http://www.maine.gov/dmr/rm/rov/rovsurvey.htm#summary>.

<sup>11</sup> Both fishermen and the NMFS Gear Research Team report that non-floating line is already in use by some fishermen in certain areas from Maine through Rhode Island. Fishermen may prefer non-floating line in these areas for performance reasons or because they believe it reduces the chance of gear conflicts.

<sup>12</sup> Using a variety of indicators that is likely to be partially correlated with reduced entanglement risk to Atlantic large whales, the alternatives can be compared quantitatively. Further discussion of these quantitative risk reduction indicators is presented in section 5.1.3 of this chapter.

Along these lines, it is important to note that as of 2007, Massachusetts prohibited the use of "positively buoyant" (i.e., floating) groundline on fixed fishing gear (i.e., bottom or sink gillnets or pots) in state waters. Prior to this action, the state noted that a changeover to sinking and/or neutrally buoyant groundline had already begun. According to a Massachusetts Division of Marine Fisheries (MADMF) gear buyback program survey of fishermen who most likely represented the Massachusetts inshore lobster trawl fleet, this fishery experienced an estimated 10 percent reduction in the amount of floating groundline used between 2002 and 2003. The data indicate that 46.7 percent of the fishermen who responded to the survey (515 out of 1196 surveys sent) did not use floating groundline in their trawls. Fifty-six percent of these fishermen indicated that they had replaced floating groundline within the last three years. Based on these results and communication with the inshore lobster trap/pot industry, MADMF reported that the majority of the inshore lobstermen under its jurisdiction was already switching to sinking and/or neutrally buoyant groundline before state requirements went into effect (note that MADMF uses the term "negatively buoyant"). Additionally, MADMF partnered with other groups on a gear exchange program to provide Massachusetts commercial lobstermen with financial assistance (through a Federal grant) to purchase "negatively buoyant" groundline to reduce the risks of North Atlantic right whales becoming entangled in state coastal waters. Under this program, eligible Massachusetts lobstermen turned in their old polypropylene line, to be earmarked for recycling. The lobstermen were issued a voucher to purchase "negatively buoyant" line at a participating distributor (participating fishermen were required to pay for a portion of the line). MADMF believes that this program had a significant effect in encouraging lobstermen to switch to "negatively buoyant" groundline before it was formally prohibited. NMFS has teamed with other organizations to institute similar buyback programs in the Mid-Atlantic region (New Jersey, Delaware, Maryland, Virginia, and North Carolina) and in Maine. These programs seem likely to expedite the conversion to sinking and/or neutrally buoyant groundline in the areas they serve.

*Indirect effects:*

The potential indirect effect of requiring groundline to be composed of non-floating line is unclear. The key consideration is whether the requirement would increase or decrease the quantity of gear lost during commercial fishing operations. Lost gear – commonly called ghost gear – can pose a potential long-term entanglement risk to large whales. All else equal, an increase in the quantity of gear lost at sea would likely pose an increase in the risk of entanglement; a decrease in the quantity of gear lost at sea would likely have the opposite effect.

Based on a review of extensive underwater video footage on groundline tests conducted from Maine to Florida, the NMFS Gear Research Team believes that the use of non-floating groundline may increase the frequency with which gear becomes snagged on rocks or other marine debris; this is of particular concern in areas where the sea floor is extremely rocky (e.g., Maine's inshore lobster fishery) (NMFS, 2003). If the line snags on a rock or other obstacle, it may break as it is hauled to the surface, resulting in the loss of gear. Conversely, the Gear Research Team notes that the use of non-floating groundline could diminish the likelihood of gear conflicts that occur when different fishermen set trawls in close proximity to one another, since it would eliminate arcs of floating line in the water column that can become intertwined.

Such conflicts often lead to a loss of gear, either because fishermen cut the entangling line in an attempt to recover their own gear or because fouled gear is dragged from its original location when one of the lines is hauled. To the extent that the use of non-floating groundline would decrease the frequency of such conflicts, it would reduce gear loss.<sup>13</sup>

The relative effect of these potential impacts is unknown. In light of this uncertainty, the analysis takes a precautionary approach and assumes that requiring the use of non-floating groundline would increase the rate of gear loss for trap/pot fishermen.<sup>14</sup> To the extent that this is the case, the increase in the quantity of ghost gear would add to the risk of large whales becoming entangled. The risks associated with an increase in gear loss, however, are likely to be outweighed by the benefits gained by reducing the vertical profile of groundline in the water column. Overall, therefore, the effect of the sinking and/or neutrally buoyant groundline requirement is expected to be a reduction in entanglement risks.

### 5.1.1.2 Buoy Line Requirements

Like groundline, buoy line (i.e., line that is directly connected from a flotation device to gillnet or trap/pot gear) has been identified as a potential entanglement threat to Atlantic large whales.<sup>15</sup> Data on the quantity of buoy line currently used by the gillnet, lobster trap/pot, and other trap/pot fisheries in waters potentially subject to ALWTRP regulations are unavailable. The economic analysis presented in Chapter 6, however, is based in part on estimates of the amount of buoy line typically used by vessels in these fisheries, as well as the number of active vessels in each fishery. Using these figures, it is possible to develop an overall estimate of the amount of buoy line these vessels employ. Exhibit 5-8 presents these estimates. As the exhibit indicates, vessels in the fisheries of interest are estimated to employ more than 30.6 million fathoms of buoy line. Approximately 32 percent of this line is assumed to be floating line. The remainder (68 percent) of the buoy line is assumed to be sinking and/or neutrally buoyant line, which is used in certain areas (e.g., by lobster trap/pot vessels and gillnet vessels in the SAM zone) to comply with current ALWTRP requirements, but is also frequently used on the upper portion of buoy lines independent of regulatory requirements.<sup>16</sup> The estimate for the lobster

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<sup>13</sup> In addition to the issues noted above, some fishermen have raised concerns that the use of non-floating groundline would make it more difficult to grapple for and recover gear when buoy lines are lost. In 2003, the NMFS Gear Research Team conducted a study to determine whether this would be the case in Mid-Atlantic waters, which are largely devoid of extreme hard bottom. The study found that the use of sinking and/or neutrally buoyant line rather than floating line had no impact on gear recovery in areas where the sea floor is consistent with Mid-Atlantic conditions. Investigation of this issue in areas characterized by different bottom conditions is ongoing; however, it is likely that the use of sinking and/or neutrally buoyant groundline will prove more problematic when grappling for lost gear in hard bottom areas.

<sup>14</sup> This assumption is consistent with that employed in the economic impact analysis (see Chapter 6).

<sup>15</sup> "Endline" is an alternative term for buoy line.

<sup>16</sup> The DEIS estimated that approximately 52 percent of the buoy line in use is floating line, and 48 percent is sinking and/or neutrally buoyant line. The change reflects a change in the specification of baseline gear configurations in cases in which state or Federal regulations do not specifically require the use of sinking and/or neutrally buoyant line. The calculation employed in the DEIS assumed in such cases that the upper third of the buoy line would be sinking and/or neutrally buoyant line, while the lower two-thirds would be floating line. The calculation employed in the FEIS assumes that the upper *two-thirds* of the buoy line is sinking and/or neutrally

trap/pot fishery accounts for approximately 93 percent of the buoy line currently in use. The remainder is accounted for by gillnet fisheries (1 percent) and other trap/pot fisheries (6 percent).

<b>Exhibit 5-8</b>			
<b>ESTIMATED QUANTITY OF BUOY LINE IN USE</b>			
<b>(thousands of fathoms)</b>			
<b>Fishery</b>	<b>Floating Line</b>	<b>Sinking and/or Neutrally Buoyant Line</b>	<b>Total</b>
Lobster trap/pot	9,123	19,205	28,328
Gillnet	92	221	313
Other trap/pot	659	1,317	1,976
<b>TOTAL</b>	<b>9,874</b>	<b>20,743</b>	<b>30,617</b>

Note: Columns and rows may not sum to reported totals due to rounding error.

Alternatives 2 through 6 Final (Preferred) incorporate several provisions pertaining to buoy lines that may reduce the frequency or severity of whale entanglements: (1) universal gear modification requirements; (2) non-floating line requirements; and (3) restrictions on the number of buoy lines that certain fishermen can employ. The following discussion examines the potential direct and indirect effects of these provisions.

*Direct effects:*

Under current regulations, all fisheries subject to ALWTRP requirements must comply with the universal gear modification standard, which prohibits the use of gillnet or trap/pot gear that at any time has any portion of the buoy line floating at the surface. The universal gear modification standard also encourages (but does not require) fishermen to keep buoy lines as knot-free as possible.<sup>17</sup>

Alternatives 2 through 6 Final (Preferred) would extend the universal gear modification requirement to several additional fisheries in ALWTRP-regulated waters (as specified in the List of Fisheries, 72 FR 14466):

- the Atlantic blue crab trap/pot fishery;
- the Atlantic mixed species trap/pot fishery;
- the Northeast anchored float gillnet fishery; and

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buoyant line, while the lower third is floating line. The change in assumptions takes into account the recent introduction of state regulations that prohibit the use of "positively buoyant" (i.e., floating) line on the upper two-thirds of buoy lines in Massachusetts waters, and is potentially more consistent with standard practice in other areas.

<sup>17</sup> In addition to the buoy line provisions noted above, the universal gear modification standard requires fishermen to haul their gear at least once every 30 days. This provision is designed to reduce the risks associated with "wet storage" of gear, the practice of leaving gear in the water even when it is not being actively fished. Prohibiting wet storage of gear would reduce the overall amount of gear in the water, particularly gear that is not checked regularly. Thus, the wet storage prohibition would provide a direct benefit to large whales by decreasing the likelihood of an entanglement.

- the Southeast Atlantic gillnet fishery.<sup>18</sup>

The extension of the universal gear modification requirement to these fisheries may benefit large whales by reducing the frequency or severity of entanglement in buoy lines and associated gear. For example, the elimination of floating buoy line at the surface could be of significant benefit to North Atlantic right whales, which often skim-feed at the surface. Similarly, the use of knot-free lines could diminish the likelihood that line would become lodged in baleen or around appendages, thus hindering natural and/or directed disentanglement efforts.<sup>19</sup>

Alternatives 2 through 6 Final (Preferred) would also mandate that certain vessels subject to the requirements of the ALWTRP use non-floating buoy line. This requirement is designed to reduce entanglement risks by reducing the amount of line in the water column and floating at the surface.<sup>20</sup> Specifically:

- Alternatives 2 through 4 would maintain existing standards for lobster trap/pot gear in the Cape Cod Bay Restricted Area from January 1 through May 15, requiring the use of sinking and/or neutrally buoyant line on the upper two-thirds of all buoy lines. These alternatives would also extend this requirement to other trap/pot gear. In addition, other trap/pot gear in the SAM zone would be required to comply with the standards currently applicable to lobster trap/pot gear and anchored gillnets from March 1 through July 31, mandating the use of buoy lines made entirely of sinking and/or neutrally buoyant line; this requirement, however, would be eliminated for all fisheries with the elimination of the SAM program, 12 months after publication of the final rule.
- Like Alternatives 2 through 4, Alternative 5 would maintain existing buoy line standards for lobster trap/pot gear in the Cape Cod Bay Restricted Area and extend this requirement to other trap/pot gear. In addition, it would require other trap/pot gear in the SAM zone from March 1 through July 31 to comply with buoy line standards for the SAM program. However, it would modify these standards to allow the lower third of all buoy lines to employ floating line. Since the SAM program would not be eliminated under this alternative, the buoy line requirement in SAM waters would remain in effect indefinitely.

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<sup>18</sup> Alternatives 2 and 4 would also require the Mid-Atlantic anchored gillnet fishery to comply with the universal gear modification standard year-round; Alternatives 3\*, 5, 6 Draft\*, and 6 Final (Preferred) would require the Mid-Atlantic anchored gillnet fishery to comply with this requirement on a seasonal basis (September 1 through May 31).

<sup>19</sup> To the extent that fishermen in previously unregulated fisheries already follow these practices, the incremental benefit of regulations requiring knot-free lines will be reduced.

<sup>20</sup> To the extent that fishermen already choose to employ non-floating buoy line, regulations requiring its use will not yield a reduction in entanglement risks. This may be the case, for example, in areas with high boat traffic, where fishermen may already use non-floating buoy line to avoid conflicts between vessels and gear.

- Like the alternatives discussed above, Alternatives 6 Draft\* and 6 Final (Preferred) would maintain existing buoy line standards for lobster trap/pot gear in the Cape Cod Bay Restricted Area and extend this requirement to other trap/pot gear. In addition, they would require other trap/pot gear in the SAM zone from March 1 through July 31 to comply with buoy line standards for the SAM program. However, they would modify these standards to allow the lower third of all buoy lines to employ floating line. Twelve months after publication of the final rule, the SAM program would terminate and the buoy line requirements associated with it would be eliminated.

As noted above, the standards in some instances would require the use of non-floating material throughout the buoy line's entire length, but in others would require its use only along the upper two-thirds of the line. Consideration of the latter approach is based upon information provided by the Massachusetts Division of Marine Fisheries and underwater video footage taken by NMFS, which demonstrates that using polypropylene (floating) line on the bottom third of the buoy line typically produces a similar profile to that of 100 percent sink and 100 percent neutrally buoyant configured lines (Lyman and McKiernan, 2004). Therefore, it seems that the use of floating line on the bottom third of the buoy line does not appreciably change the profile of line in the water column, and thus will not increase the risk that large whales will become entangled. In addition, allowing the use of floating line on the lower third of the buoy line would help to ensure that the buoy line remains above the rest of the gear, thereby preventing fouling with obstacles on the bottom and reducing gear loss.

As an additional measure of protection, the alternatives analyzed would in several cases institute restrictions designed to reduce the number of buoy lines that fishermen employ. For example, Alternatives 2 through 4 would limit other trap/pot gear in the Cape Cod Bay Restricted Area from January 1 through May 15 to a two-trap string that can have only one buoy line, or to trawls of four or more traps/pots (single traps and three-trap trawls would be prohibited). These alternatives would also (1) prohibit the use of single traps/pots in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay from May 16 to December 31; (2) prohibit the use of more than one buoy line on trawls of four or fewer traps in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay from May 16 to December 31; and (3) set a limit of one buoy line per trawl in SAM restricted waters until 12 months after publication of the final rule, when all SAM provisions would be eliminated. Alternatives 5 and 6 Draft\* would set similar requirements, but trawls set in SAM restricted waters would be allowed two buoy lines per trawl except in areas where SAM restricted waters overlap with Northern Nearshore waters and Stellwagen Bank/Jeffreys Ledge. In these areas, the prohibition on single traps and the limit of one buoy line for trawls of four or fewer traps would continue to apply. The requirements under Alternative 6 Final (Preferred) would be identical to those under Alternatives 5 and 6 Draft\*, except that Alternative 6 Final (Preferred) would maintain the current limit of one buoy line for trawls of five or fewer traps (rather than four or fewer traps) in Northern Nearshore waters, the Stellwagen Bank/Jeffreys Ledge Restricted Area, and in Federal waters of Cape Cod Bay from May 16 to December 31.

In the case of other trap/pot fisheries, these restrictions would represent new requirements. In each case, the provision is designed to reduce the amount of buoy line in the water column, and thus directly reduce the risk of large whale entanglement. Similar requirements would apply to lobster trap/pot gear. In this case, however, the provisions would constitute a continuation or revision of existing lobster fishery requirements, rather than the application of an entirely new standard. For example, current ALWTRP regulations for the Northern Nearshore and Stellwagen Bank/Jeffreys Ledge lobster fishery, and for the Federal waters of Cape Cod Bay (May 16 through December 31), allow only one buoy line on trawls of five or fewer traps. Thus, the change in the standard incorporated in Alternatives 2 through 6 Draft\* – prohibiting the use of more than one buoy line on trawls of *four* or fewer traps – would represent a relaxation of current requirements. In this case, consideration of a change was motivated by reports received during the comment period on the DAM proposed rule and during the ALWTRP EIS scoping process that the existing requirement had prompted fishermen to split their trawls, thus *increasing* the number of buoy lines in the water (68 FR 51195). In light of these reports, Alternatives 2 through 6 Draft\* were designed to allow trawls with five traps or more to use two buoy lines, in the hope that this provision would result in an overall *decrease* in the amount of buoy line employed, thereby reducing entanglement risks. Alternative 6 Final (Preferred), however, would retain the current standard, allowing only one buoy line on trawls of five or fewer traps. In light of comments on the proposed rule and DEIS, which questioned the likely impact of a change in this standard, NMFS believes retaining the current standard is appropriate.

With the exception of Alternative 1 (No Action), all of the alternatives under consideration would eliminate the existing requirement that lobster trawls in SAM waters use no more than one buoy line.<sup>21</sup> In the case of Alternatives 5, 6 Draft\*, and 6 Final (Preferred), this requirement would be eliminated six months after publication of the final rule; under Alternatives 2 through 4, the requirement would end 12 months after publication of the final rule, when the SAM program would be eliminated. Although this change has the potential to increase the amount of buoy line in use in SAM waters (as currently defined), consideration of this change is motivated by concerns that requiring the use of a single buoy line may encourage lobstermen to split their trawls, thus increasing the number of buoy lines in the water. In addition, requiring the use of a single buoy line may increase the risk of gear loss (due to gear conflicts, for example), thus increasing the entanglement risks associated with ghost gear (see below). In light of these factors, NMFS believes that elimination of the current requirement has the potential to decrease entanglement risks in the SAM zone.<sup>22</sup>

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<sup>21</sup> Under Alternatives 2 through 6 Draft\*, lobster and other trap/pot vessels fishing in the SAM waters that overlap with Northern Nearshore waters and Stellwagen Bank/Jeffreys Ledge would be limited to one buoy line for trawls of four or fewer traps/pots. Under Alternative 6 Final (Preferred), these vessels would be limited to one buoy line for trawls of five or fewer traps/pots. Under all of these alternatives, the prohibition on single traps in these waters would continue to apply.

<sup>22</sup> NMFS believes that further research is necessary before it proposes additional measures to reduce the risks associated with vertical lines. Such research is currently underway (e.g., investigation of the profile of vertical line with different buoy line configurations, and evaluation of the impact of requiring a minimum number of traps per trawl in certain areas). NMFS plans to discuss the results of this research and its implications at future meetings of the Atlantic Large Whale Take Reduction Team (ALWTRT). The information developed through this process will provide a basis for considering broad-based options for the regulation of vertical line as part of future rulemaking actions.

*Indirect effects:*

The indirect effects of the requirements described above depend upon whether they would result in an increase in gear loss, with a resulting increase in the risk that whales may become entangled in ghost gear. Non-floating buoy line, for example, is considered more susceptible than floating line to becoming entangled in other gear as a result of tidal action. If a buoy line becomes wrapped around a trap or tangled in a trawl as the tide ebbs and flows, the line may break, resulting in gear loss. To avoid this effect, Alternatives 2 through 6 Final (Preferred) would eliminate requirements to use sinking and/or neutrally buoyant line along the entire length of the buoy line no later than 12 months following publication of the final rule. Allowing the use of floating line on the lower third of the buoy line would help to ensure that the buoy line remains above the rest of the gear, thereby preventing fouling with changes in tide and avoiding an increase in the risks associated with ghost gear.<sup>23</sup>

It is unclear whether the buoy line restrictions described above would lead to an overall increase in gear loss. In the case of other trap/pot fisheries, new restrictions on the number of buoy lines employed could increase the loss of gear to vessel traffic, bad weather, or gear conflicts. In contrast, the relaxation of existing restrictions for the lobster trap/pot fishery could reduce gear loss rates, particularly in SAM waters, where trawls would no longer be restricted to a single buoy line.<sup>24</sup> Given the relatively large size of the lobster trap/pot fishery, the overall impact of the set restrictions under consideration seems likely to be a decrease in gear loss. As a result, these changes could help to reduce the potential for whales to become entangled in lost gear.

### 5.1.1.3 Weak Link and Anchoring Requirements

The potential regulatory changes analyzed include provisions requiring that lobster and other trap/pot gear employ weak links on all buoy lines. Specifically:

- Alternative 2 would maintain existing requirements for lobster trap/pot gear mandating that buoy lines be attached to the main buoy with a weak link, and would extend these requirements to waters between 35°30'N and 27°51'N, as well as to the small portion of Lobster Management Area 6 (Long Island Sound) that is not included in exempted waters and is not

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<sup>23</sup> As an additional consideration, NMFS is concerned that a requirement to use non-floating material over the entire length of the buoy line would encourage fishermen to use “toggle buoys” or small gillnet floats to raise the buoy line off the bottom to prevent it from fouling. The use of a toggle or float in this manner could pose a threat to whales, since the toggle or float could become lodged in the baleen of an entangled whale. Allowing the use of floating line on the bottom portion of the buoy line would eliminate the need for toggle buoys, and thus avoid an inadvertent increase in entanglement risks.

<sup>24</sup> Under Alternatives 2 through 6 Draft\*, lobster and other trap/pot vessels fishing in the SAM waters that overlap with Northern Nearshore waters and Stellwagen Bank/Jeffreys Ledge would be limited to one buoy line for trawls of four or fewer traps/pots. Under Alternative 6 Final (Preferred), these vessels would be limited to one buoy line for trawls of five or fewer traps/pots. Under all of these alternatives, the prohibition on single traps in these waters would continue to apply.

currently covered by the ALWTRP. In addition, it would require that weak links be placed on all flotation and/or weighted devices attached to the buoy line, such as surface buoys and toggles. In nearshore or inshore trap/pot waters, including the Great South Channel Restricted Area that overlaps with LMA 2 and the Outer Cape LMA, weak links with a breaking strength of 600 pounds would be required.<sup>25</sup> In offshore trap/pot waters, including the Great South Channel Restricted Area that overlaps with LMA 3 and the LMA 2/3 Overlap between July 1 and March 31, the breaking strength on buoys would be reduced from 2,000 pounds to 1,500 pounds.<sup>26</sup> Requirements identical to those for lobster trap/pot gear would be extended to other trap/pot fisheries that would be newly regulated under the ALWTRP.<sup>27</sup> These requirements would apply year-round.

- Alternatives 3\*, 5, 6 Draft\*, and 6 Final (Preferred) would establish similar requirements on lobster and other trap/pot gear, but would impose them on a year-round basis only in waters north and east of a line extending from Watch Hill, Rhode Island (41°18.2' N and 71°51.5' W) south to 40°00' N, then east to the boundary of the Exclusive Economic Zone (EEZ). From this area south to the South Carolina/Georgia border (i.e., 32°00' N), the requirements would be in effect from September 1 through May 31. Between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, the requirements would be in effect from November 15 through April 15. Finally, between 29°00' N and 27°51' N, the requirements would apply from December 1 through March 31.

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<sup>25</sup> Gear research (NMFS, 2002) indicates that a 600-pound weak link will provide a measure of protection for whales, as well as keep gear operational and prevent ghost gear in this area. The 600-pound weak link requirement has been in effect since February of 2001 in the Northern Nearshore Lobster Waters Area, with very few problems reported. The NMFS Gear Research Team has conducted research on the strain on inshore buoy systems on the Outer Cape. Buoys were towed at speeds up to 20 knots and a 120-pound strain was recorded. Load cells were attached to large buoy systems in Grand Manan Channel, known for its strong tides (approximately 18 to 20 feet (5.49 to 6.09 meters)), and a 140-pound strain was recorded in the spring. NMFS cautions that while the strain recorded on buoy systems can indicate whether or not a particular weak link breaking strength is appropriate, the recorded strains alone cannot dictate weak link breaking strengths, as reasonable safety measures must be included that would prevent gear from being lost under unfavorable conditions.

<sup>26</sup> This change is based on testing conducted by NMFS in collaboration with the offshore lobster industry. The results of this effort suggest that the breaking strength on the buoy weak link could be lowered while still allowing the gear to be used effectively (NMFS, 2002).

<sup>27</sup> An exception to this requirement would apply to the red crab fishery. This fishery is typically conducted at depths in excess of 2,000 feet, with individual trawls consisting of up to 200 traps. The buoy lines required to set and haul this gear must be able to withstand significant loads. As a result, the lines are longer and larger in diameter than buoy lines in other offshore trap/pot fisheries, and require the support of a more buoyant surface system. In these circumstances, a 1,500-pound weak link requirement may not provide an adequate human safety factor. Given these considerations, the ALWTRP would establish a separate standard for the red crab fishery, requiring weak links on the buoy line to have a maximum breaking strength of 2,000 pounds. This requirement would represent a reduction from the maximum breaking strength (3,780 pounds) currently allowed for weak links on the buoy line under the Final Rule implementing the Red Crab Fishery Management Plan.

- Alternative 4 would impose the requirements identified above on a year-round basis north of the South Carolina/Georgia border (i.e., 32°00' N). South of this area, the seasonal standards specified under Alternatives 3\*, 5, 6 Draft\*, and 6 Final (Preferred) would apply.

Alternatives 2 through 6 Final (Preferred) would also require the incorporation of weak links into gillnet gear. In certain areas, the weak link requirements for anchored gillnets would be coupled with the specification of minimum anchoring strength standards. Specifically:

- Alternative 2 would require that the buoy lines of anchored gillnet gear be attached to the main buoy with a weak link having a maximum breaking strength of 1,100 pounds. This standard would be expanded to require that weak links be placed on all flotation and/or weighted devices attached to the buoy line, such as surface buoys and toggles. In addition, Alternative 2 would mandate changes in the number and placement of weak links within net panels. In the Northeast anchored gillnet fishery, each net panel would require five or more weak links, depending on panel size (rather than one), and all nets would be secured at each end of the net string with the minimum holding power of a 22-pound Danforth-style anchor.<sup>28</sup> Similar requirements would apply to the Mid-Atlantic anchored gillnet fishery and to the Southeast gillnet fishery north of 27°51' N, except that, in these areas, the minimum anchoring standard and the requirement that net panels employ five or more weak links would not apply to gillnets that return to port with the vessel; gillnets that return to port with the vessel would instead be required to incorporate a single 1,100-pound weak link into each net panel. Alternative 2 would also extend weak link requirements to the driftnet fishery in the Northeast and Mid-Atlantic; in this case, vessels fishing with tended gear at night would be required to incorporate one 1,100-pound weak link into each net panel.<sup>29</sup> Each of these standards would be effective year-round.
- Alternatives 3\* and 6 Draft\* would establish similar requirements, but would impose them on a year-round basis only in waters north and east of a line extending from Watch Hill, Rhode Island (41°18.2' N and 71°51.5' W) south to 40°00' N, then east to the boundary of the EEZ. From this area south to the South Carolina/Georgia border (i.e., 32°00' N), the requirements would be in effect from September 1 through May 31.

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<sup>28</sup> For all variations in panel size, the following weak link requirements would apply: 1) weak links must be placed in the center of each of the up and down lines at both ends of each net panel; and 2) one floatline weak link must be placed as close as possible to each end of the net panel just before the floatline meets the up and down line. Also, for net panels of 50 fathoms or less in length, one floatline weak link must be placed at the center of the net panel, and for net panels greater than 50 fathoms, weak links must be placed continuously along the floatline separated by a maximum distance of 25 fathoms. The breaking strength of each of these weak links must not exceed 1,100 pounds (498.9 kilograms).

<sup>29</sup> "Tended gear" is defined in 50 CFR 229.2 to mean fishing gear that is physically attached to a vessel in a way that is capable of harvesting fish. Similarly, to "tend" gear means to fish with gear attached to the vessel.

Between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, the requirements would be in effect from November 15 through April 15. Finally, between 29°00' N and 27°51' N, the requirements would apply from December 1 through March 31.

- Alternative 4 would establish the requirements identified above on a year-round basis north of the South Carolina/Georgia border (i.e., 32°00' N). South of this area, the seasonal standards specified under Alternatives 3\* and 6 Draft\* would apply.
- Alternative 5 would require that the buoy lines of anchored gillnet gear be attached to the main buoy with a weak link having a maximum breaking strength of 1,100 pounds. It would expand this standard to require that weak links be placed on all flotation and/or weighted devices attached to the buoy line, such as surface buoys and toggles. These requirements would apply on a year-round basis in waters north and east of a line extending from Watch Hill, Rhode Island (41°18.2'N and 71°51.5'W) south to 40°00'N, then east to the boundary of the EEZ. From this area south to the South Carolina/Georgia border (i.e., 32°00' N), the requirements would be in effect from September 1 through May 31. Between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, the requirements would be in effect from November 15 through April 15. Finally, between 29°00' N and 27°51' N, the requirements would apply from December 1 through March 31. In addition, Alternative 5 would maintain current minimum anchoring standards and net panel weak link requirements within SAM waters, expanding these requirements to areas newly incorporated into the SAM program. Alternative 5 would also extend the minimum anchoring standards and net panel weak link requirements that currently apply on a seasonal basis in the Mid-Atlantic Coastal Waters Area to the Southeast gillnet fishery north of 27°51' N latitude.
- Alternative 6 Final (Preferred) would impose requirements similar to those specified under Alternatives 3\* and 6 Draft\*. Under Alternative 6 Final (Preferred), however, the driftnet fishery in the Northeast and Mid-Atlantic would not be required to incorporate an 1,100-pound weak link into each net panel, and net panel weak link and anchoring requirements would not apply to any gillnets fished in waters deeper than 280 fathoms. In addition, gillnets used within 300 yards of the North Carolina coast would be allowed an alternative weak link and anchoring configuration: five or more weak links per net panel, depending on panel length, with a breaking strength no greater than 600 pounds, anchored with the holding power of at least an eight-pound Danforth-style anchor on the offshore end of the net string and a 31-pound dead weight on the inshore end of the string. Finally, as an alternative to the placement of five weak links per net panel, anchored gillnets in the Northeast, Mid-Atlantic, and Southeast would be permitted to employ the following weak link configuration: one

weak link placed between net panels in the floatline tie loops; one weak link in the center of the floatline of each net panel; one weak link in the up and down lines of each net panel; and one weak link placed where the floatline tie loops attach to the bridle, buoy line, or groundline at each end of a net string.<sup>30</sup>

All of the requirements described above are designed to reduce the likelihood that interactions between whales and commercial fishing gear will result in entanglements that cause serious injury or mortality. The following discussion further explores the potential direct and indirect effects of these standards.

*Direct effects:*

Both weak link and anchoring requirements are designed to reduce the number of interactions between whales and commercial fishing gear that result in a serious entanglement.<sup>31</sup> Under Alternatives 2 through 6 Draft\*, approximately 31 million fathoms of buoy line would incorporate weak links on all flotation and/or weighted devices off the main buoy line (see Exhibit 5-11 in section 5.1.3.2). This reflects the installation of approximately 345,000 weak links. In contrast, under Alternative 6 Final (Preferred), approximately 25 million fathoms of buoy line would incorporate weak links on all flotation and/or weighted devices off the main buoy line; in total, an estimated 281,000 weak links would be installed, approximately 82 percent of the number that would be installed under Alternative 6 Draft\*. The difference between the alternatives is attributable to differences in the areas designated as exempt from ALWTRP requirements. As discussed in section 5.1.2.4, Alternative 6 Final (Preferred) would expand exempted areas in Maine and Long Island Sound, but only in locations in which whales are unlikely to be found, as suggested by a review of data on large whale sightings. Thus, NMFS believes that Alternative 6 Draft\* and Alternative 6 Final (Preferred) would have a similar impact in reducing the risks of entanglement, despite the difference in the quantity of buoy line affected and the number of weak links required to be installed.

The impacts of the alternatives also differ with respect to incorporating weak links into gillnet panels. For example, under Alternative 5, the number of gillnet panels with multiple weak links installed would be approximately 2,000,000 compared to estimates ranging from approximately 125,000 to 127,000 under Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred). In contrast, the number of gillnet panels with one weak link installed under Alternative 5 would be approximately 118,600, compared to estimates ranging from approximately 60,000 to 61,000 under Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred). The alternatives also differ with respect to the number of gillnet strings that would be required to install anchors of a specified holding strength. Under Alternative 5, the number of

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<sup>30</sup> NMFS would also clarify that rope of appropriate breaking strength is suitable to meet net panel weak link requirements, and that in the absence of an up and down line, weak links are not required.

<sup>31</sup> NMFS has worked with several gear manufacturers to develop weak links for the lobster trap/pot and gillnet fisheries (NMFS, 2002). The specifications of breaking strengths incorporated in Alternatives 2 through 6 Final (Preferred) are based upon stress analyses of buoy systems conducted by the NMFS Gear Research Team, including several years of at-sea testing from Maine to North Carolina in both inshore and offshore fisheries.

additional gillnet strings with anchors installed would be less than 100. In comparison, Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred) would require approximately 2,900 gillnet strings to be equipped with anchors of appropriate holding strength.

As previously noted, buoy lines have been identified as a source of entanglement risk, in part because the presence of an obstacle like a buoy makes it more difficult for a whale to free itself from line wrapped around an appendage or lodged in its mouth. The requirement to incorporate weak links into buoy lines is specifically designed to reduce entanglements and serious injury due to entanglements in and around the mouth as a result of interactions with buoy lines and surface systems. In such a case, the theory of operation is that the forward motion of the whale will pull the buoy line through the whale's mouth until the buoy and weak link impinge against the baleen. At this point, the combination of the whale's momentum and the weight of the gear on the lower end of the buoy line will cause the load to increase until the weak link parts, allowing the buoy and weak link to detach from the line and remain outside the whale's mouth. The bitter end of the buoy line would then continue to be pulled through the baleen until it exits the whale's mouth. Adding a weak link on all devices attached to the buoy line increases the likelihood that a line sliding through a whale's mouth will break away quickly at the buoy before the whale begins to thrash and become more entangled.<sup>32</sup>

The rationale for incorporating weak links into gillnet panels is similar. As detailed above, Alternatives 2 through 6 Final (Preferred) each include provisions that require certain gillnets to incorporate from one to five or more weak links per net panel, depending on panel size. When one weak link per net panel is specified, the regulations would require that the weak link be placed in the center of each net panel's floatline.<sup>33</sup> The 1,100-pound weak link in the center of the floatline of each net panel would be expected to break when a whale exerts pressure in opposition to the resistance provided by the net's weight and anchoring system (NMFS, 2002; NMFS, 2003).<sup>34</sup> The weak links would allow the line to part and unravel from the net mesh when a whale encounters any section of the gear. The net mesh would then be free of the

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<sup>32</sup> There have been three documented entanglement cases in which the gear recovered included weak links attached to buoys. This includes two events (one in 2002, the other in 2003) in which weak links were recovered that had not released. In both of these cases the buoy line wrapped around the whale's tail stock, a situation that the weak link in the line was not designed to address. A third event involved a weak link placed directly under the surface system. In this case, the weak link did release, allowing the whale to swim free of the anchoring gear. A disentanglement team later removed the gear that remained with the whale.

<sup>33</sup> Research indicates that when one weak link in a net panel is used, placement of the link in the center of each net panel's floatline, rather than between gillnet panels or at the gillnet's bridle, will decrease entanglement risks (Smolowitz and Wiley, 1998; NMFS, 2002; NMFS, 2003). Links that part at the bridle or between net panels, when only one weak link is used, may leave a long section of net and line intact, presenting a continued risk of entanglement.

<sup>34</sup> New floatline with a diameter of 5/16" – 3/8" typically has a breaking strength of 1,700 – 2,700 pounds. The 1,100-pound breaking strength incorporated in current ALWTRP regulations was initially specified in NMFS' 1997 interim final rule (62 FR 39157) and was recommended as a "best available practice" by the Gear Advisory Group (GAG). NMFS has conducted gillnet research with 1,100-pound (498.9-kilogram) and 600-pound (272.2-kilogram) weak links (NMFS, 2002). The broad geographic area covered by the ALWTRP includes physical environments that require that the 1,100-pound (498.9-kilogram) breaking strength be maintained. NMFS will continue gear research to determine the lowest possible value that will allow fishing to continue safely and provide a higher probability that an entangled animal will be able to free itself in the event of an entanglement.

stronger floatline, and a large whale would have a better chance of breaking free of the weaker monofilament mesh. The incorporation of multiple weak links into each net panel could further increase the likelihood that a whale would be able to free itself from entanglement in a gillnet without sustaining serious injury (NMFS, 2002; NMFS, 2003). Moreover, should some gear remain attached to a whale after the initial encounter, the chance that it would be shed by the whale or removed through subsequent disentanglement efforts would increase.

As detailed above, Alternatives 2 through 6 Final (Preferred), to varying degrees, would require anchored gillnets to be secured with the holding power of at least a 22-pound (9.9 kilogram) Danforth-style anchor at each end of the net string. This requirement is designed to ensure that if a whale encounters the anchored gear, the tension placed on the line would be sufficient to cause the weak link to break. The combination of net panel weak links and anchors should increase the likelihood that a whale would be able to break free of the gear it encounters.<sup>35</sup> An exception to anchoring requirements would be allowed in certain cases (see above) if gillnets return to port with the vessel. This exception would apply to gillnets in the Mid- and South Atlantic, which may be anchored with insufficient holding power but which are well-tended, thus reducing the likelihood of entanglements in such gear. It is NMFS' belief that if an entanglement were to occur in such gear while it is being hauled – or if the gear became snagged on the ocean bottom – there would be sufficient resistance on the gear to allow the weak link to part as designed. Additionally, if an entanglement were to occur, the fishermen tending the gear would be able to report it as soon as possible.

When NMFS issued its DEIS and proposed rule, it sought comment from the public on weak link and anchoring configurations other than those incorporated into Alternatives 2 through 6 Draft\*. The alternative configurations permitted under Alternative 6 Final (Preferred) reflect comments received from the fishing industry, state and regional regulatory authorities, scientists, and conservationists. In particular, the alternative weak link and anchoring configuration permitted within 300 yards of the North Carolina coast responds to concerns that the use of anchors with the holding power of a 22-pound Danforth-style anchor would present safety issues for small vessels. In April of 2005, the NMFS Gear Research Team worked with a commercial fisherman to investigate alternative weak link and anchoring systems. Based on the results of these tests and the comments received on the DEIS, NMFS believes that the alternative configuration – i.e., five or more weak links per net panel, depending on panel length, with a breaking strength no greater than 600 pounds, anchored with the holding power of at least an eight-pound Danforth-style anchor on the offshore end of the net string and a 31-pound dead weight on the inshore end of the string – will provide the same level of protection to whales as the configuration specified under Alternative 6 Draft\*, and will be safer to coastal fishermen.

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<sup>35</sup> In order to evaluate the effectiveness of weak links placed in the floatline of anchored gillnets, NMFS conducted investigations simulating an entanglement (NMFS, 2002; NMFS, 2003). NMFS placed strain on fifteen net strings that were anchored and twenty that were not anchored. Trials were run with both 600-pound (272.2-kilogram) and 1,100-pound (498.9-kilogram) weak links at three places on the floatline. When strain was applied to the gillnets with proper anchoring systems, the floatline weak link broke with very little net attached. This provides evidence that weak links can be expected to break when encountering strain such as that placed on them by a marine mammal. The fact that the weak link broke quickly and cleanly provides evidence that an encounter between a whale and gillnet gear with proper anchoring would reduce the risk of entanglement.

This alternative is consistent with a consensus recommendation of the Mid- and South Atlantic subgroup of the Atlantic Large Whale Take Reduction Team.

Comments on the DEIS and proposed rule also included an alternative to the proposed configuration and placement of five or more weak links per net panel. This alternative would allow anchored gillnets in the Northeast, Mid-Atlantic, and Southeast to place one weak link between net panels in the floatline tie loops, one weak link in the center of the floatline of each net panel, and one weak link in the up and down lines of each net panel. Because net panels are strung closely together, a single weak link placed between net panels in the floatline tie loops is functionally equivalent to two closely spaced weak links at the end of each net panel. Thus, NMFS believes that the alternative configuration specified under Alternative 6 Final (Preferred) would provide the same level of protection to large whales as the configuration originally specified under Alternative 6 Draft\*.

Finally, comments on the DEIS and proposed rule from both the fishing industry and the Mid-Atlantic Fishery Management Council raised concerns about the safety of incorporating one 1,100-pound weak link per net panel when fishing tended driftnet gear at night. Withdrawing this proposed requirement would postpone action on a measure designed to reduce entanglement risks. In light of the concerns raised, however, NMFS believes that further testing of the safety of weak links in driftnet gear is warranted. Accordingly, Alternative 6 Final (Preferred) does not include this requirement.

*Indirect effects:*

Gear research indicates that the installation of weak links is unlikely to increase the rate of gear loss, and thus is unlikely to increase the risk that whales could become entangled in ghost gear. Several weak link requirements have been implemented under previous ALWTRP initiatives, and the NMFS Gear Research Team reports that they have received few comments regarding problems with the failure of any of these devices. NMFS' Gear Research Team has collected information on gillnet gear fished with the above configuration of weak links in the Northeast since the summer of 2001. In Maine, net panels with these configurations (no floating line, anchoring power of a 22-pound Danforth-style anchor on each end of the net string, and five 1,100-pound weak links) have been fished in 15-net strings in the same manner as unmodified nets in both the 12-25 mile offshore and 80-100 mile offshore range. Areas fished with this gear include the Great South Channel Sliver Area, Jeffreys Ledge, Cashes Ledge and Platts Bank, the Outer Falls, and the edge of the Davis Swell. Conditions included extremes in current, tides, and weather. The five weak link-configured nets displayed no problems other than those consistent with traditionally rigged gillnets in the Gulf of Maine. Since the spring of 2003, the NMFS Gear Research Team has also collected information on gillnet gear fished with the above configuration of net panel weak links in the Mid-Atlantic. Load cell data collected on vessels while hauling gear in the Mid-Atlantic indicate loads similar to those recorded in New England (approximately 250 to 500 pounds (113.4 to 226.8 kilograms)) (NMFS, 2002; NMFS, 2003). In the waters off Maryland and Virginia, these nets have been fished close to shore as well as between 12 to 15 nautical miles (22.2 to 27.8 kilometers) offshore. The above configured nets displayed no problems other than those consistent with traditionally rigged gillnets in the Mid-Atlantic. This finding is supported by a study funded by the Virginia Marine Resources Commission, in which

modified gillnet gear with five 1,100-pound weak links was used to fish for various species; this study also found no operational differences between modified and traditionally fished gear. In addition, the NMFS Gear Research Team has conducted a series of research projects to test the amount of strain placed on buoy systems when used in typical conditions at different locations (NMFS, 2002; NMFS, 2003); all tests have confirmed that weak links at the required breaking strength should not contribute to any significant additional gear loss (Kenney, 2003).<sup>36</sup>

#### 5.1.1.4 Set Restrictions and Gear Stowing Requirements

The potential regulatory changes under analysis include several restrictions on the use of gillnet gear:

- *Northeast and Mid-Atlantic* – Alternatives 2 and 4 would prohibit the use of driftnet gear at night in Northeast and Mid-Atlantic waters unless the gear is tended, and would require that all such gear set by a vessel be removed from the water and stowed on board the vessel before it returns to port. These regulations would be in effect year-round. Alternatives 3\*, 5, 6 Draft\*, and 6 Final (Preferred) would institute similar requirements on a year-round basis in waters north and east of a line extending from Watch Hill, Rhode Island (41°18.2'N and 71°51.5'W) south to 40°00'N, then east to the boundary of the EEZ; south and west of this area, the regulations would only be in effect from September 1 through May 31.
- *Southeast Atlantic* – In Southeast waters, Alternatives 2 through 6 Draft\* would establish seasonal prohibitions on straight sets of gillnet gear at night, and similar prohibitions on the use of strikenets at night or when visibility is less than 500 yards.<sup>37</sup> These restrictions would be in effect from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N; and from December 1 through March 31 in waters between 29°00' N and 27°51' N for Southeast gillnet and Southeast shark gillnet fisheries. The eastern boundary for these areas would be the EEZ. In contrast, Alternative 6 Final (Preferred) would also establish a seasonal prohibition on straight sets of gillnet gear at night (for non-shark nets), the use of strikenets at night, or the use of strikenets when visibility is less than 500 yards (for

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<sup>36</sup> In addition to the information provided above, the NMFS Gear Research Team notes the possibility that the use of weak links could decrease the amount of gear that is lost due to gear conflicts. For example, if snagged gear parts at a weak link, it is less likely to be dragged away from where it was originally set, thus increasing the chance that the gear will be recovered. This observation is supported by the experience of several Maine fishermen, who have reported that weak links on buoy systems allowed buoys to pop off when trawlers towed through their gear. Although weak links were not designed for such purposes, the fishermen involved believe that their presence in this case prevented their gear from being towed away and permanently lost. In these situations, the fishermen were able to recover all of their gear and avoid the creation of additional ghost gear.

<sup>37</sup> "Strikenet gear" means a gillnet designed so that, when deployed, it will encircle or enclose an area of water, either by use of the net alone or by utilizing the shoreline to complete encirclement.

shark nets), but would limit this prohibition to waters between 32°00' N, 29°00' N, and 80°00' W from November 15 through April 15, and to waters between 29°00' N, 27°51' N, and 80°00' W from December 1 through March 31.<sup>38</sup>

As explained further below, these requirements are designed to reduce the risk that large whales will become entangled in gillnet gear.

*Direct effects:*

The provisions noted above would contribute directly to the protection of Atlantic large whales. The night set restrictions under consideration are designed to reduce the risk that poor visibility would contribute to an entanglement; the prohibition on the use of strikenets when visibility is less than 500 yards has a similar purpose. The use of driftnets in the fisheries of the Northeast or Mid-Atlantic, the use of strikenets in Southeast waters, or the use of straight sets of gillnet gear in the Southeast during the day is likely to pose a minimal risk to large whales, since such gear is actively tended and could be readily retrieved should a whale approach. When visibility is poor, however, fishermen may not realize that a whale is in the vicinity, and thus may fail to react in time to avoid an entanglement. In light of this consideration, a prohibition on operations when visibility is restricted would reduce the risk of entanglement. Under Alternatives 3\* through 6 Final (Preferred), an estimated 44 to 45 additional vessels would be affected by night set restrictions; under Alternative 2, an estimated 56 additional vessels would be affected, compared to the status quo (Alternative 1, No Action). The increase in the estimated number of affected vessels under Alternative 2 likely reflects the impact of year-round regulations (see Exhibit 5-11 in section 5.1.3.2). Given available data on the seasonal distribution of whale populations, however, the implementation of year-round requirements would offer limited additional conservation value to Atlantic large whales when compared with seasonal requirements.

The requirement that driftnet vessels in the Northeast and Mid-Atlantic remove their gear from the water and stow it on board before returning to port is designed to ensure that any interactions between driftnets and whales would be observed and reported in a timely fashion, allowing a response to be mounted as soon as possible. Driftnet vessels fishing in the Mid-Atlantic between December 1 and March 31 are already required to stow their nets onboard when returning to port; thus, the potential change under consideration would simply extend the requirement to vessels operating in the Mid-Atlantic during periods that were not previously regulated, to vessels operating in the newly extended Mid-Atlantic restricted area (see Chapter 3), and to vessels operating in the Northeast. These changes would in large part codify current fishing practices; since driftnets are not anchored and can drift with the current, they are rarely left untended for an extended period of time and are unlikely to be left in the water when a vessel returns to port. Nonetheless, this requirement could help to reduce entanglement risks, both by ensuring that current practices are adhered to and by guaranteeing that these practices do not change. Under Alternatives 3, 5, 6 Draft\*, and 6 Final (Preferred), approximately 604 vessels

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<sup>38</sup> The first of these areas would be designated the Southeast U.S. Restricted Area North. The second would be designated the Southeast U.S. Restricted Area South.

would be newly affected by gear stowing restrictions; under Alternatives 2 and 4, approximately 614 vessels would be newly affected, compared to the status quo (Alternative 1, No Action) (see Exhibit 5-11 in section 5.1.3.2). The increase in the estimated number of affected vessels under Alternatives 2 and 4 likely reflects the impact of year-round regulations in the Mid-Atlantic. As previously stated, the implementation of year-round requirements would offer limited additional conservation value to Atlantic large whales when compared with seasonal requirements.

*Indirect effects:*

Any indirect effects associated with the above-noted restrictions on gillnet use are likely to be positive. In particular, because the restrictions limit activity when visibility is poor and prohibit affected fishermen from leaving their gear unattended while their vessels return to port, the restrictions may reduce gear loss, thus benefiting large whales by reducing the risk of entanglement in ghost gear.

#### **5.1.1.5 Gear Marking**

With the exception of Alternative 1 (No Action), all of the regulatory alternatives under consideration would establish new gear marking requirements. Alternatives 2 through 6 Draft\* include a common gear marking scheme that would result in the incorporation of approximately 2.2 million new marks into the gear subject to ALWTRP regulations. In contrast, Alternative 6 Final (Preferred) employs a different standard, which would result in the incorporation of approximately 0.3 million new marks into the gear subject to ALWTRP regulations (see Exhibit 5-11 in section 5.1.3.2).

The gear marking provisions are designed to improve NMFS' ability to identify the gear involved in an entanglement. As discussed below, these provisions would have no immediate direct impact on entanglement risks. In the long run, however, they may help NMFS to target and improve its efforts to protect large whales.

*Direct effects:*

Alternatives 2 through 6 Draft\* would remove most of the ALWTRP's current gear marking requirements. In place of the current standards, gillnet, lobster trap/pot, and other trap/pot vessels would be required to identify buoy lines with a four-inch colored mark every 10 fathoms, and to mark all surface buoys with a vessel or permit number. The current requirements for marking shark gillnet panels would remain in place; however, shark gillnet vessels would not be required to mark buoy lines that are four feet or less in length.<sup>39</sup>

In response to the DEIS and proposed rule, NMFS received many comments from the fishing industry stating that the proposed gear marking scheme – particularly the requirement to

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<sup>39</sup> The gear marking provisions under consideration would not require groundlines to be marked. As gear marking technology improves, NMFS may in the future require groundlines to be marked.

mark each buoy line every 10 fathoms – was impracticable. In light of these comments, Alternative 6 Final (Preferred) would maintain the ALWTRP's current gear marking approach, which specifies that buoy lines must bear a four-inch colored mark at their midpoint, but would extend this requirement to all newly regulated fisheries and currently regulated fisheries with no gear marking requirements. In addition, all vessels subject to ALWTRP regulations would be required to mark their surface buoys with their vessel registration number, vessel documentation number, Federal permit number, or some other form of positive identification required by the state in which the vessel's home port is located. The current requirements for marking shark gillnet panels would remain in place, but neither shark gillnet vessels nor other gillnet vessels in the Southeast would be required to mark buoy lines that are four feet or less in length.

The regulatory provisions described above would have no direct impact on the probability of whales becoming entangled in commercial fishing gear, nor would they affect the severity of an entanglement should one occur. As noted below, however, potential changes in gear marking requirements could have an indirect effect on whale entanglement risks.

*Indirect effects:*

A critical issue in understanding the nature of large whale entanglements is obtaining information about the gear involved. Currently, gear removal from entangled animals provides the only reliable information about the nature of entanglements (Johnson et al., 2005). However, it is often difficult to connect the gear in which a whale is entangled with a particular fishery, because entangled whales often carry only a portion of the gear they have encountered and disentanglement efforts sometimes recover only some of the remaining gear. The gear marking requirements under consideration would help to generate information on the nature of the gear involved in an entanglement. In addition, these provisions would in some cases allow NMFS to identify the owner of the gear, and thus allow the agency to gather additional information on where, when, and how the gear was set. By increasing scientific understanding of the nature of large whale entanglements, gear marking measures would allow NMFS, over time, to improve the effectiveness of the ALWTRP. Thus, these measures are expected to contribute indirectly to the preservation and restoration of whale stocks.

The ALWTRP's current gear marking requirements extend only to gillnet and lobster trap/pot gear for some management areas, and provide for a single four-inch mark on buoy lines midway in the water column. By extending gear marking requirements to all management areas and other trap/pot gear, Alternatives 2 through 6 Final (Preferred) would improve NMFS' ability to identify the gear involved in an entanglement. In addition, by requiring that buoy lines bear a mark every 10 fathoms, Alternatives 2 through 6 Draft\* would increase the chances of identifying fragments of line that may be visible on or recovered from an entangled whale. Similarly, by requiring that surface buoys be marked with a vessel or permit number, Alternatives 2 through 6 Final (Preferred) would increase the probability that NMFS could identify the gear involved in an entanglement, and thus pursue additional information on the circumstances that led to the event. The use of marks like these, which may be identifiable from a distance or in photographs, would be particularly valuable for cases in which the gear involved in an entanglement cannot be recovered (Johnson et al., 2005).

An additional indirect benefit might result from potential changes to shark gillnet marking requirements. Unlike other gillnet fisheries regulated under the ALWTRP, shark gillnets do not employ a standard buoy line; instead, one short line is used between the float line of the gear and the high-flyer. The revised gear marking standards would only apply to such lines if their lengths exceed four feet.<sup>40</sup> To avoid the cost of complying with the gear marking requirement, shark fishermen might choose to employ shorter lines, thus further reducing entanglement risks to whales.<sup>41</sup>

### 5.1.2 Impacts from Changes to Restricted Times and Areas

In addition to gear modification requirements, the potential changes to the ALWTRP include a range of restrictions on the location and timing of fishing activity. The discussion below addresses the direct and indirect effects of the following provisions:

- the expansion of the SAM zone under Alternatives 5, 6 Draft\*, and 6 Final (Preferred);
- seasonal closures of newly regulated fisheries in restricted areas;
- expansion of the geographic scope of the ALWTRP in the Mid-Atlantic and Southeast, coupled with changes in the periods of time during which ALWTRP regulations in the Southeast areas would apply, as well as renaming of the Southeast U.S. Observer and Southeast U.S. Restricted Areas;<sup>42</sup>
- changes to exempted waters in the Northeast and Mid-Atlantic;

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<sup>40</sup> For consistency, Alternative 6 Final (Preferred) would modify the exemption from gear marking requirements for buoy lines less than or equal to four feet in length for shark gillnet vessels.

<sup>41</sup> The benefits associated with any such impact are likely to be small, since shark vessels typically use buoy lines no more than four feet long. In most cases, longer lines are used only during inclement weather.

<sup>42</sup> Under Alternatives 2 through 6 Draft\*, for shark gillnet fisheries, the portion of the Southeast U.S. Restricted Area overlapping the Southeast U.S. Observer Area north of 27°51' N to the South Carolina/Georgia border would be renamed the "Northern Monitoring and Restricted Area," and the portion of the Southeast U.S. Observer Area south of 27°51' N to 26°46.5' N would be renamed the "Southern Monitoring Area." For non-shark gillnet fisheries, the waters north of 27°51' N to the South Carolina/Georgia border would be designated "Other Southeast Gillnet Waters." All these areas would extend east to the eastern edge of the EEZ.

Under Alternative 6 Final (Preferred), the Southeast U.S. Restricted Area would be renamed the "Southeast U.S. Restricted Area (N and S)", using 29°00' N as the dividing line between the northern (to 32°00' N) and southern (to 27°51' N) areas. These areas would include only waters west of 80°00' W, and would be a management area for both shark and non-shark gillnet fisheries. The Southeast U.S. Observer Area would be renamed the "Southeast U.S. Monitoring Area," and its boundaries would be redefined to include only those waters south of 27°51' N, north of 26°46.5' N, and west of 80°00' W. This management area would be for shark gillnet fisheries only. The "Other Southeast Gillnet Waters" area would encompass the waters south of 32°00' N and east of 80°00' W to the eastern edge of the EEZ. This would be a management area for both shark (north of 26°46.5' N) and non-shark (north of 27°51' N) fisheries.

- deep water exemptions;
- extension of the SAM and Dynamic Area Management (DAM) programs to additional fisheries; and
- the inclusion of seasonal restrictions on fishing activity in the Southeast and/or Mid-Atlantic.

#### **5.1.2.1 Expanded SAM Under Alternatives 5, 6 Draft\*, and 6 Final (Preferred)**

The SAM program was established to protect predictable seasonal aggregations of North Atlantic right whales in the waters off Cape Cod and eastward to the boundary of the Exclusive Economic Zone. As defined under current regulations, the program includes two areas, called SAM West and SAM East, and specifies time periods for each (March 1 through April 30 and May 1 through July 31, respectively) during which gear modifications for lobster trap/pot and anchored gillnet gear are more stringent than those otherwise required for the same gear under the ALWTRP. The dividing line between SAM West and SAM East is 69°24' W longitude. The SAM areas adjoin but do not include the Cape Cod Bay Restricted Area or the Great South Channel Restricted Area.

The current boundaries of the SAM areas were defined based on aerial survey data collected from 1999 through 2001 (Merrick et al., 2001), as well as the methods of Clapham and Pace (2001). Since implementation of the SAM program, however, additional information on the distribution of right whales in the Gulf of Maine, including new aerial survey data, has been obtained. In addition, repeated DAM triggers in some areas suggest that the current SAM areas do not encompass all predictable seasonal aggregations of North Atlantic right whales in waters north of 40°00' N latitude. In light of this information, Alternatives 5, 6 Draft\*, and 6 Final (Preferred) propose to change the boundaries of the SAM areas.

The proposed change in boundaries is based upon two analyses conducted by the Northeast Fisheries Science Center (NEFSC). The first used spring (March through May) sightings data from 1999 to 2003 to assess whether the current SAM West and SAM East areas encompass all areas where right whales regularly congregate at that time of year. The methods employed in this analysis were similar to those used to define the original SAM areas (Merrick et al., 2001). Briefly, right whale sightings that met the DAM trigger criteria – three right whales and sufficient density (Clapham and Pace, 2001) – were identified. A core area was defined and mapped around each qualifying sighting. A buffer zone with a radius of 15 nautical miles was placed around each core, and the sightings with their buffer zones were overlaid. The second analysis considered March to July sightings data collected from 1975 to 2003 in the area between 40°00' N latitude and 45°00' N latitude from the Hague Line westward to the New England coast (or 73°00' W longitude) (Merrick, 2005). The defined area was subdivided into a grid, counts of individual right whales were summed by month for each grid cell, and the sum was divided by the cell's area. These normalized values were plotted and the monthly plots compared to help identify/verify areas where right whales seasonally congregate. The results of the analyses reflect basic knowledge of right whale distribution in the Gulf of Maine; whales occur at

relatively high densities within Cape Cod Bay in March and April, then move eastward as the spring and summer progress. However, the additional survey data indicate that: (1) right whales regularly occur in March and April north of the Cape Cod Bay Restricted Area and west of the existing SAM West; (2) right whales regularly occur south of SAM West and west of the Great South Channel Restricted Area; (3) right whales are still present in SAM West in May (when SAM-related gear modifications are no longer required); and (4) there are very few or no sightings in the southeast corner of the SAM East area (Merrick, 2005).

Based on these results, Alternatives 5, 6 Draft\*, and 6 Final (Preferred) propose to modify the existing coordinates for the SAM areas. The revised SAM West would continue to adjoin the Cape Cod Bay Restricted Area, but the western boundary of SAM West would be extended westward to encompass seasonal aggregations of right whales that occur north of the Cape Cod Bay Restricted Area.<sup>43</sup> Similarly, the southern boundary of SAM West would be extended further south, adjoining the Great South Channel Sliver area, to encompass seasonal aggregations of right whales that occur south of SAM West and west of the Great South Channel Restricted Area. Finally, the southern boundary of SAM East would be revised to include the Great South Channel Restricted Area, but would exclude the southeast corner of the existing SAM East area where there have been very few right whale sightings.<sup>44</sup> The western boundary of SAM East would be extended west to encompass right whales that might remain in SAM West in May (after the SAM West area restrictions have expired). As a result, the western boundary of SAM East would shift westward to 69° 45' W longitude for the May-July period.

The changes described above would take effect within six months of the publication of new ALWTRP requirements. Under Alternatives 6 Draft\* and 6 Final (Preferred), however, all SAM requirements would terminate 12 months after publication of the final rule, when the SAM program would be eliminated; at that time, the broad-based gear modification requirements mandated for most areas under Alternative 6 Draft\* and 6 Final (Preferred) would come into effect.

*Direct effects:*

Under Alternatives 5, 6 Draft\*, and 6 Final (Preferred), the proposed expansion of the SAM zone would allow the DAM program to be eliminated six months after publication of the final rule. The area to be incorporated into the expanded SAM zone would encompass many of the areas that previously have been designated DAM zones, as well as other areas that have a high potential to receive such designation. In light of these considerations, NMFS believes that replacement of the DAM program with an expanded SAM program would increase the amount of protection afforded to right whales. In addition, NMFS believes that expanding the SAM zone would provide greater protection to right whales in the Northeast during times of predictable spring aggregations. In particular, the new overlap of SAM East and SAM West

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<sup>43</sup> The Cape Cod Bay Restricted Area includes ALWTRP management areas for trap/pot and gillnet gear.

<sup>44</sup> The Great South Channel Restricted Area includes ALWTRP management areas for trap/pot gear (Great South Channel Restricted Trap/Pot Area) and gillnet gear (Great South Channel Restricted Gillnet Area and Great South Channel Sliver Restricted Area).

would provide a direct benefit to right whales in this area during the month of April, when the number of right whales in the vicinity is expected to be high. Compared to Alternatives 1 through 4, expansion of the SAM zone under Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would extend SAM requirements to an estimated 24 to 25 additional vessels (see Exhibit 5-11 in section 5.1.3.2).

As noted in the discussion of gear modification requirements, Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would eliminate the existing requirement that lobster trap/pot trawls in SAM waters use no more than one buoy line.<sup>45</sup> In addition, SAM requirements would be modified to allow floating line in the lower one-third of the buoy line. Although these changes have the potential to increase the amount of buoy line in use in SAM waters (as currently defined), consideration of these changes is motivated by concerns that the current requirements may increase the risk of gear loss, and thus increase the entanglement risks associated with ghost gear. In addition, the current requirement mandating use of a single buoy line may encourage lobstermen to split their trawls, thus increasing the number of buoy lines in the water. In light of these factors, NMFS believes that the elimination of the current requirements may decrease entanglement risks in the SAM zone.

*Indirect effects:*

Alternative 5 does not include expanded broad-based gear requirements coast-wide, and would only impose these gear restrictions within the expanded SAM zone during specified time periods. For the designated SAM areas, the same is true of Alternative 6 Draft\* and Alternative 6 Final (Preferred) until 12 months after publication of the final rule, when broad-based gear modification requirements would take effect in most areas and the SAM program would be eliminated. In each case, however, it is possible that fishermen who modified their gear to comply with SAM requirements would also use that gear in other areas and/or other seasons. To the extent this occurred, the SAM program would provide an ancillary benefit, affording whales a greater degree of protection than the regulations require.

### **5.1.2.2 New Fishery Closures in Restricted Areas**

With the exception of Alternative 1 (No Action), each of the regulatory alternatives under consideration would expand the scope of the ALWTRP to include the Atlantic mixed species trap/pot fishery, the Northeast anchored float gillnet fishery, and the Northeast driftnet fishery.<sup>46</sup> The newly-regulated fisheries would be subject to prohibitions on fishing activity in restricted

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<sup>45</sup> Under Alternatives 2 through 6 Draft\*, lobster and other trap/pot vessels fishing in the SAM waters that overlap with Northern Nearshore waters and Stellwagen Bank/Jeffreys Ledge would be limited to one buoy line for trawls of four or fewer traps/pots. Under Alternative 6 Final (Preferred), these vessels would be limited to one buoy line for trawls of five or fewer traps/pots. Under all of these alternatives, the prohibition on single traps in these waters would continue to apply.

<sup>46</sup> The Atlantic blue crab trap/pot fishery would also become subject to ALWTRP requirements. This fishery, however, does not extend far enough north to be affected by seasonal closures of the restricted areas addressed here.

areas.<sup>47</sup> Specifically, fishermen would be prohibited from using gillnet gear inside the Cape Cod Bay Restricted Area from January 1 through May 15, trap/pot gear inside the Great South Channel Restricted Trap/Pot Area from April 1 through June 30, or gillnet gear inside the Great South Channel Restricted Gillnet Area from April 1 through June 30.<sup>48</sup>

*Direct effects:*

NMFS believes that the closure of the Great South Channel Trap/Pot Restricted Area to other trap/pot fishing from April 1 to June 30 would have a beneficial impact on whale entanglement risks, as would seasonal prohibitions on driftnet and anchored float gillnet fishing in the Cape Cod Bay Restricted Area and the Great South Channel Restricted Gillnet Area. In each case, however, the impacts are likely to be minor. In the Northeast, very few vessels use driftnets or anchored float gillnets, and there is no indication that vessels using such gear have been active in the Cape Cod Bay Restricted Area or the Great South Channel Restricted Gillnet Area during the periods of interest. Vessel activity data show some use of other trap/pot gear in the Great South Channel Restricted Trap/Pot Area from April 1 to June 30, but this activity is extremely limited. As a result, the seasonal closure of these areas to other trap/pot fishing and/or driftnet and anchored float gillnet fishing is likely to have a small but beneficial impact on whale entanglement risks.

*Indirect effects:*

The provisions noted above could have indirect beneficial effects on large whales by tempering the possible expansion of the Northeast driftnet, anchored float gillnet, or other trap/pot fisheries. Any vessels entering into these fisheries would be subject to the seasonal closure of the restricted areas.

### **5.1.2.3 Changes to Mid-Atlantic and Southeast Restricted Areas and Times**

Current ALWTRP regulations specify standards for the use of gillnets within the Mid-Atlantic Coastal Waters Area and the Southeast U.S. Observer and Restricted Areas. Under Alternatives 2 through 6 Draft\*, for shark gillnet fisheries, the Southeast U.S. Restricted Area (which overlaps with the portion of the Southeast U.S. Observer Area north of 27°51' N) would be renamed the “Northern Monitoring and Restricted Area,” and the portion of the Southeast U.S. Observer Area south of 27°51' N would be renamed the “Southern Monitoring Area.” For non-shark gillnet fisheries in the Southeast, the waters north of 27°51' N would be designated as

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<sup>47</sup> The restricted areas encompass both Cape Cod Bay and the Great South Channel, which NMFS has designated as critical habitat for North Atlantic right whales. These areas are also important feeding habitats for humpback and fin whales.

<sup>48</sup> The prohibition on gillnet fishing in the Great South Channel Restricted Area would apply only to the Great South Channel Restricted Gillnet Area. Gillnet fishing would be permitted year-round in the Great South Channel Sliver Restricted Area; gillnet gear used in this area would be required to be compliant with all applicable ALWTRP regulations.

“Other Southeast Gillnet Waters.” All these areas (and thus the regulations that apply therein) would be extended eastward to the boundary of the EEZ. In contrast, under Alternative 6 Final (Preferred), the Southeast U.S. Restricted Area would be renamed the "Southeast U.S. Restricted Area (N and S)", using 29°00' N as the dividing line between the northern (to 32°00' N) and southern (to 27°51' N) areas. These areas would include only waters west of 80°00' W, and would be a management area for both shark and non-shark gillnet fisheries. The Southeast U.S. Observer Area would be renamed the "Southeast U.S. Monitoring Area," and its boundaries would be redefined to include only those waters south of 27°51' N, north of 26°46.5' N, and west of 80°00' W. This management area would be for shark gillnet fisheries only. The “Other Southeast Gillnet Waters” area would encompass the waters south of 32°00' N and east of 80°00' W to the eastern edge of the EEZ. This would be a management area for both shark (north of 26°46.5' N) and non-shark (north of 27°51' N) fisheries. To avoid confusion in comparing current regulatory requirements in these areas to those that would apply under each alternative, the following discussion retains the original nomenclature.

In addition to the changes noted above, Alternatives 2 through 6 Final (Preferred) would revise the time period during which regulations in the Southeast U.S. Observer and Restricted areas would apply. Specifically:

- Alternatives 2 through 6 Final (Preferred) would modify the periods during which the Southeast U.S. Restricted Area is closed to shark gillnet fishing (except strikenetting). Under current regulations, the closure extends from November 15 through March 31. Under the revised regulations, the closure would extend from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N, and from December 1 through March 31 in waters between 29°00' N and 27°51' N. Alternatives 2 through 6 Draft\* would apply these provisions eastward to the boundary of the EEZ; Alternative 6 Final (Preferred) would make them effective only in waters west of 80°00' W.
- Alternatives 2 through 6 Final (Preferred) would also modify requirements for the use of spotter planes by vessels strikenetting for sharks within the Southeast U.S. Restricted Area. Under current regulations, provisions for the use of spotter planes extend from November 15 through March 31. Under the revised regulations, these provisions would be applicable from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N, and from December 1 through March 31 in waters between 29°00' N and 27°51' N. Alternatives 2 through 6 Draft\* would apply these provisions eastward to the boundary of the EEZ; Alternative 6 Final (Preferred) would make them effective only in waters west of 80°00' W.
- Alternatives 2 through 6 Final (Preferred) would modify whale approach regulations for shark gillnet vessels within the Southeast U.S. Restricted Area. Current regulations stipulate that vessels strikenetting for sharks within this area during the restricted period (November 15 through March 31) may not set their nets within three nautical miles of a right, humpback,

or fin whale, and must remove gear from the water immediately if a right, humpback, or fin whale approaches within three nautical miles of it.<sup>49</sup> Under Alternative 2, these requirements would apply to shark net gear year-round between the South Carolina/Georgia border (i.e., 32°00' N) and 27°51' N. Under Alternatives 3 through 6 Final (Preferred), the requirements would take effect from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00'N, and from December 1 through March 31 in waters between 29°00'N and 27°51'N. Under each of the alternatives discussed, including Alternative 6 Final (Preferred), these provisions would apply eastward to the boundary of the EEZ.

- Alternatives 2 through 6 Draft\* would remove requirements for 100% observer coverage within the Southeast U.S. Observer Area (including the Southeast U.S. Restricted Area). Under current regulations, provisions for 100% observer coverage apply to the use of shark nets from November 15 through March 31 in Atlantic waters south of the South Carolina/Georgia border (i.e., 32°00' N), west of 80°00'W, and north of 26°46.5'N. The revised regulations would replace the requirements for 100% observer coverage with a requirement to employ an automated Vessel Monitoring System, or VMS (see “Direct effects” below). In addition, the revised regulations would change the dates of coverage to November 15 through April 15 for shark nets in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N, and to December 1 through March 31 for shark nets in waters between 29°00' N and 26°46.5' N. Alternatives 2 through 6 Draft\* would apply the VMS provisions eastward to the boundary of the EEZ.<sup>50</sup>
- Alternative 6 Final (Preferred) would retain requirements for 100% observer coverage within the Southeast U.S. Restricted Area. Specifically, observer requirements would apply to the use of strikenets from November 15 through April 15 in waters between 32°00' N and 29°00' N, and from December 1 through March 31 in waters between 29°00' N and 27°51'N. NMFS would allow VMS to be substituted for 100% observer coverage only in waters between 27°51'N and 26°46.5' N; VMS would be required in these waters from December 1 through March 31. In addition,

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<sup>49</sup> NMFS believes that a three-mile approach limit gives fishermen ample time to remove their gear from the water before an entanglement can occur (62 FR 39157).

<sup>50</sup> Consistent with the change in requirements for shark gillnet fisheries, Alternatives 2 through 6 Draft\* would rename the portion of the Southeast U.S. Observer Area that extends from the South Carolina/Georgia border (i.e., 32°00' N) south to 27°51' N (i.e., the Southeast U.S. Restricted Area) the “Northern Monitoring and Restricted Area,” and would rename the portion of the Southeast U.S. Observer Area south of 27°51' N to 26°46.5' N the “Southern Monitoring Area.” Both of these areas would extend east to the eastern edge of the EEZ.

Alternative 6 Final (Preferred) would make the observer and VMS provisions effective only in waters west of 80°00' W.<sup>51</sup>

*Direct effects:*

Gillnet vessels in the Southeast and Mid-Atlantic do not typically fish in the areas that would be newly regulated under the alternatives described above, nor are gillnet vessels in the Southeast typically active during periods that would be newly subject to the requirements these alternatives establish.<sup>52</sup> As a result, the changes described above would be unlikely to have a major or immediate impact on protected whales. The DEIS noted that NMFS was considering these changes primarily to ensure that ALWTRP requirements would be in place to address any expansion of current fishing activity. Should such expansion occur, the DEIS noted that the requirements would provide the following benefits:

- **Increased whale protection through better enforcement** – The EEZ is an existing, well understood boundary. Extending most ALWTRP requirements eastward to the limits of the EEZ, as would be the case under Alternatives 2 through 6 Draft\*, would make consistent enforcement of ALWTRP regulations easier to attain, and thus enhance efforts to protect whales.
- **Increased spotter plane coverage** – Expansion of the Southeast U.S. Restricted Area eastward to the boundary of the EEZ, as would be the case under Alternatives 2 through 6 Draft\*, would increase the size of the region within which vessels strikenetting for sharks must obtain spotter plane coverage. With increased aerial surveillance, the likelihood of spotting right whales would increase. Spotter planes may help identify and monitor the positions of right whale calves and their mothers, and report any entanglements in fishing gear. The identification of an entangled or injured large whale would allow for possible disentanglement and/or tagging efforts to be coordinated.<sup>53</sup>

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<sup>51</sup> Consistent with these changes, Alternative 6 Final (Preferred) would rename the Southeast U.S. Restricted Area the "Southeast U.S. Restricted Area (N and S)," using 29°00' N as the dividing line between the northern (to 32°00' N) and southern (to 27°51' N) areas. These areas would include only waters west of 80°00' W. The Southeast U.S. Observer Area would be renamed the "Southeast U.S. Monitoring Area," and its boundaries would be redefined to include only those waters south of 27°51' N, north of 26°46.5' N, and west of 80°00' W.

<sup>52</sup> As previously described in Section 5.1.1.3, "Weak Link and Anchoring Requirements," and section 5.1.1.4, "Set Restriction and Gear Stowing Requirements," Alternatives 2 through 6 Final (Preferred) propose changes to the timing of requirements for gillnet vessels in the Mid-Atlantic and Southeast. See these sections for a discussion of the timing of requirements in these areas.

<sup>53</sup> Although not part of the mission of the ALWTRP, additional spotter plane coverage may also help to reduce the occurrence of ship strikes. Ship strikes are a major concern in the conservation of large whales, particularly right whales. Spotter planes can assist in observing vessel traffic in proximity to whales and can report sightings of both whales and vessels to the Early Warning System (EWS).

In response to comments on the proposed rule questioning the benefits of extending ALWTRP requirements eastward to the boundary of the EEZ, NMFS conducted additional analysis of large whale sightings data obtained from the North Atlantic Right Whale Consortium (NARWC) Sightings Database, which includes all large whale sightings collected on all right whale surveys, and is curated by the University of Rhode Island (URI). The evaluation of the data found little evidence that large whales in Southeast waters – particularly right whales – can be found in waters east of the current boundary of the Southeast U.S. Restricted Area and Southeast U.S. Observer Area (i.e., 80°00' W). Thus, extending requirements beyond 80°00' W would be likely to have little practical benefit. On this basis, Alternative 6 Final (Preferred) would set 80°00' W as the eastern limit of most ALWTRP requirements.

The DEIS also noted that as the result of Amendment 1 to the Highly Migratory Species Fishery Management Plan, shark gillnet vessels operating in the Southeast U.S. Observer Area would be required to employ automated vessel monitoring systems (VMSs). Consistent with this regulatory change, Alternatives 2 through 6 Draft\* provided for the removal of requirements for 100% observer coverage from November 15 through March 31 in Atlantic waters south of the South Carolina/Georgia border (i.e., 32°00' N), west of 80°00'W, and north of 26°46.5'N. These alternatives would replace the requirements for 100% observer coverage with a requirement to employ a VMS.

The information available when Alternatives 2 through 6 Draft\* were developed indicated that the use of VMS would be more effective than observer coverage for the shark gillnet fishery in monitoring and enforcing the time and area closure in the Southeast U.S. Observer Area.<sup>54</sup> Thus, NMFS believed that incorporating the use of a VMS program would benefit large whales protected by the ALWTRP. Since publication of the DEIS, NMFS has learned that VMS tracks may fail to distinguish between the use of strikenets and the use of driftnets. Distinguishing between these techniques is important because the use of driftnets in waters from the South Carolina/Georgia border (i.e., 32°00' N) south to 27°51' N and west of 80°00' W (i.e., in the Southeast U.S. Restricted Area) is prohibited. The illegal use of driftnets in these waters could have an adverse effect on large whales, particularly right whales. Accordingly, Alternative 6 Final (Preferred) would allow VMS as a substitute for 100% observer coverage only from 27°51'N south to 26°46.5' N, where restrictions on the use of driftnets are not in effect. NMFS believes this approach is necessary to ensure that driftnets are not deployed where their use is prohibited.

Despite the differences noted above, Alternative 6 Final (Preferred) includes a number of changes to current requirements that it holds in common with Alternatives 2 through 6 Draft\*. As described below, these changes would enhance the protection of large whales in several ways:

- **Increased protection for late-migrating whales** – Extending spotter plane and observer or VMS requirements through the first half of April in waters between the South Carolina/Georgia border (i.e., 32°00' N) and

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<sup>54</sup> The primary purpose of the observer program is to observe catch, not to enforce regulations. The collection of information on marine mammal interactions with the shark gillnet fishery is a secondary benefit of the observer program.

29°00' N would provide protection for large whales that linger in the Southeast region longer than expected before migrating north.<sup>55</sup>

- **Increased protection for whales that approach gear** – Implementing current whale approach requirements on a year-round basis within the Southeast U.S. Restricted Area (Alternative 2), or modifying the time during which these requirements are in effect to better correspond to periods when endangered whales are likely to be present (Alternatives 3\* through 6 Final (Preferred)) would help to reduce the risks of entanglement in shark gillnet gear.

NMFS does not believe that the changes described above would have any adverse impact on the preservation or restoration of whale stocks. In particular, analysis of data from the NARWC Sightings Database indicates that revising the period of time that the Southeast U.S. Restricted Area would be closed to shark gillnet fishing should not put right whales at risk. The revised closure times coincide with historical observations of right whale presence and movement, and thus should be protective of right whales.<sup>56</sup>

*Indirect effects:*

The regulatory provisions outlined above could have indirect effects that would enhance the protection of whales. For example, replacement of the current observer program with a VMS requirement, as provided under Alternatives 2 through 6 Draft\*, would reduce NMFS' oversight costs for the shark gillnet fishery by a minimum of \$100 thousand annually. These funds could be used to extend the observer program to other fisheries in the Southeast for which observer coverage has been lacking. Under Alternative 6 Final (Preferred), however, NMFS would allow VMS to be substituted for 100% observer coverage only in waters between 27°51'N and 26°46.5' N; VMS would be required in these waters from December 1 through March 31. Thus, Alternative 6 Final (Preferred) would not significantly reduce NMFS' oversight costs for the shark gillnet fishery. As described above, however, NMFS believes that maintenance of the observer requirement is necessary to ensure that driftnets are not deployed where their use is prohibited.

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<sup>55</sup> A review of right whale sightings data from the North Atlantic Right Whale Consortium (NARWC) Sightings Database indicates that some individuals remain longer in the Southeast than others.

<sup>56</sup> Current ALWTRP regulations for the shark gillnet fishery between the South Carolina/Georgia border (i.e., 32°00' N) and 26°46.5' N are in effect from November 15 to March 31. Alternatives 3\*, 4, 6 Draft\*, and 6 Final (Preferred) would modify this approach, making the requirements applicable from November 15 through April 15 between the South Carolina/Georgia border and 29°00' N, and from December 1 through March 31 between 29°00' N and 26°46.5' N. Consideration of this change is based on data indicating that right whales are rarely sighted south of 29°00' N latitude from November 1 to November 15 (n=1) or from April 1 to April 15 (n=3), but may occur sporadically throughout the area north of 29°00' N latitude from April 1 to April 15.

#### 5.1.2.4 Changes to Exempted Waters

The ALWTRP currently exempts certain bays, harbors, inlets, and other coastal waters from the provisions of the plan (see Chapter 2). Alternatives 2 through 6 Draft\* would expand these areas to include all waters landward of the 72 COLREGS demarcation line (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by NOAA (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80, with the exception of Boston Harbor, Gardiners Bay, and portions of the Maine coast, where NMFS would create a different exemption line (see Chapter 3). Alternative 6 Final (Preferred) would follow a similar approach, except that additional areas off the coast of Maine and in Long Island Sound would be designated as exempt, while the line of demarcation for exempt waters in Massachusetts would remain at the status quo (see Chapter 3). In each case, NMFS would continue to monitor all exempted areas, and encourage states to develop contingency plans in the event a large whale is sighted in such areas. These potential changes have been developed in response to requests from state fishery management agencies and other comments on the DEIS, and are designed to ensure that the ALWTRP does not unnecessarily extend commercial fishing regulations to waters in which endangered or protected whales are at low risk from impacts due to entanglement such as areas where large whales are

##### *Direct effects:*

In developing potential changes to the specification of exempted waters, NMFS initially analyzed right, humpback, and fin whale sightings distribution data collected from 1960 to 2002 from two available data sources: the North Atlantic Right Whale Consortium (NARWC) Sightings Database, which is maintained by the University of Rhode Island (URI) and contains data obtained from both dedicated surveys and opportunistic sightings of right whales, as well as supplementary data on sightings of humpback and fin whales; and a right, humpback, and fin whale sightings database compiled by the Maine Department of Marine Resources. In response to comments on the DEIS, NMFS expanded its analysis to consider data on large whale sightings from 1960 to mid-September 2005 obtained from the NARWC Sightings Database; data on large whale sightings from 2002 through 2006 that were collected through the Northeast Fisheries Science Center's (NEFSC) systematic aerial surveys and the Northeast U.S. Right Whale Sighting Advisory System (SAS); and data on right, humpback, and fin whale sightings compiled by the Maine Department of Marine Resources. In addition, NMFS considered satellite tracking data for right whales presented in peer-reviewed papers by Mate et al. (1997) and Baumgartner and Mate (2005).<sup>57</sup>

The areas that would be newly exempted from ALWTRP requirements include only those in which whales are unlikely to be found, as suggested both by NMFS' review of the data and its current understanding of whale behavior, as well as areas where whales are at low risk from

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<sup>57</sup> For a more complete discussion of the data and the process NMFS employed to develop potential changes to the specification of exempted waters, see Appendix 3-A. See Appendix 3-B for delineation of the areas that would be exempt under Alternatives 2 through 6 Draft\*, and Appendix 3-C for delineation of the areas that would be exempt under Alternative 6 Final (Preferred).

impacts due to entanglement.<sup>58</sup> Therefore, exempting these areas from ALWTRP regulations is believed to be unlikely to have significant direct effects on endangered or protected whales.

*Indirect effects:*

Exempting certain areas from ALWTRP regulations may encourage some fishermen to shift their activity to those areas. If this were to result in a decrease in fishing activity in areas that whales are more likely to frequent, it would help to reduce entanglement risks.<sup>59</sup>

Improved targeting of ALWTRP regulations might also increase support for their implementation within the commercial fishing community. Fishermen are more likely to comply with restrictions on their operations when they understand that those restrictions serve a beneficial purpose. Requiring fishermen to comply with ALWTRP requirements where whales are unlikely to be encountered can undermine belief in the need for the requirements, and may ultimately undermine compliance with the plan in other areas. To the extent that the designation of exempted areas makes clear that ALWTRP regulations are designed to apply where entanglement risks are low, it may foster improved compliance, and thus indirectly assist in preserving and restoring endangered or protected whale species.

#### **5.1.2.5 Deep Water Exemptions**

The ALWTRP currently requires lobster trap/pot vessels to use sinking and/or neutrally buoyant groundline in the Cape Cod Bay Restricted Area from January 1 to May 15. In addition, lobster trap/pot gear and gillnet gear set in the SAM zone during designated times (or in a DAM zone when a DAM gear modification is in effect) must employ sinking and/or neutrally buoyant groundline (amongst other requirements).

As previously described, Alternatives 2 through 6 Final (Preferred) would expand the non-floating groundline requirement, in most cases making the use of sinking and/or neutrally buoyant groundline mandatory on a seasonal or year-round basis in all waters covered by the ALWTRP. Each of these alternatives, however, would provide an exemption to the groundline requirement for gear that is fished at depths greater than 280 fathoms. Alternative 6 Final (Preferred) would also exempt gillnets fished at depths greater than 280 fathoms from the proposed net panel weak link and anchoring requirements. As explained below, these exemptions are unlikely to have an adverse impact on entanglement risks.

*Direct effects:*

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<sup>58</sup> The sightings data indicate some observations of large whales inside currently exempted waters (e.g., in Georgia) or waters that would be newly exempted (e.g., portions of Delaware Bay). NMFS' review of the data, however, suggests that these occurrences are rare and risk is low.

<sup>59</sup> It is also possible that fishermen who modify their gear to comply with ALWTRP requirements would use the same gear in exempted areas. To the extent this occurred, whales would experience a greater degree of protection than the regulations require.

The large whales discussed here (right, humpback, fin, and minke) are not known to commonly dive to depths greater than 275 fathoms (502.9 meters). Thus, providing an exemption that allows the use of floating groundline when gear is fished at depths greater than 280 fathoms – providing a five fathom margin of safety to account for the vertical profile of excess groundline in the water column – is unlikely to pose a risk of entanglement.

A review of vessel trip reports for 2002 further supports the conclusion that the proposed deep water exemption would not materially affect entanglement risks. The trip report data indicate that vessels targeting red crab are the only vessels that consistently fish at depths greater than 280 fathoms; the review identified only 18 instances (in more than 47 thousand trips) in which a lobster trap/pot or gillnet vessel reported fishing at depths greater than 280 fathoms. Given the relatively limited fishing activity in these waters, the risk of an entanglement associated with the use of floating groundline at depths of greater than 280 fathoms is likely to be remote.<sup>60</sup>

For similar reasons, exempting gillnets fished at depths greater than 280 fathoms from the proposed net panel weak link and anchoring requirements is unlikely to have an adverse impact on entanglement risks. Neither right, humpback, fin, nor minke whales are known to commonly dive to depths greater than 275 fathoms. Moreover, as indicated above, few gillnet vessels report fishing at depths greater than 280 fathoms. Thus, the risk of an entanglement associated with net panels fished at depths of greater than 280 fathoms is unlikely to be significant.

*Indirect effects:*

As noted above, requiring fishermen to comply with ALWTRP requirements in situations where the risks of entanglement are remote can undermine belief in the need for the requirements, and may ultimately undermine compliance with the plan in other areas. To the extent that regulatory exemptions for gear fished in waters deeper than 280 fathoms makes clear that ALWTRP regulations are designed to apply where the chances of an entanglement are genuine, it may foster improved compliance with the other provisions of the plan, and thus indirectly assist in preserving and restoring stocks of endangered and/or protected whales.

#### **5.1.2.6 Extension of SAM and DAM Programs to Additional Fisheries**

As previously described, regulatory Alternatives 2 through 6 Final (Preferred) would expand the scope of the ALWTRP to include the Atlantic mixed species trap/pot fishery and the Northeast anchored float gillnet fishery.<sup>61</sup> Under Alternatives 2, 3\*, and 4, these fisheries would

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<sup>60</sup> It is also important to note that the red crab fishery is not currently required to employ sinking and/or neutrally buoyant groundline, and that none of the instances in which lobster trap/pot or gillnet vessels reported fishing at depths of greater than 280 fathoms occurred in waters currently subject to such requirements. Thus, allowing the continued use of floating groundline in these cases would simply preserve the status quo; it would not constitute an *increase* in entanglement risks relative to current conditions.

<sup>61</sup> The Northeast driftnet fishery and the Atlantic blue crab trap/pot fishery would also become subject to ALWTRP requirements, but the former would not be subject to the SAM or DAM programs. The Atlantic blue crab

be subject to the requirements of the SAM and DAM programs until 12 months after publication of the final rule, when both programs would be eliminated. Under Alternative 5, these fisheries would become subject to the requirements of the expanded SAM program (the DAM program would be eliminated six months following publication of the final rule). Finally, under Alternative 6 Draft\* and Alternative 6 Final (Preferred), these fisheries would be subject to the requirements of the expanded SAM program until 12 months after publication of the final rule, when the program would be eliminated (the DAM program would be eliminated six months following publication of the final rule).

*Direct effects:*

Regulation of additional fisheries under the SAM and DAM programs is likely to have a direct effect on the protection and restoration of Atlantic large whales, providing measures to reduce the risk of entanglement when aggregations of whales are known or likely to be present. Under several alternatives (see above), these measures would cease to be in effect 12 months after publication of the final rule. In these cases, however, the SAM and/or DAM programs would be replaced by a more broadly based gear modification program. In the interim, the combination of groundline, buoy line, and weak link modifications required by the SAM and DAM programs would afford additional protection to large whales, with direct and indirect impacts similar to those described in the relevant sections above. In comparison to Alternatives 1 through 4, the expansion of the SAM zone under Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would extend SAM requirements to an additional 24 to 25 vessels (see Exhibit 5-11 in section 5.1.3.2). Compared to the status quo (Alternative 1), Alternatives 2 through 4 would extend DAM requirements to approximately 266 to 267 additional vessels. In contrast, no additional vessels would be regulated under Alternatives 5, 6 Draft\*, or 6 Final (Preferred), because these alternatives would eliminate the DAM program six months after publication of the final rule.

*Indirect effects:*

The inclusion of additional fisheries in the SAM and DAM programs could provide indirect benefits to whales if vessels newly subject to SAM and/or DAM gear requirements extended the use of gear that meets SAM or DAM standards to other areas.

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trap/pot fishery would be subject to SAM and DAM requirements, but does not extend far enough north to be affected by the SAM program. Given its location (centered primarily in Chesapeake Bay), it is also unlikely to be affected by the DAM program.

### 5.1.2.7 Seasonal Regulation of Southeast and Mid-Atlantic Waters

A fundamental difference among Alternatives 2 through 6 Final (Preferred) is the extent to which broad-based gear modification requirements – i.e., sinking and/or neutrally buoyant groundline requirements, requirements concerning the use of multiple weak links in gillnet panels, and minimum gillnet anchoring requirements – would be imposed on fisheries in the Mid-Atlantic and Southeast. Alternative 5 would impose no such requirements, while Alternative 2 would impose these requirements year-round in both the Mid-Atlantic and Southeast. Alternatives 3\*, 6 Draft\*, and 6 Final (Preferred) would also extend broad-based gear modification requirements to the Mid-Atlantic and Southeast, but would only do so on a seasonal basis: from September 1 through May 31 in the Mid-Atlantic, from November 15 through April 15 between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, and from December 1 through March 31 in waters south of 29°00' N. In contrast, Alternative 4 would establish year-round gear modification requirements in the Mid-Atlantic, but would impose them on a seasonal basis in the Southeast: from November 15 through April 15 between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, and from December 1 through March 31 in waters south of 29°00' N.<sup>62</sup>

Consideration of seasonal variation in gear modification requirements is based upon the understanding of seasonal differences in the geographic distribution of populations of endangered whales, as reflected in a NMFS analysis of whale sightings data based on the December 2003 version of the North Atlantic Right Whale Consortium (NARWC) Sightings Database, which is maintained by the University of Rhode Island. This dataset includes a total of 21,977 right whale sighting records from the 18<sup>th</sup> century through 2003, as well as 4,414 humpback and 8,098 fin whale sighting records. The analysis provides the following information on the seasonal distribution of endangered whales:

- **Right Whales** – Right whale distribution has a strong seasonal aspect. The northern feeding areas are occupied primarily from May through September (although Cape Cod Bay is sometimes occupied from December on), with some right whales found in the area year-round. Right whales can be found in the Mid-Atlantic year-round, but sightings primarily occur between September and May. Right whales occupy the southern calving grounds (south of the South Carolina/Georgia border) from late November through early April, but these areas are largely unused for the remainder of the year. The greatest proportion of all right whale sightings occur in this region during the winter months, with virtually no sightings outside of this time period.<sup>63</sup>

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<sup>62</sup> The southern boundary of the southernmost area subject to ALWTRP requirements would be set at 27°51' N for trap/pot and Southeast gillnet fisheries, and at 26°46.5' N for shark net fisheries.

<sup>63</sup> Within the Southeast region, the URI dataset shows that right whales rarely occur south of 29°00' N latitude until after November 15. Right whale sightings expand south from December through February, and then north of 29°00' N after early April, with more variable sightings in March. Thus, it is considered appropriate to regulate the areas south of the South Carolina/Georgia border (i.e., 32°00' N) on a rolling basis.

- **Humpback Whales** – The seasonal distribution of humpback whales is similar to that of right whales. Humpback whales are common in the Northeast year-round, but the northern feeding grounds are primarily occupied from April through December. Humpback whales are present in the Mid-Atlantic year-round, but sightings primarily occur between September and May. They are common in the Southeast only during the winter months (November through April).
- **Fin Whales** – There are virtually no sightings of fin whales in the Southeast or southern Mid-Atlantic (i.e., south of Cape Hatteras) at any time of year. They are commonly seen north of the Cape Hatteras year-round.

Exhibit 5-9 summarizes the results of this analysis. In light of this information, NMFS has considered standards that would be designed to protect whales when they are most likely to be present in Mid-Atlantic or Southeast waters, without imposing restrictions on fishermen in these areas when whales are not likely to be present.

<b>Exhibit 5-9</b>			
<b>SEASONAL DISTRIBUTION OF ENDANGERED WHALE SPECIES</b>			
<b>Area</b>	<b>Right Whales</b>	<b>Humpback Whales</b>	<b>Fin Whales</b>
Northeast <sup>1</sup>	Common year-round; primarily from May through September	Common year-round; primarily from April through December	Common year-round
Mid-Atlantic <sup>2</sup>	Present year-round; primarily from September through May	Present year-round; primarily from September through May	Common year-round north of Cape Hatteras
Southeast <sup>3</sup>	Common from late November through early April	Common from November through April	Uncommon at any time
Notes:			
<sup>1</sup> Waters north of a line extending south from the Rhode Island – Connecticut border, then east at the 40 degree latitude line.			
<sup>2</sup> Waters south of the line described above and north of the South Carolina – Georgia border.			
<sup>3</sup> Waters south of the South Carolina – Georgia border.			

*Direct effects:*

The application of broad-based gear modification requirements on a seasonal basis in Mid-Atlantic and/or Southeast waters, as envisioned under Alternatives 3\*, 4, 6 Draft\*, and 6 Final (Preferred), is unlikely to have an adverse effect on the entanglement risks *currently* faced by large whales, since the seasonal variation in requirements would pertain to the implementation of new standards. Looking forward, the implementation of year-round rather than seasonal requirements would offer the most risk averse approach. Given available data on the seasonal distribution of whale populations, however, year-round requirements seem to offer limited additional conservation value compared to seasonal requirements. On a practical basis, seasonal requirements could offer the same degree of protection as year-round standards, without

requiring fishermen to comply with restrictions on their operations when the chances of an entanglement are remote.

*Indirect effects:*

As noted above, requiring fishermen to comply with ALWTRP requirements in situations where the risks of entanglement are low can undermine support for and compliance with the plan. Consideration of a seasonal approach to broad-based gear modification requirements – as envisioned under Alternatives 3\*, 4, 6 Draft\*, and 6 Final (Preferred) – is motivated by data suggesting that year-round requirements in the Mid-Atlantic and Southeast may not be warranted. To the extent that implementing seasonal rather than year-round restrictions makes clear that ALWTRP regulations are designed to apply where and when entanglements are most likely, a seasonal approach may foster improved compliance with the plan as a whole, and thus indirectly assist in preserving and restoring stocks of endangered or protected whales.

It is possible that fishermen who modified their gear to comply with seasonal requirements would also use that gear when the requirements are not in effect. To the extent this occurred, the seasonal approach would provide an ancillary benefit, affording whales a greater degree of protection than the regulations require.

### **5.1.3 Comparison of Biological Impacts Across Regulatory Alternatives**

The biological impacts described in the previous section vary across the regulatory alternatives. This section compares the direct and indirect biological impacts of each alternative. Where sufficient information is available, the alternatives are compared using quantitative criteria. The discussion is divided into two parts:

- First, it describes the criteria used to compare the direct and indirect impacts of each regulatory provision;
- Second, it compares the direct and indirect impacts across regulatory alternatives.

#### **5.1.3.1 Comparison Criteria**

As previously noted, the discussion of the biological impacts of new ALWTRP requirements on whale entanglement risks is largely qualitative. This approach is necessary because models that would enable NMFS to conduct a rigorous quantitative assessment of such risks are currently unavailable. In some instances, however, it is possible to develop quantitative indicators of the impact of alternative regulations.

Exhibit 5-10 summarizes the quantitative indicators developed to compare the biological impacts of the regulatory alternatives under consideration. As the exhibit shows, most of the indicators reflect changes in the number of vessels subject to ALWTRP requirements or changes

in commercial fishing operations, such as increases in the quantity of low-risk gear used. These indicators do not measure changes in entanglement risks, but offer useful information on factors that may partially correlate with such risks.

The indicators listed in Exhibit 5-10 focus primarily upon measures of the direct effects of new ALWTRP regulations. None of the indicators address one of the potentially important indirect effects of changes in ALWTRP regulations: a change in gear loss associated with new groundline requirements, buoy line requirements, or weak link and anchoring requirements. Changes in the amount of gear that is lost may affect whale entanglement risks. This indirect effect is addressed qualitatively in a separate discussion (in addition, see Section 5.1.1.1 for a discussion of the potential effect of groundline requirements on gear loss, Section 5.1.1.2 for a discussion of the potential effect of buoy line requirements on gear loss, and Section 5.1.1.3 for a discussion of the potential effect of weak link and anchoring requirements on gear loss).

In addition to excluding consideration of gear loss impacts, the list of quantitative indicators does not address the impacts of the following provisions:

- seasonal closures of newly regulated fisheries in restricted areas;
- expansion of the geographic scope of the ALWTRP in the Mid-Atlantic and Southeast, coupled with changes in the periods of time during which ALWTRP regulations in the Southeast would apply; and
- deep water exemptions.

As previously noted, the impacts of these provisions under Alternatives 2 through 6 Final (Preferred) are expected to be similar. Because differences among the alternatives with respect to the impact of these provisions should be negligible, they are excluded from the analysis.

Exhibit 5-10			
RISK REDUCTION INDICATORS			
Regulatory Provision		Impact	Risk Reduction Indicator
<b>Major Gear Requirements</b>			
Groundline <sup>1</sup>	Non-floating line requirement	Direct benefit to large whales by reducing the amount of fishing line in the water column.	Additional fathoms of groundline converted
Buoy line	Universal gear modifications	Direct benefit to large whales by reducing the amount of fishing line at the water surface.	Additional vessels required to comply
	Non-floating line requirement	See <i>SAM Program</i> and/or <i>Right Whale Restricted Areas</i> , below.	See <i>SAM Program</i> and/or <i>Right Whale Restricted Areas</i> , below.
	Single buoy line provision		
Weak links and anchoring	Weak links required at all flotation and/or weighted devices off the main buoy line	Direct benefit to large whales by increasing the number of effective breaking points in fishing gear.	Fathoms of buoy line with weak links installed on all flotation and/or weighted devices; number of additional weak links installed on all flotation and/or weighted devices
	Weak links required in all net panels (gillnet only)		Number of additional gillnet net panels with weak links installed
	Anchors required for all gillnet strings (gillnet only)		Number of additional gillnet strings with anchors installed
Set restrictions and gear stowing requirements	Night set restrictions (gillnet only)	Direct benefit to large whales by reducing the interaction between large whales and untended fishing gear at night.	Additional vessels required to comply
	Gear stowing requirements (gillnet only)	Direct benefit to large whales by reducing the interaction between large whales and untended fishing gear.	
	One buoy line per trawl of four traps or fewer <sup>2</sup>	Potential direct benefit to large whales if the action reduces the amount of buoy line in the water column.	
Gear marking	Marking of buoy lines	Indirect benefit to large whales by increasing scientific understanding of the nature of large whale entanglements.	Number of new gear marks
<b>Changes to Restricted Times and Areas</b>			
Right Whale Restricted Areas	New fishery closures in Great South Channel (April 1 – June 30)	Direct benefit to large whales by decreasing the potential for interactions between large whales and fishing gear in right whale restricted areas.	Additional vessels required to comply
	Gear requirements in Cape Cod Bay, (January 1 – May 15): <sup>3</sup> <ul style="list-style-type: none"> <li>Prohibition on single pots</li> <li>Non-floating buoy line requirement</li> </ul>	Direct benefit to large whales by increasing the number of vessels that must comply with low-risk gear requirements, specifically by reducing the amount of buoy line in the water column and floating at the surface.	Additional vessels required to comply Additional fathoms of buoy line converted
SAM Program <sup>3</sup>	Revised SAM boundaries (Alternatives 5, 6 Draft*, and 6 Final (Preferred))	Direct benefit to large whales by increasing the area of protection afforded to large whales.	Additional vessels subject to SAM program
	Inclusion of other trap/pot vessels in SAM program: <sup>4</sup> <ul style="list-style-type: none"> <li>Non-floating buoy line requirement</li> <li>Single buoy line provision</li> </ul>	Direct benefit to large whales by reducing the amount of fishing line in the water column and floating at the surface.	Additional fathoms of buoy line converted
			Additional buoy lines eliminated
DAM Program <sup>5</sup>	Inclusion of other trap/pot vessels in DAM program: <sup>4</sup> <ul style="list-style-type: none"> <li>Non-floating buoy line requirement</li> </ul>	Direct benefit to large whales by increasing the number of vessels that must comply with low-risk gear requirements, specifically by reducing the amount of buoy line in the water column and floating at the surface.	Additional vessels required to comply
			Additional fathoms of buoy line converted
<b>Seasonality</b>			
Inclusion of seasonal alternatives		Direct benefit to large whales by increasing protection during times when whales are known to congregate in certain areas.	Area-days <sup>6</sup>
<p>Notes:</p> <p><sup>1</sup> This indicator addresses all groundline converted, including groundline converted pursuant to SAM or DAM program requirements.</p> <p><sup>2</sup> This restriction would be a requirement under Alternatives 2 through 6 Draft* in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in areas of Cape Cod Bay that overlap with Northern Nearshore waters.</p> <p><sup>3</sup> Under Alternatives 2 through 4, 6 Draft*, and 6 Final (Preferred), the SAM program would terminate 12 months after publication of the final rule.</p> <p><sup>4</sup> Only gear requirements that are unique to the SAM or DAM program are analyzed.</p> <p><sup>5</sup> Under Alternatives 2 through 4, the DAM program would terminate 12 months after publication of the final rule. Under Alternatives 5, 6 Draft*, and 6 Final (Preferred), the DAM program would terminate six months after publication of the final rule.</p> <p><sup>6</sup> This indicator is calculated by multiplying the square nautical miles of protected area by the number of days that seasonal gear modification requirements apply.</p>			

### 5.1.3.2 Comparison of Regulatory Alternatives

#### Quantitative Risk Reduction Indicators

Exhibit 5-11 compares the impacts of Alternatives 2 through 6 Final (Preferred) using a variety of indicators that are likely to correlate with reduced entanglement risk to Atlantic large whales.<sup>64</sup> As the exhibit indicates, the impacts associated with Alternative 5 would be significantly less than those associated with Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred), primarily because Alternative 5 would not impose as broad a set of gear modification requirements. In particular:

- Alternative 5 would not require vessels fishing outside Cape Cod Bay (January 1 to May 15) or the Seasonal Area Management zone (March 1 to July 1) to convert their groundline to sinking and/or neutrally buoyant line. In contrast, Alternatives 2, 3\*, 4, 6 Draft\*, and 6 Final (Preferred) would require most vessels fishing in ALWTRP-regulated waters to convert to sinking and/or neutrally buoyant groundline. Under Alternative 5, the total groundline converted to non-floating line would be less than one percent of the total groundline converted under Alternatives 2, 3\*, 4, 6 Draft\*, and 6 Final (Preferred).
- Alternative 5 would not require anchored gillnet vessels fishing outside the SAM zone to incorporate multiple weak links in each net panel. In addition, Alternative 5 would limit the geographic scope of requirements that anchored gillnet vessels secure their nets at each end with an anchor having the holding power (at minimum) of a 22-pound Danforth-style anchor; this standard would only apply to gear subject to SAM requirements, and on a seasonal basis to gear in the Mid-Atlantic and Southeast when the gear does not return to port with the vessel. Under Alternative 5, the total number of net panels with multiple weak links installed would be approximately two percent of the total under Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred). Similarly, under Alternative 5, the total number of gillnet strings required to be equipped with anchors having the holding power (at minimum) of a 22-pound Danforth-style anchor would be approximately one percent of the total under Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred).

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<sup>64</sup> The analysis evaluates the impact of new ALWTRP requirements relative to the status quo — i.e., a baseline scenario that assumes no change in existing ALWTRP requirements. This baseline scenario is equivalent to Alternative 1 (No Action). As previously stated, it is important to note that the No Action Alternative (Alternative 1) would not achieve the objective of reducing harm to large whales by reducing the likelihood of entanglement and/or reducing the severity of an entanglement should one occur. If Alternative 1 were chosen, there would likely be additional incidents of serious injury and mortality to large whales due to entanglement in commercial fishing gear, rather than a reduction in these interactions. Factors such as serious injury and mortality due to commercial fishing impede the right whale population's ability to recover (Reeves et al., 2001).

Exhibit 5-11							
COMPARISON OF IMPACTS BY ALTERNATIVE: QUANTITATIVE RISK REDUCTION INDICATORS <sup>1</sup>							
	Regulatory Alternatives						
	No Action 1	2	3*	4	5	6 Draft*	6 Final (Preferred)
<b>Changes in the Number of Affected Vessels</b>							
Newly regulated lobster trap/pot vessels	0	11	10	11	10	10	5
Newly regulated gillnet vessels <sup>2</sup>	0	616	604	615	604	604	604
Newly regulated other trap/pot vessels	0	418	416	418	416	416	431
<b>Major Gear Requirements</b>							
Fathoms of groundline converted (millions) <sup>3</sup>	0	31.2	31.1	31.2	0.2	31.1	23.9
Fathoms of buoy line with weak links installed on all flotation and/or weighted devices (millions)	0	30.7	30.6	30.7	30.6	30.6	24.8
Number of weak links installed on all flotation and/or weighted devices off the main buoy line (thousands)	0	345.7	344.7	345.7	344.7	344.7	281.4
Number of gillnet net panels with multiple weak links installed (thousands)	0	125.9	124.9	125.9	2.0	125.0	126.7
Number of gillnet net panels with 1 weak link installed (thousands)	0	60.7	59.6	60.6	118.6	59.6	59.6
Number of gillnet strings with anchors installed (thousands)	0	2.9	2.9	2.9	<0.1	2.9	2.9
Number of new gear marks (millions)	0	2.2	2.2	2.2	2.2	2.2	0.3
<b>Set and Stow Restrictions</b>							
Newly affected vessels - night set restrictions <sup>2</sup>	0	56	44	45	44	44	44
Newly affected vessels - gear stowing restrictions <sup>2</sup>	0	614	604	614	604	604	604
Newly affected vessels - one buoy line per trawl of four traps or fewer <sup>4</sup>	0	20	20	20	20	20	NA
<b>Right Whale Area Restrictions<sup>5</sup></b>							
Newly regulated vessels in Great South Channel (April 1 – June 30)	0	<1	<1	<1	<1	<1	<1
Newly regulated vessels in Cape Cod Bay (January 1 – May 15)	0	2	2	2	2	2	2
Fathoms of buoy line converted in Cape Cod Bay (January 1 – May 15)	0	1,349	1,349	1,349	1,349	1,349	1,349
<b>SAM Program<sup>6</sup></b>							
Newly regulated vessels in SAM program <sup>6,7</sup>	0	<1	<1	<1	24	24	25
Fathoms of buoy line converted <sup>6,8</sup>	0	924	924	924	24,483	25,331	25,331
Number of buoy lines eliminated <sup>6</sup>	0	7	7	7	NA	NA	NA
<b>DAM Program<sup>9</sup></b>							
Newly regulated vessels in DAM program	0	267	266	267	NA	NA	NA
Fathoms of buoy line converted (thousands)	0	369.7	368.8	369.7	NA	NA	NA
<b>Seasonality</b>							
Area-Days: Trap/pot (millions) <sup>10</sup>	0	91.9	65.2	78.6	65.2	65.2	65.1
Area-Days: Gillnet (millions) <sup>10</sup>	0	92.8	65.5	78.9	65.5	65.5	65.4
Key: NA = not applicable * = Specified as a Preferred Alternative in the DEIS							
Notes:							
<sup>1</sup> Numbers presented in this table represent changes incremental to the baseline. Since Alternative 1 is equivalent to no action, all values equal zero.							
<sup>2</sup> Estimates of newly regulated vessels assume that 50 percent of Mid-Atlantic driftnet vessels are currently regulated by ALWTRP requirements that apply in the Mid-Atlantic from December 1 through March 31. All others (i.e., those active only between April 1 and November 30) would be newly regulated.							
<sup>3</sup> This number includes groundline that would be converted as a result of SAM, DAM, and Cape Cod Bay Restricted Area requirements, as well as groundline that would be converted as a result of broad-based gear modification requirements.							
<sup>4</sup> This restriction is a new requirement for other trap/pot vessels fishing in Northern Nearshore waters and Stellwagen Bank/Jeffreys Ledge.							
<sup>5</sup> The use of driftnets or anchored float gillnets would be prohibited in the Cape Cod Bay Restricted Area from January 1 through May 15, and in the Great South Channel Restricted Gillnet Area from April 1 through June 30. The use of mixed species trap/pot gear would be prohibited in the Great South Channel Restricted Area from April 1 through June 30.							
<sup>6</sup> Under Alternatives 2, 3*, 4, 6 Draft*, and 6 Final (Preferred), the SAM program and all gear requirements unique to this program would be eliminated 12 months after publication of the final rule.							
<sup>7</sup> Under Alternatives 2 through 4, this figure represents the number of other trap/pot vessels that would be newly subject to SAM requirements. Under Alternatives 5, 6 Draft*, and 6 Final (Preferred), this figure also includes the change in the number of vessels subject to SAM requirements as a result of changes in the SAM zone's boundaries.							
<sup>8</sup> Until 12 months after publication of the final rule, Alternatives 2 through 4 would require that buoy lines be made entirely of non-floating line. Under Alternatives 5, 6 Draft*, and 6 Final (Preferred), vessels would be allowed to use floating line in the bottom third of the buoy line. Under Alternatives 5, 6 Draft*, and 6 Final (Preferred), this figure represents the net change in the fathoms of buoy line converted, including both increases and decreases in buoy line converted as a result of changes in the SAM zone's boundaries.							
<sup>9</sup> Under Alternatives 2 through 4, the DAM program and all gear requirements unique to this program would be eliminated 12 months after publication of the final rule. Under Alternatives 5, 6 Draft*, and 6 Final (Preferred), the program would be eliminated six months after publication of the final rule.							
<sup>10</sup> This indicator is designed to capture seasonal differences in the application of regulations under each alternative, and is calculated by multiplying the square nautical miles of area protected under the ALWTRP by the number of days each year that seasonal gear modification requirements would apply.							

As a result of these differences, the benefits of Alternative 5 for whale survival are likely to be significantly lower than the benefits associated with Alternatives 2, 3\*, 4, 6 Draft\*, and 6 Final (Preferred).

The impacts of Alternatives 2, 3\*, 4, 6 Draft\*, and 6 Final (Preferred) are quite similar, reflecting similarities in the regulatory requirements imposed under each alternative. For example, each of these alternatives would require the conversion of approximately 24 million to 31 million fathoms of floating groundline to sinking and/or neutrally buoyant line. Further, each would require the installation of weak links on an estimated 25 million to 31 million fathoms of buoy line, the incorporation of a single weak link into an estimated 60 thousand to 61 thousand gillnet panels, and the incorporation of multiple weak links into an estimated 125 thousand to 127 thousand gillnet panels.<sup>65</sup> Similarly, approximately 2,900 gillnet strings would become subject to new minimum anchoring strength standards. Finally, each of these alternatives would extend ALWTRP regulations to more than a thousand additional vessels, including more than 600 newly regulated gillnet vessels and 400 newly regulated other trap/pot vessels. Each newly regulated vessel would be required to comply with applicable standards for the conversion of floating groundline, installation of additional weak links, and implementation of minimum anchoring strength standards. Such actions are expected to correlate with a greater reduction of entanglement risk to Atlantic large whales.

The most notable differences in the estimated impacts of Alternative 6 Final (Preferred) and Alternatives 2, 3\*, 4, and 6 Draft\* are primarily attributable to differences between Alternative 6 Final (Preferred) and the other alternatives in the designation of exempted areas. As Exhibit 5-11 indicates, Alternative 6 Final (Preferred) would require vessels to convert an estimated 23.9 million fathoms of groundline from floating to sinking and/or neutrally buoyant line; this figure is approximately 77 percent of the total that would be converted to sinking and/or neutrally buoyant line under Alternatives 2, 3\*, 4, and 6 Draft\*. Similarly, Alternative 6 Final (Preferred) would require weak links to be installed on all flotation and/or weighted devices attached to 24.8 million fathoms of buoy line, approximately 81 to 82 percent of the total length of buoy line that would be affected by this requirement under Alternatives 2, 3\*, 4, and 6 Draft\*.

The differences between Alternative 6 Final (Preferred) and Alternatives 2, 3\*, 4, and 6 Draft\* on the two indicators noted above likely overstate any actual differences in the degree to which these alternatives would reduce entanglement risks. The designation of exempted areas under each of these alternatives is based on a review of large whale sightings data to determine where whales are likely to be found. While Alternative 6 Final (Preferred) would exempt areas off the coast of Maine and in Long Island Sound that would be regulated under Alternatives 2, 3\*, 4, and 6 Draft\*, whales are unlikely to occur in these areas and entanglement risks are low. As a result, Alternatives 2, 3\*, 4, and 6 Draft\* would likely offer little additional risk reduction relative to Alternative 6 Final (Preferred).

With respect to most other indicators, the impacts of Alternative 6 Final (Preferred) are similar to those of Alternatives 2, 3\*, 4, and 6 Draft\*. The most notable exception is the number

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<sup>65</sup> Based upon the best available information, the analysis assumes that anchored gillnet vessels in the Northeast and Mid-Atlantic fish net panels that average 50 fathoms (300 feet) in length. Thus, gillnet vessels in these areas would be required to employ multiple weak links per net panel.

of "area-days" for which broad-based gear modification requirements would be in effect. This indicator is designed to capture seasonal differences in the application of regulations under each alternative, and is calculated by multiplying the square nautical miles of area protected under the ALWTRP by the number of days each year that seasonal gear modification requirements would apply.<sup>66</sup> By this measure, Alternative 2 would provide the highest degree of protection (an estimated 92 to 93 million area-days subject to broad-based gear modification requirements), followed by Alternative 4 (79 million area-days) and Alternatives 3\*, 5, 6 Draft\*, and 6 Final (Preferred), with approximately 65 million area-days each. As noted in the DEIS, however, the actual risk-reduction potential of these alternatives is unlikely to vary as much as this indicator implies. The seasonal exemptions provided under Alternatives 3\*, 4, 6 Draft\*, and 6 Final (Preferred) are premised on the migratory patterns of whales. Current understanding of these patterns suggests that the risk of entanglement for a whale in the Mid-Atlantic or Southeast during the summer months (June through August) is low. As a result, year-round requirements in the Mid-Atlantic or Southeast would likely offer little additional risk reduction relative to seasonal standards.

### **Gear Loss Impacts**

As previously noted, three major gear modification requirements have the potential to affect the amount of gear that commercial fishermen lose, and thus influence the risks of entanglement in ghost gear: groundline requirements, buoy line requirements, and weak link and anchoring requirements. Exhibit 5-12 summarizes, by alternative, the potential impact of these provisions on gear loss rates.<sup>67</sup> Note that weak link and anchoring requirements are not believed to affect gear loss rates.

Relative to the other alternatives, Alternative 5 has the least potential for increasing gear loss rates. This result is a product of two factors: (1) relatively limited expansion of requirements mandating the use of non-floating groundline; and (2) rapid elimination of the SAM program's non-floating buoy line and single buoy line requirements, both of which may contribute to elevated gear loss rates within the SAM zone.<sup>68</sup> Alternatives 2, 3\*, 4, 6 Draft\*, and 6 Final (Preferred) are unlikely to differ with respect to their long-term impacts on gear loss. Until 12 months after publication of the final rule, however, Alternatives 2 through 4 would preserve the SAM program's non-floating buoy line and single buoy line provisions. This is likely to result in slightly greater near-term gear loss rates under these alternatives than under

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<sup>66</sup> As discussed in detail elsewhere, the provisions of Alternative 2 would be effective year-round. In contrast, ALWTRP provisions under Alternatives 3\*, 6 Draft\*, and 6 Final would be in effect seasonally for vessels fishing in the Mid-Atlantic and Southeast; under Alternative 4, ALWTRP provisions would also be in effect seasonally, but only in the Southeast.

<sup>67</sup> It is important to note that this exhibit only provides information on the direction of the change in gear loss rates, and gives no indication of the magnitude of that change.

<sup>68</sup> Alternative 5 would require the use of sinking and/or neutrally buoyant groundline in the newly expanded SAM zone, but would not extend this requirement to additional areas. In addition, Alternative 5 would eliminate the SAM program's non-floating buoy line and single buoy line provisions six months after publication of revised ALWTRP regulations.

Alternatives 6 Draft\* or 6 Final (Preferred), which would eliminate the non-floating buoy line and single buoy line provisions six months after publication of revised ALWTRP regulations.

<b>Exhibit 5-12</b>							
<b>POTENTIAL CHANGES IN GEAR LOSS RATES<sup>1</sup></b>							
<b>Regulatory Provision</b>	<b>Regulatory Alternatives</b>						<b>6 Final (Preferred)</b>
	<b>1</b>	<b>2</b>	<b>3*</b>	<b>4</b>	<b>5</b>	<b>6 Draft*</b>	
Non-floating groundline	o	+	+	+	+	+	+
SAM buoy line requirements							
Non-floating buoy line <sup>2</sup>	o	+	+	+	NA	NA	NA
Single buoy line <sup>2</sup>	o	+	+	+	NA	NA	NA
Floating line in the bottom third of the buoy line <sup>3</sup>	o	-	-	-	-	-	-
Allowing two buoy lines <sup>3</sup>	o	-	-	-	-	-	-
Weak links and anchoring	o	o	o	o	o	o	o
<b>Key:</b> o = no change + = provision has the potential to increase gear loss rates - = provision has the potential to reduce gear loss rates * = Specified as a Preferred Alternative in the DEIS							
<b>Notes:</b> <sup>1</sup> This exhibit indicates the likely direction of a potential change in gear loss. It does not provide information about the potential magnitude of the change. <sup>2</sup> Alternatives 2 through 4 would preserve this element of the SAM program and expand its application to other trap/pot vessels until 12 months after publication of the final rule, when the SAM program would be eliminated. <sup>3</sup> Alternatives 2 through 4 would introduce this provision 12 months after publication of the final rule, when the SAM program would be eliminated.							

## 5.2 OTHER IMPACTS

In addition to impacts on large whale species, changes to ALWTRP regulations may affect other aspects of the marine environment, including other protected species, essential fish habitat, and directed catch and bycatch in affected fisheries. The remainder of this chapter discusses these potential effects, which are summarized in Exhibit 5-13. As the exhibit indicates, there is no significant difference among Alternatives 2 through 6 Final (Preferred) with respect to impacts on essential fish habitat, directed catch, or bycatch; in each case, the impacts are expected to be minor. The alternatives differ, however, with respect to the ancillary benefits they would afford other protected species. As the following discussion explains, these differences stem from differences in the extent to which the alternatives would mandate broad-based gear modification requirements that could prove beneficial to potentially affected species of whales, porpoises, dolphins, seals, and sea turtles.

## Exhibit 5-13

**IMPACTS OF REGULATORY ALTERNATIVES ON OTHER PROTECTED SPECIES,  
ESSENTIAL FISH HABITAT, DIRECTED CATCH, AND BYCATCH**

<b>Regulatory Alternative</b>	<b>Impacts on Other Protected Species</b>	<b>Impacts on Essential Fish Habitat</b>	<b>Impacts on Directed Catch and Bycatch</b>
Alternative 1 (No Action)	<ul style="list-style-type: none"> <li>Status quo - no additional impact</li> </ul>	<ul style="list-style-type: none"> <li>Status quo - no additional impact</li> </ul>	<ul style="list-style-type: none"> <li>Status quo - no additional impact</li> </ul>
Alternative 2	<ul style="list-style-type: none"> <li>Groundline and buoy line requirements could help directly reduce entanglement risks for sea turtles, whales, dolphins, porpoises, and seals; gear marking requirements could provide an indirect benefit. Weak link and net anchoring requirements may benefit blue, sei, and sperm whales, since these species would possess the size and strength for weak links to function properly. Benefits of broad-based gear modification requirements would be realized in all regulated areas year-round.</li> <li>Seasonal closure of Great South Channel and Cape Cod Bay Restricted Areas to additional fisheries could provide limited ancillary benefits to sea turtles, sei whales, harbor porpoises, seals, and some pelagic delphinids that may be present when the closures are in effect.</li> <li>Expansion of gillnet areas subject to ALWTRP requirements in the Mid-Atlantic and Southeast could provide ancillary benefits to other protected species in the event of increased gillnet activity in these areas.</li> <li>Expansion of exempted waters could increase entanglement risks in these areas for some other protected species, such as sea turtles.</li> <li>Extension of SAM and DAM programs to additional fisheries until 12 months after publication of the final rule could provide ancillary benefits to other protected species that may be present when these requirements are in effect.</li> </ul>	<ul style="list-style-type: none"> <li>Potential increase in fishing pressure in exempted areas could have an adverse impact on the benthic environment.</li> <li>Gillnet anchors and sinking and/or neutrally buoyant groundline could have an adverse impact on benthic habitat, but such impacts are likely to be minimal and temporary.</li> <li>Changes in gear loss rates associated with gear modification requirements could have an indirect effect on the benthic environment.</li> </ul>	<ul style="list-style-type: none"> <li>Gear modification requirements are expected to have no direct impact on directed catch or bycatch; changes in gear loss rates associated with these requirements could have an indirect effect.</li> <li>Seasonal closure of Cape Cod Bay and Great South Channel Restricted Areas to additional fisheries should have minimal impact.</li> <li>Potential increase in fishing pressure in exempted areas could reduce directed catch in those areas.</li> </ul>

## Exhibit 5-13

**IMPACTS OF REGULATORY ALTERNATIVES ON OTHER PROTECTED SPECIES,  
ESSENTIAL FISH HABITAT, DIRECTED CATCH, AND BYCATCH**

<b>Regulatory Alternative</b>	<b>Impacts on Other Protected Species</b>	<b>Impacts on Essential Fish Habitat</b>	<b>Impacts on Directed Catch and Bycatch</b>
Alternative 3*	<ul style="list-style-type: none"> <li>• Groundline and buoy line requirements could help directly reduce entanglement risks for sea turtles, whales, dolphins, porpoises, and seals; gear marking requirements could provide an indirect benefit. Weak link and net anchoring requirements may benefit blue, sei, and sperm whales, since these species would possess the size and strength for weak links to function properly. Benefits of broad-based gear modification requirements would be realized year-round in the Northeast, but only seasonally in the Mid-Atlantic and Southeast.</li> <li>• Seasonal closure of Great South Channel and Cape Cod Bay Restricted Areas to additional fisheries could provide limited ancillary benefits to sea turtles, sei whales, harbor porpoises, seals, and some pelagic delphinids that may be present when the closures are in effect.</li> <li>• Expansion of gillnet areas subject to ALWTRP requirements in the Mid-Atlantic and Southeast could provide ancillary benefits to other protected species in the event of increased gillnet activity in these areas.</li> <li>• Expansion of exempted waters could increase entanglement risks in these areas for some other protected species, such as sea turtles.</li> <li>• Extension of SAM and DAM programs to additional fisheries until 12 months after publication of the final rule could provide ancillary benefits to other protected species that may be present when these requirements are in effect.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential increase in fishing pressure in exempted areas could have an adverse impact on the benthic environment.</li> <li>• Gillnet anchors and sinking and/or neutrally buoyant groundline could have an adverse impact on benthic habitat, but such impacts are likely to be minimal and temporary.</li> <li>• Changes in gear loss rates associated with gear modification requirements could have an indirect effect on the benthic environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Gear modification requirements are expected to have no direct impact on directed catch or bycatch; changes in gear loss rates associated with these requirements could have an indirect effect.</li> <li>• Seasonal closure of Cape Cod Bay and Great South Channel Restricted Areas to additional fisheries should have minimal impact.</li> <li>• Potential increase in fishing pressure in exempted areas could reduce directed catch in those areas.</li> </ul>

## Exhibit 5-13

**IMPACTS OF REGULATORY ALTERNATIVES ON OTHER PROTECTED SPECIES,  
ESSENTIAL FISH HABITAT, DIRECTED CATCH, AND BYCATCH**

<b>Regulatory Alternative</b>	<b>Impacts on Other Protected Species</b>	<b>Impacts on Essential Fish Habitat</b>	<b>Impacts on Directed Catch and Bycatch</b>
Alternative 4	<ul style="list-style-type: none"> <li>• Groundline and buoy line requirements could help directly reduce entanglement risks for sea turtles, whales, dolphins, porpoises, and seals; gear marking requirements could provide an indirect benefit. Weak link and net anchoring requirements may benefit blue, sei, and sperm whales, since these species would possess the size and strength for weak links to function properly. Benefits of broad-based gear modification requirements would be realized year-round in the Northeast and Mid-Atlantic, but only seasonally in the Southeast.</li> <li>• Seasonal closure of Great South Channel and Cape Cod Bay Restricted Areas to additional fisheries could provide limited ancillary benefits to sea turtles, sei whales, harbor porpoises, seals, and some pelagic delphinids that may be present when the closures are in effect.</li> <li>• Expansion of gillnet areas subject to ALWTRP requirements in the Mid-Atlantic and Southeast could provide ancillary benefits to other protected species in the event of increased gillnet activity in these areas.</li> <li>• Expansion of exempted waters could increase entanglement risks in these areas for some other protected species, such as sea turtles.</li> <li>• Extension of SAM and DAM programs to additional fisheries until 12 months after publication of the final rule could provide ancillary benefits to other protected species that may be present when these requirements are in effect.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential increase in fishing pressure in exempted areas could have an adverse impact on the benthic environment.</li> <li>• Gillnet anchors and sinking and/or neutrally buoyant groundline could have an adverse impact on benthic habitat, but such impacts are likely to be minimal and temporary.</li> <li>• Changes in gear loss rates associated with gear modification requirements could have an indirect effect on the benthic environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Gear modification requirements are expected to have no direct impact on directed catch or bycatch; changes in gear loss rates associated with these requirements could have an indirect effect.</li> <li>• Seasonal closure of Cape Cod Bay and Great South Channel Restricted Areas to additional fisheries should have minimal impact.</li> <li>• Potential increase in fishing pressure in exempted areas could reduce directed catch in those areas.</li> </ul>

## Exhibit 5-13

**IMPACTS OF REGULATORY ALTERNATIVES ON OTHER PROTECTED SPECIES,  
ESSENTIAL FISH HABITAT, DIRECTED CATCH, AND BYCATCH**

<b>Regulatory Alternative</b>	<b>Impacts on Other Protected Species</b>	<b>Impacts on Essential Fish Habitat</b>	<b>Impacts on Directed Catch and Bycatch</b>
Alternative 5	<ul style="list-style-type: none"> <li>• Extension of SAM groundline and buoy line requirements to additional fisheries and expansion of the SAM program to new areas could help directly reduce entanglement risks for sea turtles, whales, dolphins, porpoises, and seals that may be present in the SAM areas when SAM requirements are in effect; gear marking requirements could provide an indirect benefit. Benefits of broad-based gear modification requirements would not be realized.</li> <li>• Seasonal closure of Great South Channel and Cape Cod Bay Restricted Areas to additional fisheries could provide limited ancillary benefits to sea turtles, sei whales, harbor porpoises, seals, and some pelagic delphinids that may be present when the closures are in effect.</li> <li>• Expansion of gillnet areas subject to ALWTRP requirements in the Mid-Atlantic and Southeast could provide ancillary benefits to other protected species in the event of increased gillnet activity in these areas.</li> <li>• Expansion of exempted waters could increase entanglement risks in these areas for some other protected species, such as sea turtles.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential increase in fishing pressure in exempted areas could have an adverse impact on the benthic environment.</li> <li>• Gillnet anchors and sinking and/or neutrally buoyant groundline could have an adverse impact on benthic habitat, but such impacts are likely to be minimal and temporary.</li> <li>• Changes in gear loss rates associated with gear modification requirements could have an indirect effect on the benthic environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Gear modification requirements are expected to have no direct impact on directed catch or bycatch; changes in gear loss rates associated with these requirements could have an indirect effect.</li> <li>• Seasonal closure of Cape Cod Bay and Great South Channel Restricted Areas to additional fisheries should have minimal impact.</li> <li>• Potential increase in fishing pressure in exempted areas could reduce directed catch in those areas.</li> </ul>

## Exhibit 5-13

**IMPACTS OF REGULATORY ALTERNATIVES ON OTHER PROTECTED SPECIES,  
ESSENTIAL FISH HABITAT, DIRECTED CATCH, AND BYCATCH**

<b>Regulatory Alternative</b>	<b>Impacts on Other Protected Species</b>	<b>Impacts on Essential Fish Habitat</b>	<b>Impacts on Directed Catch and Bycatch</b>
Alternative 6 Draft*	<ul style="list-style-type: none"> <li>• Groundline and buoy line requirements could help directly reduce entanglement risks for sea turtles, whales, dolphins, porpoises, and seals; gear marking requirements could provide an indirect benefit. Weak link and net anchoring requirements may benefit blue, sei, and sperm whales, since these species would possess the size and strength for weak links to function properly. Benefits of broad-based gear modification requirements would be realized year-round in the Northeast but only seasonally in the Mid-Atlantic and Southeast.</li> <li>• Seasonal closure of Great South Channel and Cape Cod Bay Restricted Areas to additional fisheries could provide limited ancillary benefits to sea turtles, sei whales, harbor porpoises, seals, and some pelagic delphinids that may be present when the closures are in effect.</li> <li>• Expansion of gillnet areas subject to ALWTRP requirements in the Mid-Atlantic and Southeast could provide ancillary benefits to other protected species in the event of increased gillnet activity in these areas.</li> <li>• Expansion of exempted waters could increase entanglement risks in these areas for some other protected species, such as sea turtles.</li> <li>• Expansion of SAM area and extension of SAM program to additional fisheries until 12 months after publication of the final rule could provide ancillary benefits to other protected species that may be present when SAM requirements are in effect.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential increase in fishing pressure in exempted areas could have an adverse impact on the benthic environment.</li> <li>• Gillnet anchors and sinking and/or neutrally buoyant groundline could have an adverse impact on benthic habitat, but such impacts are likely to be minimal and temporary.</li> <li>• Changes in gear loss rates associated with gear modification requirements could have an indirect effect on the benthic environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Gear modification requirements are expected to have no direct impact on directed catch or bycatch; changes in gear loss rates associated with these requirements could have an indirect effect.</li> <li>• Seasonal closure of Cape Cod Bay and Great South Channel Restricted Areas to additional fisheries should have minimal impact.</li> <li>• Potential increase in fishing pressure in exempted areas could reduce directed catch in those areas.</li> </ul>

## Exhibit 5-13

**IMPACTS OF REGULATORY ALTERNATIVES ON OTHER PROTECTED SPECIES,  
ESSENTIAL FISH HABITAT, DIRECTED CATCH, AND BYCATCH**

<b>Regulatory Alternative</b>	<b>Impacts on Other Protected Species</b>	<b>Impacts on Essential Fish Habitat</b>	<b>Impacts on Directed Catch and Bycatch</b>
Alternative 6 Final (Preferred)	<ul style="list-style-type: none"> <li>• Groundline and buoy line requirements could help directly reduce entanglement risks for sea turtles, whales, dolphins, porpoises, and seals; gear marking requirements could provide an indirect benefit. Weak link and net anchoring requirements may benefit blue, sei, and sperm whales, since these species would possess the size and strength for weak links to function properly. Benefits of broad-based gear modification requirements would be realized year-round in the Northeast but only seasonally in the Mid-Atlantic and Southeast.</li> <li>• Seasonal closure of Great South Channel and Cape Cod Bay Restricted Areas to additional fisheries could provide limited ancillary benefits to sea turtles, sei whales, harbor porpoises, seals, and some pelagic delphinids that may be present when the closures are in effect.</li> <li>• Expansion of exempted waters could increase entanglement risks in these areas for some other protected species, such as sea turtles.</li> <li>• Expansion of SAM area and extension of SAM program to additional fisheries until 12 months after publication of the final rule could provide ancillary benefits to other protected species that may be present when SAM requirements are in effect.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential increase in fishing pressure in exempted areas could have an adverse impact on the benthic environment.</li> <li>• Gillnet anchors and sinking and/or neutrally buoyant groundline could have an adverse impact on benthic habitat, but such impacts are likely to be minimal and temporary.</li> <li>• Changes in gear loss rates associated with gear modification requirements could have an indirect effect on the benthic environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Gear modification requirements are expected to have no direct impact on directed catch or bycatch; changes in gear loss rates associated with these requirements could have an indirect effect.</li> <li>• Seasonal closure of Cape Cod Bay and Great South Channel Restricted Areas to additional fisheries should have minimal impact.</li> <li>• Potential increase in fishing pressure in exempted areas could reduce directed catch in those areas.</li> </ul>
<p>Key: * = Specified as a Preferred Alternative in the DEIS</p>			

### 5.2.1 Impacts to Other Protected Species

In addition to the large whales discussed in Section 5.1, other protected species in the waters subject to regulation under the ALWTRP can become entangled in commercial fishing gear. Some other protected species, such as the shortnose sturgeon, the Gulf of Maine distinct population segment of Atlantic salmon, roseate terns, and piping plovers, which are listed under the Endangered Species Act, also utilize waters potentially subject to ALWTRP requirements. These species, however, are minimally affected by the commercial fishing operations that are regulated under the ALWTRP. Hence, the biological impacts analysis does not address these species.

This section assesses the potential impact of modifications to the ALWTRP on other ESA listed species and marine mammals, and non-ESA listed marine mammals. The ESA listed species include Kemp's ridley, loggerhead, leatherback, green, olive ridley, and hawksbill sea turtles, as well as sperm, blue, and sei whales. Leatherback, Kemp's ridley, green (Florida and Pacific coast of Mexico breeding populations), and hawksbill turtles are listed as endangered under the Endangered Species Act, while olive ridley and loggerhead turtles are listed as threatened. Non-ESA listed marine mammals include harbor porpoises, coastal bottlenose dolphins, Atlantic white-sided dolphins, Risso's dolphins, pelagic delphinids (spotted dolphins, striped dolphins, pilot whales, offshore bottlenose dolphins, and common dolphins), and harbor, gray, and harp seals. Bottlenose dolphins (coastal stock), pilot whales, and common dolphins are considered neither endangered nor threatened, but are afforded protection as strategic stocks under the Marine Mammal Protection Act.

NMFS believes that some of the other protected species whose ranges overlap with the fisheries managed by the ALWTRP may be potentially affected by the proposed changes outlined in this DEIS. For harbor porpoises, Atlantic white-sided, spotted, striped, offshore bottlenose, and Risso's dolphins, and harbor, gray, and harp seals, the total fishery-related mortality and serious injury for potentially affected stocks is considered to be insignificant and approaching a zero mortality and serious injury rate.<sup>69</sup> However, as a precautionary approach, NMFS considers these species potentially affected due to the possible overlap between the fisheries regulated under the ALWTRP and the range of these species.

The Nova Scotian stock of sei whales occurs only in the Northeast and Mid-Atlantic (Waring et al., 2003); therefore, the potential ALWTRP effects related to these species are only discussed for these areas. Hawksbill and olive ridley sea turtles have a southerly distribution; therefore, the potential ALWTRP effects related to this species are only discussed for measures pertaining to the Southeast.

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<sup>69</sup> As documented in the following U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessment Reports for the Western North Atlantic (WNA) stock of each species: for striped and Atlantic spotted dolphins, Waring et al. (2000); for pantropical spotted and Risso's dolphins, Waring et al. (2002); for Atlantic white-sided and offshore bottlenose dolphins, harbor, gray, and harp seals, and harbor porpoise (Gulf of Maine/Bay of Fundy stock), Waring et al. (2003).

### 5.2.1.1 Groundline Requirements

As previously described, Alternatives 2 through 6 Final (Preferred) would require the use of sinking and/or neutrally buoyant (i.e., non-floating) groundline in designated areas at certain times. In each case, this requirement is unlikely to adversely affect other protected species. To the contrary, alternatives that require non-floating groundline may decrease the risk of entanglement, and thus serious injury or mortality, for these species.

Though relatively little information exists about groundline entanglements of sea turtles, it is believed that measures that reduce the amount of groundline floating or forming loops in the water column may decrease the risk of entanglement for most species. Furthermore, in the case of leatherback sea turtles, any reduction in the risk of entanglement as a result of requiring non-floating groundline could also have a beneficial effect on mortality rates related to ship strikes, as research suggests that entangled leatherbacks are more susceptible to such incidents (NMFS, 2001a).

Although the commercial fisheries regulated under the ALWTRP may affect blue and sperm whales, there seems to be significant separation between the known feeding range of these species and primary fishing areas. In addition, Waring et al. (2002) indicate that the level of fishery interaction for these species is insignificant and approaching a zero mortality and serious injury rate. Therefore, the gear used in the commercial fisheries regulated under the ALWTRP is not likely to adversely affect blue or sperm whales.

Due to similarities in distribution, feeding behavior, and other characteristics, sei whales are believed to benefit from ALWTRP measures in much the same manner as the other large whale species the plan is designed to protect.

Bottlenose dolphins, harbor porpoises, Atlantic white-sided dolphins, pelagic delphinids (pilot whales, and spotted, striped, and common dolphins), and harbor, gray, and harp seals more commonly become ensnared in nets rather than lines; however, marine mammals could become entangled in groundline, and any reduction in the amount of line in the water column should decrease the risk of entanglement for these species. Modifications that reduce the risk of entanglement would have a favorable effect on serious injury and mortality rates, and thus increase recruitment.<sup>70</sup>

In summary, Alternatives 2 through 4, 6 Draft\* and 6 Final (Preferred) would require that approximately 24 million to 31 million fathoms of groundline be converted to sinking and/or neutrally buoyant line compared to the No Action Alternative (Alternative 1). In contrast, Alternative 5, which does not include broad-based gear modifications, would require the conversion of approximately 200,000 fathoms of groundline, a significantly smaller amount (see Exhibit 5-11 in section 5.1.3.2). Thus, though it is important to recognize the lack of information about entanglements in groundline for some protected species (such as sea turtles), these species may experience a smaller reduction in the risk of entanglement in floating groundline under Alternative 5 than they would under Alternatives 2 through 4, 6 Draft\*, and 6 Final (Preferred).

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<sup>70</sup> Recruitment refers to the process of adding juveniles or sub-adults to a population.

### 5.2.1.2 Buoy Line Requirements

In addition to the large whales discussed in Section 5.1, other protected species in the waters subject to regulation under the ALWTRP are known to become entangled in lobster, other trap/pot, and gillnet buoy lines (NMFS, 2001a; NMFS, 2001b; NMFS, 2001c; NMFS, 2001d).<sup>71</sup> In particular, NMFS receives several reports of leatherback entanglements in lobster trap/pot buoy lines every year (Dwyer et al., 2002). Data collected by the Sea Turtle Stranding and Salvage Network (STSSN) and NMFS also indicate that whelk trap/pot gear has been involved in a number of reported leatherback entanglements in Massachusetts and New Jersey waters (NMFS unpublished data, 2001). Research suggests that leatherbacks may be attracted to buoys because they resemble jellyfish, one of the turtles' prey. Leatherbacks and loggerheads may also attempt to feed on the bivalves, algae, and gelatinous organisms that colonize buoys and ropes (NMFS, 2001a). Once a sea turtle becomes entangled, its mobility is impaired and its ability to feed may be hampered. Entangled turtles may eventually drown under the weight of the gear or if the trailing gear becomes lodged on rocks or ledges below the surface.

As described previously, the regulatory changes under consideration include several provisions pertaining to buoy lines which are designed to reduce large whale entanglement risks. For example, Alternatives 2 through 6 Final (Preferred) would extend the universal gear modification requirement to several new fisheries in ALWTRP-regulated waters, including the Atlantic mixed species trap/pot fishery, the Northeast anchored float gillnet fishery, and the Southeast Atlantic gillnet fishery. This requirement prohibits the use of gillnet or trap/pot gear that at any time has any portion of the buoy line floating at the surface. It also encourages (but does not require) fishermen to keep buoy lines as knot-free as possible. The extension of this standard to additional fisheries could benefit other protected species, such as sea turtles, by reducing the risk of entanglement associated with floating buoy line at the surface. Similarly, the use of knot-free lines could diminish the risk of entanglement by reducing the likelihood that line would become lodged around appendages.

Although the commercial fisheries regulated under the ALWTRP may affect blue and sperm whales, there seems to be significant separation between the known feeding range of these species and primary fishing areas. In addition, Waring et al. (2002) indicate that the level of fishery interaction is insignificant and approaching a zero mortality and serious injury rate. Therefore, the gear used in the commercial fisheries regulated under the ALWTRP is not likely to adversely affect blue or sperm whales.

Due to similarities in distribution, feeding behavior, and other characteristics, sei whales are believed to benefit from ALWTRP measures in much the same manner as the large whale species the plan is designed to protect.

Bottlenose dolphins, harbor porpoises, Atlantic white-sided dolphins, pelagic delphinids (pilot whales, and spotted, striped, and common dolphins), and harbor, gray, and harp seals more commonly become ensnared in nets rather than lines; however, marine mammals could become

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<sup>71</sup> With respect to other trap/pot fisheries, NMFS has documented the entanglement of sea turtles in buoy lines associated with whelk, crab, and black sea bass trap/pot gear.

entangled in buoy line, and any reduction in the amount of line in the water column should decrease the risk of entanglement for these species.

Alternatives 2 through 6 Final (Preferred) would also mandate that vessels fishing in certain areas at specified times use non-floating buoy line. In some instances (e.g., Alternatives 2 through 4 in waters subject to the SAM program), the regulations would require the use of non-floating material throughout the buoy line's entire length; in others (e.g., Alternatives 5, 6 Draft\*, and 6 Final (Preferred) in waters subject to the SAM program), they would require its use only along the upper two-thirds of the line. In either case, the requirement is designed to reduce entanglement risks by reducing the amount of floating line in the water column.

Just as these measures could benefit large whales, they could also benefit other protected species by eliminating loops of line at the surface. This measure may reduce the likelihood of some turtle interactions with fishing gear; however, given current limits in NMFS' understanding of turtle interactions with buoy line, it is not feasible to quantify the reduction in risk that might be achieved by reducing the amount of floating buoy line in the water column.

As an additional measure of protection, the alternatives analyzed would in several cases impose restrictions designed to reduce the number of buoy lines that fishermen employ. Alternatives 2 through 4 would limit other trap/pot gear in the Cape Cod Bay Restricted Area from January 1 through May 15 to a two-trap string that can have only one buoy line, or to trawls of four or more traps. Alternatives 2 through 4 would also (1) prohibit the use of single traps in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay from May 16 to December 31; (2) prohibit the use of more than one buoy line on trawls of four or fewer traps in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay from May 16 to December 31; and (3) set a limit of one buoy line per trawl in SAM restricted waters until 12 months after publication of the final rule, when SAM provisions would be eliminated. Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would set similar requirements, except that (1) trawls set in SAM restricted waters would be allowed two buoy lines per trawl, and (2) Alternative 6 Final (Preferred) would prohibit the use of more than one buoy line on trawls of five or fewer traps (rather than four or fewer) in Northern Nearshore waters, Stellwagen Bank/Jeffreys Ledge, and in Federal waters of Cape Cod Bay from May 16 to December 31. By helping to reduce the amount of buoy line in the water column, these measures would help to reduce the entanglement risks faced by other protected species, as well as whales.<sup>72</sup> In particular, the measures for Cape Cod Bay and the Northern Nearshore waters (May 16 to December 31) may benefit both hard-shelled and leatherback turtles, as they occur seasonally in these waters.

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<sup>72</sup> As noted previously, some of the changes described above appear to constitute a relaxation of existing standards. For example, current SAM standards for lobster trap/pot and gillnet gear prohibit the use of more than one buoy line; Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would eliminate this requirement six months after publication of the final rule, while Alternatives 2, 3, and 4 would eliminate the requirement 12 months after publication of the final rule, when the SAM program would expire. In this case, however, consideration of the change is motivated by concerns that requiring the use of a single buoy line may encourage fishermen to split trawls or strings, thus increasing the number of buoy lines in the water. In addition, requiring the use of a single buoy line may increase the risk of gear loss, thus increasing the entanglement risks associated with ghost gear. In light of these factors, NMFS believes that elimination of the current requirement could potentially decrease entanglement risks.

### 5.2.1.3 Weak Link and Anchoring Requirements

As described previously, Alternatives 2 through 6 Final (Preferred) include time- and area-specific provisions requiring the incorporation of weak links on flotation and/or weighted devices attached to the buoy line on gillnet, lobster trap/pot, and other trap/pot gear. These alternatives would also require the incorporation of weak links into gillnet panels, and would specify minimum anchoring strength standards for anchored gillnets. These requirements are designed to reduce the likelihood that interactions between whales and commercial fishing gear will result in entanglements that cause serious injury or death.

These provisions, which are specifically designed to reduce the risk of serious injury or mortality to large whales, are likely to have a beneficial effect for other protected species of similar size and strength. For example, in the unlikely event of an entanglement, blue, sei, and sperm whales may benefit from the weak link and anchoring requirements, because they would possess the size and strength necessary for the weak links to function properly. In contrast, smaller animals, including bottlenose dolphins, harbor porpoises, Atlantic white-sided dolphins, pelagic delphinids (pilot whales, and spotted, striped, and common dolphins), harbor, gray and harp seals, and sea turtles, may lack the strength to break weak links as strong as those that would be allowed under the ALWTRP.

### 5.2.1.4 Set Restrictions and Gear Stowing Requirements

The potential regulatory changes under analysis include several restrictions on the use of gillnet gear:

- *Northeast and Mid-Atlantic* – Alternatives 2 and 4 would prohibit the use of driftnet gear at night in Northeast and Mid-Atlantic waters unless the gear is tended, and would require that all such gear set by a vessel be removed from the water and stowed on board the vessel before it returns to port. These regulations would be in effect year-round. Alternatives 3\*, 5, 6 Draft\*, and 6 Final (Preferred) would institute similar requirements on a year-round basis in waters north and east of a line extending from Watch Hill, Rhode Island (41°18.2'N and 71°51.5'W) south to 40°00'N, then east to the boundary of the EEZ; south and west of this area, the regulations would only be in effect from September 1 through May 31.
- *Southeast Atlantic* – In Southeast waters, Alternatives 2 through 6 Draft\* would establish seasonal prohibitions on straight sets of gillnet gear at night, and similar prohibitions on the use of strikenets at night or when visibility is less than 500 yards.<sup>73</sup> These restrictions would be in effect from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N; and from December

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<sup>73</sup> "Strikenet gear" means a gillnet designed so that, when deployed, it will encircle or enclose an area of water, either by use of the net alone or by utilizing the shoreline to complete encirclement.

1 through March 31 in waters between 29°00' N and 27°51' N for Southeast gillnet and Southeast shark gillnet fisheries. The eastern boundary for these areas would be the EEZ. In contrast, Alternative 6 Final (Preferred) would also establish a seasonal prohibition on straight sets of gillnet gear at night, the use of strikenets at night, or the use of strikenets when visibility is less than 500 yards, but would limit this prohibition to waters between 32°00' N, 29°00' N, and 80°00' W from November 15 through April 15, and to waters between 29°00' N, 27°51' N, and 80°00' W from December 1 through March 31.<sup>74</sup>

The provisions noted above could help to reduce entanglement risks for other protected species. For example, the prohibition on the use of strikenets when visibility is less than 500 yards could reduce instances in which poor visibility may contribute to entanglement (of sea turtles or bottlenose dolphins, in particular). These species may also benefit from the prohibition on straight sets of gillnet gear at night, which has the effect of removing gear from the water column during this period.<sup>75</sup> Similarly, the requirement that driftnet vessels in the Northeast and Mid-Atlantic remove their gear from the water and stow it on board before returning to port may help to reduce instances in which failure to tend gear contributes to the entanglement of other protected species.

Under Alternatives 3\* through 6 Final (Preferred), approximately 44 to 45 vessels would be affected by new night set restrictions; under Alternative 2, approximately 56 additional vessels would be affected. In addition, under Alternatives 3\*, 5, 6 Draft and 6 Final (Preferred), approximately 604 vessels would be affected by new gear stowing restrictions; under Alternatives 2 and 4, approximately 614 vessels would be affected by these restrictions.<sup>76</sup> As previously stated, the implementation of these requirements would offer ancillary benefits of varying degree to other protected species, depending on their presence in the affected area and the alternative implemented.

### 5.2.1.5 Gear Marking Requirements

With the exception of Alternative 1 (No Action), all of the regulatory alternatives under consideration would impose new gear marking requirements. Alternatives 2 through 6 Draft\* include a common gear marking scheme that would result in the incorporation of approximately

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<sup>74</sup> The first of these areas would be designated the Southeast U.S. Restricted Area North. The second would be designated the Southeast U.S. Restricted Area South.

<sup>75</sup> The ranges of the WNA stocks of blue whales, Atlantic white-sided and Risso's dolphins, pelagic delphinids, harbor, gray, and harp seals, sei whales (Nova Scotian stock), sperm whales (North Atlantic stock), and harbor porpoises (Gulf of Maine/Bay of Fundy stock) are typically well north of the waters subject to these provisions; thus, these requirements would be unlikely to provide benefits for these species (Waring et al., 2000, 2002, and 2003).

<sup>76</sup> The differences among the alternatives reflect Alternative 2's specification of year-round requirements in the Southeast and Mid-Atlantic, and Alternative 4's specification of year-round requirements in the Mid-Atlantic (see Exhibit 5-11 in section 5.1.3.2).

2.2 million new marks into the gear subject to ALWTRP regulations. In contrast, Alternative 6 Final (Preferred) employs a different standard, which would result in the incorporation of approximately 0.3 million new marks into the gear subject to ALWTRP regulations (see Exhibit 5-11 in section 5.1.3.2). As with whales, these requirements would have no direct impact on the probability of other protected species becoming entangled in commercial fishing gear, nor would they affect the severity of an entanglement should one occur. Nonetheless, the gear marking requirements under consideration would help to generate information on the nature of the gear involved in an entanglement of any protected species. In addition, these provisions would in some cases allow NMFS to identify the owner of the gear, and thus allow the agency to gather additional information on where, when, and how the gear was set. By increasing scientific understanding of the nature of entanglements, the gear marking measures would allow NMFS, over time, to improve the effectiveness of programs designed to reduce the entanglement risks faced by other protected species. Thus, these measures could contribute indirectly to the preservation and restoration of the other potentially-affected protected species.

#### **5.2.1.6 Changes to Mid-Atlantic and Southeast Restricted Areas and Times**

Current ALWTRP regulations specify standards for the use of gillnets within the Mid-Atlantic Coastal Waters Area and the Southeast U.S. Observer and Restricted Areas. Under Alternatives 2 through 6 Draft\*, for shark gillnet fisheries, the Southeast U.S. Restricted Area (which overlaps with the portion of the Southeast U.S. Observer Area north of 27°51' N) would be renamed the “Northern Monitoring and Restricted Area,” and the portion of the Southeast U.S. Observer Area south of 27°51' N would be renamed the “Southern Monitoring Area.” For non-shark gillnet fisheries in the Southeast, the waters north of 27°51' N would be designated as “Other Southeast Gillnet Waters.” All these areas (and thus the regulations that apply therein) would be extended eastward to the boundary of the EEZ. In contrast, under Alternative 6 Final (Preferred), the Southeast U.S. Restricted Area would be renamed the “Southeast U.S. Restricted Area (N and S)”, using 29°00' N as the dividing line between the northern (to 32°00' N) and southern (to 27°51' N) areas. These areas would include only waters west of 80°00' W, and would be a management area for both shark and non-shark gillnet fisheries. The Southeast U.S. Observer Area would be renamed the “Southeast U.S. Monitoring Area,” and its boundaries would be redefined to include only those waters south of 27°51' N, north of 26°46.5' N, and west of 80°00' W. This management area would be for shark gillnet fisheries only. The “Other Southeast Gillnet Waters” area would encompass the waters south of 32°00' N and east of 80°00' W to the eastern edge of the EEZ. This would be a management area for both shark (north of 26°46.5' N) and non-shark (north of 27°51' N) fisheries. To avoid confusion in comparing current regulatory requirements in these areas to those that would apply under each alternative, the following discussion retains the original nomenclature.

In addition to the changes noted above, Alternatives 2 through 6 Final (Preferred) would revise the time period during which regulations in the Southeast U.S. Observer and Restricted areas would apply. Specifically:

- Alternatives 2 through 6 Final (Preferred) would modify the periods during which the Southeast U.S. Restricted Area is closed to shark gillnet fishing (except strikenetting). Under current regulations, the closure

extends from November 15 through March 31. Under the revised regulations, the closure would extend from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N, and from December 1 through March 31 in waters between 29°00' N and 27°51' N. Alternatives 2 through 6 Draft\* would apply these provisions eastward to the boundary of the EEZ; Alternative 6 Final (Preferred) would make them effective only in waters west of 80°00' W.

- Alternatives 2 through 6 Final (Preferred) would also modify requirements for the use of spotter planes by vessels strikenetting for sharks within the Southeast U.S. Restricted Area. Under current regulations, provisions for the use of spotter planes extend from November 15 through March 31. Under the revised regulations, these provisions would be applicable from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N, and from December 1 through March 31 in waters between 29°00' N and 27°51' N. Alternatives 2 through 6 Draft\* would apply these provisions eastward to the boundary of the EEZ; Alternative 6 Final (Preferred) would make them effective only in waters west of 80°00' W.
- Alternatives 2 through 6 Final (Preferred) would modify whale approach regulations for shark gillnet vessels within the Southeast U.S. Restricted Area. Current regulations stipulate that vessels strikenetting for sharks within this area during the restricted period (November 15 through March 31) may not set their nets within three nautical miles of a right, humpback, or fin whale, and must remove gear from the water immediately if a right, humpback, or fin whale approaches within three nautical miles of it.<sup>77</sup> Under Alternative 2, these requirements would apply to shark net gear year-round between the South Carolina/Georgia border (i.e., 32°00' N) and 27°51' N. Under Alternatives 3 through 6 Final (Preferred), the requirements would take effect from November 15 through April 15 in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00'N, and from December 1 through March 31 in waters between 29°00'N and 27°51'N. Under each of the alternatives discussed, including Alternative 6 Final (Preferred), these provisions would apply eastward to the boundary of the EEZ.
- Alternatives 2 through 6 Draft\* would remove requirements for 100% observer coverage within the Southeast U.S. Observer Area (including the Southeast U.S. Restricted Area). Under current regulations, provisions for the use of an observer apply to the use of shark nets from November 15 through March 31 in Atlantic waters south of the South Carolina/Georgia border (i.e., 32°00' N), west of 80°00'W, and north of 26°46.5'N. The

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<sup>77</sup> NMFS believes that a three-mile approach limit gives fishermen ample time to remove their gear from the water before an entanglement can occur (62 FR 39157).

revised regulations would replace the requirements for 100% observer coverage with a requirement to employ an automated Vessel Monitoring System, or VMS (see “Direct effects” below). In addition, the revised regulations would change the dates of coverage to November 15 through April 15 for shark nets in waters between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N, and to December 1 through March 31 for shark nets in waters between 29°00' N and 26°46.5' N. Alternatives 2 through 6 Draft\* would apply the VMS provisions eastward to the boundary of the EEZ.

- Alternative 6 Final (Preferred) would retain requirements for 100% observer coverage within the Southeast U.S. Restricted Area. Specifically, observer requirements would apply to the use of strikenets from November 15 through April 15 in waters between 32°00' N and 29°00' N, and from December 1 through March 31 in waters between 29°00' N and 27°51'N. NMFS would allow VMS to be substituted for 100% observer coverage only in waters between 27°51'N and 26°46.5' N; VMS would be required in these waters from December 1 through March 31. In addition, Alternative 6 Final (Preferred) would make the observer and VMS provisions effective only in waters west of 80°00' W.

Gillnet vessels in the Southeast and Mid-Atlantic do not typically fish in the areas that would be newly regulated under the alternatives described above, nor are gillnet vessels in the Southeast typically active during periods that would be newly subject to the requirements these alternatives establish. As a result, the changes described above would be unlikely to have a major or immediate impact on other protected species. The DEIS noted that NMFS was considering these changes primarily to ensure that ALWTRP requirements would be in place to address any expansion of current fishing activity. Should such expansion occur, the requirements would provide the following benefits to other protected species:

- **Regulation of commercial fishing activity in additional areas** – Extending the geographic scope of ALWTRP requirements in the Southeast, as would be the case under Alternatives 2 through 6 Draft\*, could provide further protection to sea turtles inhabiting waters east of South Carolina, Georgia, and Florida, particularly endangered leatherback turtles that begin to nest in February along the coast of Florida (NMFS, 2001e). In addition, extending requirements to additional areas in the Mid-Atlantic may further benefit leatherbacks because they live in deeper waters than other turtle species and may feed in the water column at night. Therefore, requiring restrictions on the presence of and modifications to sets of gillnets at night may reduce interactions between leatherbacks and gillnets. Bottlenose dolphins also inhabit these waters and could benefit from expansion of the areas covered by the plan.
- **Increased spotter plane coverage** – Expansion of the Southeast U.S. Restricted Area eastward to the boundary of the EEZ, as would be the case

under Alternatives 2 through 6 Draft\*, would increase the size of the region within which vessels strikenetting for sharks must obtain spotter plane coverage. Although aerial surveillance is less effective in detecting smaller animals than it is in detecting large whales, it is possible that increased spotter plane coverage would provide some ancillary benefit in protecting sea turtles or bottlenose dolphins.<sup>78</sup> The expanded use of spotter planes could also provide an indirect benefit to these species by providing additional data on their distribution and abundance.

- **Incidental benefits associated with whale approach requirements –** Implementing current whale approach requirements on a year-round basis within the newly expanded Southeast U.S. Observer and Restricted Areas (Alternative 2), or modifying the time during which these requirements are in effect to better correspond to periods when endangered whales are likely to be present (Alternatives 3 through 6 Final (Preferred)), is likely to have minimal impact on other protected species. Any benefits are likely to be a result of the incidental presence of other protected species in the vicinity of whales. Bottlenose dolphins, for example, are sometimes observed in the vicinity of whales; thus, the whale approach requirements may afford some ancillary benefit to this species.

The DEIS also noted that Amendment 1 to the Highly Migratory Species Fishery Management Plan (68 FR 74746, 69 FR 19979, and 69 FR 28106) would require shark gillnet vessels operating in the Southeast U.S. Restricted and Southeast U.S. Observer Areas to employ automated vessel monitoring systems (VMSs). Consistent with this regulatory change, Alternatives 2 through 6 Draft\* provided for the removal of requirements for 100% observer coverage from November 15 through March 31 in Atlantic waters south of the South Carolina/Georgia border (i.e., 32°00' N), west of 80°00'W, and north of 26°46.5'N. These alternatives would replace the requirements for 100% observer coverage with a requirement to employ a VMS.

The information available when Alternatives 2 through 6 Draft\* were developed indicated that the use of VMS would be more effective than observer coverage of the shark gillnet fishery in monitoring and enforcing the time and area closure in the Southeast U.S. Observer Area.<sup>79</sup> NMFS believed that incorporating the use of a VMS program would not have an adverse impact on other protected species because sufficient coverage would be maintained to provide statistically significant data on the fishery's take of such species. Since publication of the DEIS, however, NMFS has learned that VMS tracks may fail to distinguish between the use

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<sup>78</sup> The ranges of the NWA stocks of blue whales, Atlantic white-sided dolphins, pelagic delphinids, harbor, gray, and harp seals, sei whales (Nova Scotian stock), sperm whales (North Atlantic stock), and harbor porpoises (Gulf of Maine/Bay of Fundy stock) are typically well north of the of the Southeast U.S. Observer and Restricted Areas; thus, these requirements would be unlikely to provide benefits for these species (Waring et al., 2000, 2002, and 2003).

<sup>79</sup> The primary purpose of the observer program is to observe catch, not to enforce regulations. The collection of information on the interaction of protected species with the shark gillnet fishery is a secondary benefit of the observer program.

of strikenets and the use of driftnets. Distinguishing between these techniques is important because the use of driftnets in waters from the South Carolina/Georgia border (i.e., 32°00' N) south to 27°51' N and west of 80°00' W (i.e., in the Southeast U.S. Restricted Area) is prohibited. The illegal use of driftnets in these waters could have an adverse effect on other protected species, as well as large whales. Accordingly, Alternative 6 Final (Preferred) would allow VMS as a substitute for 100% observer coverage only from 27°51'N south to 26°46.5' N, where restrictions on the use of driftnets are not in effect. NMFS believes this approach is necessary to ensure that driftnets are not deployed where their use is prohibited.

#### **5.2.1.7 Expanded SAM Under Alternatives 5, 6 Draft\*, and 6 Final (Preferred)**

As described previously, the SAM program was established to protect predictable seasonal aggregations of North Atlantic right whales in the waters off Cape Cod and eastward to the boundary of the EEZ. As defined under current regulations, the program includes two areas, SAM West and SAM East, and specifies time periods for each (March 1 through April 30 and May 1 through July 31, respectively) during which gear modification standards for lobster trap/pot and anchored gillnet gear are more stringent than is otherwise required.

Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would change the boundaries of the SAM areas. The change in boundaries would be based upon analyses of right whale sightings data held by URI, and would result in a net expansion of the area subject to SAM requirements. The new boundaries would become effective within six months of publication of the final rule. Expansion of the SAM zone as specified under these alternatives would increase, by approximately 24 to 25, the number of vessels subject to SAM requirements (see Exhibit 5-11).<sup>80</sup>

Although the SAM program is designed to protect large whales, it establishes a number of gear modification requirements that are potentially beneficial to other protected species that may be present in the SAM zone when the requirements are in effect. For example, under Alternatives 5, 6 Draft\*, and 6 Final (Preferred), the SAM program would mandate the use of sinking and/or neutrally buoyant line on the upper two-thirds of all buoy lines, and would require the use of sinking and/or neutrally buoyant groundline. Expansion of the SAM zone would extend these requirements to additional areas that may be inhabited by other protected species at the time the gear modification requirements would be in effect. For example, due to similarities in distribution, feeding behavior, and other characteristics, sei whales are believed to benefit from ALWTRP measures in much the same manner as the species the plan is designed to protect. It is also possible that the benefits of expanding the SAM areas may be even greater if fishermen choose to fish SAM-modified gear outside of the required times and areas.

Although there seems to be significant separation between the known feeding range of blue and sperm whales and the primary fishing areas covered by the ALWTRP, expansion of the

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<sup>80</sup> Under Alternatives 6 Draft\* and 6 Final (Preferred), the expansion of the SAM zone would be a temporary measure. All requirements unique to the SAM program would be eliminated 12 months after publication of the final rule, when the broad-based gear modification requirements mandated under Alternatives 6 Draft\* and 6 Final (Preferred) would come into effect.

SAM zone could benefit these species if they incidentally occur in this area when the gear modifications are in effect.

Bottlenose dolphins, harbor porpoises, Atlantic white-sided dolphins, pelagic delphinids (pilot whales, and spotted, striped, and common dolphins), and harbor, gray, and harp seals more commonly become ensnared in nets rather than lines; however, marine mammals could become entangled in groundline or buoy line, and any modification that reduces line floating in the water column may decrease the risk of entanglement for these species.

#### 5.2.1.8 New Fishery Closures in Restricted Areas

With the exception of Alternative 1 (No Action), each of the regulatory alternatives under consideration would expand the scope of the ALWTRP to include the Atlantic mixed species trap/pot fishery, the Northeast anchored float gillnet fishery, and the Northeast driftnet fishery.<sup>81</sup> The newly-regulated fisheries would be subject to prohibitions on fishing activity in restricted areas. Specifically, fishermen would be prohibited from using gillnet gear inside the Cape Cod Bay Restricted Area from January 1 through May 15, trap/pot gear inside the Great South Channel Restricted Area from April 1 through June 30, or gillnet gear inside the Great South Channel Restricted Gillnet Area from April 1 through June 30.<sup>82</sup>

The closures described above could have a beneficial impact on sea turtles, but such benefits are likely to be limited. Loggerhead and Kemp's ridley sea turtles generally do not appear in the Cape Cod Bay Restricted Area until June, when the closure of the area to gillnet fishing is no longer in effect (NMFS, 2001b). In contrast, the closure of the Great South Channel Restricted Area to other trap/pot fishermen from April 1 through June 30, and the simultaneous closure of the Great South Channel Restricted Gillnet Area to driftnet and anchored float gillnet fishermen, could have a beneficial effect on loggerhead sea turtles, which are occasionally present in the Great South Channel during the month of June. The available data, however, show very little activity by vessels using driftnets, anchored float gillnets, or other trap/pot gear in the Great South Channel at this time. As a result, the benefits of prohibiting such activity are likely to be minor, except to the extent that the prohibition prevents the possible future expansion of driftnet, anchored float gillnet, or other trap/pot fisheries into this area. In addition, it is not likely that these fisheries will shift their fishing effort to areas that are not closed, as fishing activity in this area is already low.

The closures described above could have a beneficial impact on blue, sei, and sperm whales, but such benefits are likely to be limited. Blue and sperm whales are typically not reported in either the Cape Cod Bay Restricted Area or the Great South Channel Restricted Area. Blue whales are most frequently sighted in the waters off eastern Canada, with the majority of

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<sup>81</sup> The Atlantic blue crab trap/pot fishery would also become subject to ALWTRP requirements. This fishery, however, does not extend far enough north to be affected by closure of the restricted areas addressed here.

<sup>82</sup> The prohibition on gillnet fishing in the Great South Channel would apply only to the Great South Channel Restricted Gillnet Area. Gillnet fishing would be allowed year-round in the Great South Channel Sliver Restricted Area. Such activity would be subject to all applicable requirements of the ALWTRP (i.e., Northeast Gillnet Waters requirements).

recent records from the Gulf of St. Lawrence (Sears et al., 1987). At most, the blue whale is considered an occasional visitor in the U.S. Atlantic EEZ, which may represent the southern limit of its feeding range. The waters in which it has been sighted, however, are still well north of the Restricted Areas identified by the ALWTRP (CETAP, 1982; Wenzel et al., 1988). Similarly, the distribution of sperm whales in the U.S. Atlantic EEZ occurs on the edge of the continental shelf, over the continental slope, and into mid-ocean (Waring et al., 2002). Given the distinct offshore distribution of this species, sperm whales are unlikely to benefit from fishery closures in Cape Cod Bay and the Great South Channel.

In contrast, sei whales may benefit from the fishery closures described above. Although sei whales are often found in the deeper waters that characterize the edge of the continental shelf (Hain et al., 1985), NMFS aerial surveys found substantial numbers of sei whales south of Nantucket in the spring of 2001. The general offshore pattern of sei whale distribution is sometimes disrupted during episodic incursions into more shallow and inshore waters (Waring et al., 2003). In addition, sei whales (like right whales) are largely planktivorous, primarily feeding on euphausiids and copepods; this has resulted in reports of sei whales in more inshore locations, such as the Great South Channel (in 1987 and 1989) and Stellwagen Bank (in 1986) (Waring et al., 2003). Therefore, sei whales may benefit from the fishery closures in Cape Cod Bay and the Great South Channel during their periodic incursions into these waters.

For reasons similar to those discussed for blue and sperm whales, the closures described above are likely to offer limited benefits to harbor porpoises, Atlantic white-sided dolphins, pelagic delphinids, bottlenose dolphins, and harbor, gray, and harp seals. The western North Atlantic coastal migratory stock of bottlenose dolphins is generally distributed south of Long Island; thus, fishery closures in Cape Cod Bay and the Great South Channel are unlikely to have a significant impact on entanglement risks for this species. Harbor porpoises, Atlantic white-sided dolphins, and pelagic delphinids, however, are more common in New England waters. To the extent that fishery closures in the Great South Channel and Cape Cod Bay help to reduce overall fishing effort (rather than simply divert it to other areas where these species may also be present), entanglement risks to these species may be reduced.

#### **5.2.1.9 Changes to Exempted Waters**

As previously noted, the ALWTRP currently exempts certain bays, harbors, inlets, and other coastal waters from the provisions of the plan (see Chapter 2). Based on the low probability that whales would be present in these waters, Alternatives 2 through 6 Draft\* would expand these areas to include all waters landward of the 72 COLREGS demarcation line (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by NOAA (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80, with the exception of Boston Harbor, Gardiners Bay, and portions of the Maine coast, where NMFS would create a different exemption line. This would represent no change in regulations from North Carolina to Florida, but would increase the number of exempted areas from Maine to Virginia. Alternative 6 Final (Preferred) would follow a similar approach, except that additional areas off the coast of Maine and in Long Island Sound would be designated as exempt, while the line of demarcation for exempt waters in Massachusetts would remain at the status quo (see Chapter 3).

Expanding exempted areas as described above would primarily affect lobster trap/pot vessels that are currently subject to the ALWTRP requirements for Northern Inshore State Lobster Waters, but might also affect some lobster trap/pot vessels that are currently subject to ALWTRP requirements for Southern Nearshore Waters. Expanding the exempted areas could also affect gillnet vessels that are currently subject to ALWTRP requirements for the Other Northeast Gillnet Waters Area, as well as vessels that are currently subject to ALWTRP requirements for the Mid-Atlantic Coastal Waters Area. The requirements currently in place in these areas are as follows:

- **Northern Inshore State Lobster Waters** – Lobster trap/pot gear must comply with universal gear modification requirements and one option from the Lobster Take Reduction Technology List (all groundlines made entirely of sinking and/or neutrally buoyant line; all buoy lines made entirely of sinking and/or neutrally buoyant line; or all buoys attached to the buoy line with a weak link having a maximum breaking strength of 600 pounds).
- **Southern Nearshore Lobster Waters** – Lobster trap/pot gear must comply with universal gear modification requirements and all buoys must be attached to the buoy line with a weak link having a maximum breaking strength of 600 pounds.
- **Other Northeast Gillnet Waters** – Anchored gillnet gear that is subject to ALWTRP regulations must comply with universal gear modification requirements; all buoy lines must be attached to the main buoy with a weak link having a maximum breaking strength of 1,100 pounds; all net panels must contain weak links with a maximum breaking strength of 1,100 pounds in the center of the floatline; and anchored gillnet strings of 20 or fewer net panels must comply with minimum anchoring or weighting standards (see Chapter 2 for details).
- **Mid-Atlantic Coastal Waters Area** – Anchored gillnet gear that is subject to ALWTRP regulations must comply with universal gear modification requirements; all buoy lines must be attached to the main buoy with a weak link having a maximum breaking strength of 1,100 pounds; all net panels must contain weak links with a maximum breaking strength of 1,100 pounds in the center of the floatline of each 50-fathom net panel in a net string, or every 25 fathoms for longer panels; and gillnets must return to port with the vessel or be anchored at each end with an anchor having at least the holding power of a 22-pound Danforth-style anchor.

Blue, sei, and sperm whales are not expected to be affected by an expansion of ALWTRP-exempt areas, as these species are not known to occur in these areas. As previously discussed, several of these requirements (e.g., weak link provisions) are unlikely to provide any ancillary benefit to smaller protected species, such as sea turtles, bottlenose dolphins, Atlantic white-sided dolphins, Risso's dolphins, pelagic delphinids, harbor porpoises, or harbor, gray and

harp seals; however, universal gear modification requirements or the use of sinking and/or neutrally buoyant groundline or buoy line could afford such benefits. Thus, relative to the status quo, relieving previously regulated vessels from these ALWTRP requirements could have an adverse impact on other protected species that may occur in newly-exempted waters. The potential for adverse effects may be greatest for sea turtles. Loggerhead and Kemp's ridley turtles prefer inshore waters and embayments for foraging on crustaceans and mollusks (NMFS, 2001b). Leatherbacks may also swim into shallow waters if there is an abundance of jellyfish nearshore. For example, leatherbacks are reportedly present in Buzzard's Bay during the summer and fall months (NMFS, 2001d); this is one of the areas that would be newly exempted from ALWTRP requirements under Alternatives 2 through 6 Draft\*.

The practical impact of the potential change in exempted waters is unclear, since data on the number of vessels that currently fish in exempted waters are unavailable. In some areas, however, existing ALWTRP regulations extend to virtually all state waters. This is the case, for example, in Maine, where the only waters currently exempt from ALWTRP requirements are those landward of the first bridge over an embayment, harbor, or inlet. It is reasonable to assume, therefore, that relatively few vessels currently fishing in Maine waters are exempt from ALWTRP requirements. In comparison, spatial analysis suggests that approximately half of the more than 3,700 lobster vessels fishing in Maine state waters would be exempt from ALWTRP requirements under Alternatives 2 through 6 Draft\*; this proportion would increase to approximately 71 percent under Alternative 6 Final (Preferred).<sup>83</sup> Thus, the expansion of exempted waters in this state would likely affect a relatively large number of vessels, which in turn could have an adverse impact on other protected species, particularly leatherbacks. There currently is no evidence of interactions between Kemp's ridleys or green turtles and lobster trap/pot gear, and very limited information about interactions between loggerheads and lobster trap/pot gear. The magnitude of the impact on these species would depend upon the gear modifications that such vessels have already implemented but would no longer be required to maintain. If these vessels have relied primarily upon weak links to comply with ALWTRP requirements – as seems likely – the impact of removing these requirements is likely to be negligible.<sup>84</sup> Conversely, if these vessels have met ALWTRP standards by switching to sinking and/or neutrally buoyant buoy line or groundline, the impact of exempting them from these standards could be greater.<sup>85</sup> In addition, leatherback, Kemp's ridley, and loggerhead turtles

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<sup>83</sup> See Chapter 6 for further information on the estimated percentage of lobster trap/pot vessels in Maine waters that would not be subject to ALWTRP requirements under Alternatives 2 through 6 Final (Preferred). It is important to note that the impact of the expansion of exempted waters is likely to be greater in Maine than in other states, both because of the large number of vessels that fish in Maine waters and because the percentage of such waters that are currently exempt is low.

<sup>84</sup> The economic analysis presented in Chapter 6 assumes that lobster vessels fishing in Northern Inshore State Lobster Waters currently rely on the weak link option from the Lobster Technology Take Reduction List to comply with ALWTRP requirements (i.e., all buoys attached to the buoy line with a weak link having a maximum breaking strength of 600 pounds). This option is likely to be the least expensive to implement, and is unlikely to increase gear loss. In contrast, the remaining options on the list – all groundlines made entirely of sinking and/or neutrally buoyant line, or all buoy lines made entirely of sinking and/or neutrally buoyant line – are more costly to implement and could have an adverse effect on gear loss, particularly in Maine waters, where hard bottom conditions predominate.

<sup>85</sup> The discussion above focuses on the impacts of expanding exempted waters assuming that a significant number of fishermen might choose to fish exclusively within those waters, thus avoiding the need to comply with

commonly occur in Mid-Atlantic waters; many inshore embayments, harbors, and inlets are already exempt from the ALWTRP regulations. However, Delaware Bay is currently exempted landward of a line that extends from the southern point of Nantuxent Cove, New Jersey to the southern end of Kelly Island, Port Mahon, Delaware. Under Alternatives 2 through 6 Final (Preferred), NMFS proposes to exempt waters landward of the 72 COLREGS demarcation line for Delaware Bay, thus exempting the entire Bay from the ALWTRP regulations. This action may adversely affect loggerheads, as more gillnet vessels may choose not to return their nets to port. However, this effect may be minor if these fishermen currently leave their gear in the water.

#### **5.2.1.10 Deep Water Exemptions**

As previously described, Alternatives 2 through 6 Final (Preferred) would expand the areas subject to a non-floating groundline requirement, in most cases making the use of sinking and/or neutrally buoyant groundline mandatory on a seasonal or year-round basis in all waters covered by the ALWTRP. Each of these alternatives, however, would provide an exemption for gear that is fished at depths greater than 280 fathoms. Alternative 6 Final (Preferred) would also exempt gillnets fished at depths greater than 280 fathoms from the proposed net panel weak link and anchoring requirements. These exemptions, however, are unlikely to have an adverse impact on the risk that other protected species would become entangled in commercial fishing gear. With the possible exception of some sea turtles and sperm whales, the species discussed in this section are not commonly known to dive to such depths. As a result, the use of floating groundline or gillnet panels without weak links at depths greater than 280 fathoms should pose them no risk.

#### **5.2.1.11 Extension of SAM and DAM Programs to Additional Fisheries**

As previously described, Alternatives 2 through 6 Final (Preferred) would expand the scope of the ALWTRP to include the Atlantic mixed species trap/pot fishery and the Northeast anchored float gillnet fishery.<sup>86</sup> Under Alternatives 2, 3\*, and 4, these fisheries would be subject to the requirements of the SAM and DAM programs until 12 months after publication of the final rule, when both programs would be eliminated. Under Alternative 5, these fisheries would become subject to the requirements of the expanded SAM program (the DAM program would be eliminated six months following publication of the final rule). Finally, under Alternatives 6 Draft\* and 6 Final (Preferred), these fisheries would be subject to the requirements of the expanded SAM program until 12 months after publication of the final rule, when the program

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ALWTRP requirements. It is possible that fishermen would choose to modify their gear to comply with ALWTRP requirements in non-exempt waters, and would use the same gear in exempt areas. To the extent this occurred, the potential for any adverse impact on other protected species would be reduced.

<sup>86</sup> The Northeast driftnet fishery and the Atlantic blue crab trap/pot fishery would also become subject to ALWTRP requirements, but the former would not be subject to the SAM or DAM programs. The Atlantic blue crab trap/pot fishery would be subject to SAM and DAM requirements, but does not extend far enough north to be affected by the SAM program. Given its location (centered primarily in Chesapeake Bay), it is also unlikely to be affected by the DAM program.

would be eliminated (the DAM program would be eliminated six months after publication of the final rule). Expansion of the SAM zone under Alternatives 5, 6 Draft\*, and 6 Final would increase, by approximately 24 to 25, the number of vessels subject to SAM requirements (see Exhibit 5-11 in section 5.1.3.2). Under Alternatives 2 through 4, approximately 266 to 267 additional vessels would be regulated under the DAM program compared with the No Action Alternative (Alternative 1). No additional vessels would be regulated under the DAM program under Alternatives 5, 6 Draft\*, and 6 Final (Preferred), since these alternatives would eliminate the program six months after publication of the final rule.

Regulation of additional fisheries under the SAM and DAM programs would likely have a beneficial effect on other protected species if they are present in areas where SAM or DAM regulations are in effect. Although the designation of SAM and DAM areas is based solely on the distribution and abundance of right whales, other protected species may be in the vicinity when SAM and DAM measures are required. If this is the case, SAM and DAM measures that are designed to reduce large whale entanglement risks (e.g., the required use of sinking and/or neutrally buoyant buoy line and groundline) may also serve to reduce entanglement risks for other protected species. As described above, Alternatives 2, 3\*, 4, 6 Draft\*, and 6 Final (Preferred) would eliminate the DAM program six to 12 months after publication of the final rule, and would eliminate the SAM program 12 months after publication. In each case, the SAM and DAM programs would be replaced by broad-based gear modification requirements. In the interim, the gear modifications that the SAM and DAM programs would require could benefit other protected species, with impacts similar to those described in the relevant sections above.

#### **5.2.1.12 Seasonal Regulation of Southeast and Mid-Atlantic Waters**

As previously noted, a fundamental difference among the regulatory alternatives under consideration is the extent to which broad-based gear modification requirements – i.e., sinking and/or neutrally buoyant groundline requirements, requirements concerning the use of multiple weak links in gillnet panels, and minimum gillnet anchoring requirements – would be established for fisheries in Mid-Atlantic and Southeast waters. Alternative 5 would establish no such broad-based requirements, while Alternative 2 would establish these requirements year-round in both the Mid-Atlantic and Southeast. Alternatives 3\*, 6 Draft\*, and 6 Final (Preferred) would also extend broad-based gear modification requirements to the Mid-Atlantic and Southeast, but would only do so on a seasonal basis: from September 1 through May 31 in the Mid-Atlantic, from November 15 through April 15 between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, and from December 1 through March 31 in waters south of 29°00' N. In contrast, Alternative 4 would establish year-round gear modification requirements in the Mid-Atlantic, but would require them on a seasonal basis in the Southeast: from November 15 through April 15 between the South Carolina/Georgia border (i.e., 32°00' N) and 29°00' N latitude, and from December 1 through March 31 in waters south of 29°00' N.<sup>87</sup>

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<sup>87</sup> The southern boundary of the southernmost area subject to ALWTRP requirements would be set at 27°51' N for trap/pot and Southeast gillnet fisheries, and at 26°46.5' N for shark net fisheries.

The application of broad-based gear modification requirements on a seasonal basis in Mid-Atlantic and/or Southeast waters, as envisioned under Alternatives 3\*, 4, 6 Draft\*, and 6 Final (Preferred), is unlikely to have an adverse effect on the entanglement risks *currently* faced by other protected species, since the seasonal variation in requirements would pertain only to the implementation of new standards.<sup>88</sup> Looking forward, the implementation of year-round rather than seasonal requirements would offer greater ancillary benefits to these species. Under Alternative 2, for example, broad-based gear modification requirements would be in effect year-round; thus, protected species that inhabit Mid-Atlantic or Southeast waters year-round, such as bottlenose dolphins and pelagic delphinids, would receive the benefits of these requirements throughout the year. This would not be the case under Alternatives 3\*, 4, 6 Draft\*, or 6 Final (Preferred). Similarly, Alternative 2 would afford ancillary benefits to sea turtles migrating northward through the Mid-Atlantic from April through June. In contrast, Alternatives 3\*, 6 Draft\*, and 6 Final (Preferred) would only require the implementation of broad-based gear modifications through the end of May; thus, turtles migrating through the Mid-Atlantic in June would receive no additional protection. These alternatives, however, would afford sea turtles ancillary protection during their southward migration, which typically begins in September and concludes in the late fall; during this period, broad-based gear modification requirements would be in effect throughout the Mid-Atlantic. Such requirements would also be in effect in the Southeast from mid-November through mid-April, when turtle abundance in the area is highest.<sup>89</sup>

## 5.2.2 Impacts to Essential Fish Habitat

As noted in Chapter 4, using the types of fixed fishing gear regulated under the ALWTRP (i.e., traps/pots and anchored gillnets) can affect essential fish habitat primarily through the gear's impacts on the benthic environment. Such impacts generally arise as a result of contact between fishing gear and the sea floor, especially during the setting and retrieval of the gear. In some cases, bottom contact can alter the physical structure of the seabed, injure or kill benthic organisms, alter the structure and productivity of the benthic community, contribute to the suspension of sediments, and cause changes in the chemical composition of the water column overlying affected sediments. However, the habitat impacts of mobile, bottom-tending gear are much more severe than the impacts attributed to fixed, bottom-tending gear (see Section 4.4.4.1).

The regulatory alternatives under consideration are likely to have no more than a temporary or minimally adverse impact on the benthic environment (see Section 5.2.2.2). The regulatory provisions with the greatest potential to affect benthic habitat are those that may influence contact between ALWTRP-regulated gear and the sea floor. As discussed below, the provisions of interest are those pertaining to exempted waters and to groundline, weak link, and gear anchoring requirements.

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<sup>88</sup> The ranges of the WNA stocks of blue whales, Atlantic white-sided dolphins, harbor, gray, and harp seals, sei whales (Nova Scotian stock), sperm whales (North Atlantic stock), and harbor porpoises (Gulf of Maine/Bay of Fundy stock) are typically well north of the of the Southeast and Mid-Atlantic waters; thus, these requirements would be unlikely to affect these species (Waring et al., 2000, 2002, and 2003).

<sup>89</sup> It is possible that fishermen who modified their gear to comply with seasonal requirements would also use that gear when the requirements are not in effect. To the extent this occurred, it would provide an ancillary benefit to other protected species.

### 5.2.2.1 Exempted Waters

As described above, Alternatives 2 through 6 Final (Preferred) would expand the area of coastal waters that would be exempt from ALWTRP requirements. This change, coupled with an increase in regulatory requirements in other areas, might create an incentive for fishermen to relocate their effort to exempted waters. If this were to occur, it would increase stress on the benthic environment in these areas.<sup>90</sup> Any relocation of effort, however, is likely to be limited by other factors, including the already crowded conditions in inshore and nearshore waters and the conflicts between fishermen that could arise if those who attempted to relocate their effort were perceived as encroaching on territory unofficially claimed by others. As a result, any adverse impact on essential fish habitat in exempted waters is likely to be limited.

### 5.2.2.2 Groundline Requirements

With the exception of Alternative 1 (No Action), all of the regulatory alternatives under consideration would require increased use of sinking and/or neutrally buoyant groundline. The use of such line rather than floating line will increase the line's contact with the sea floor, creating the potential for adverse impacts on benthic habitat. Such impacts, however, are not expected to be more than minimal or temporary in nature. The expected impacts of sinking and/or neutrally buoyant groundline on benthic habitat would occur primarily when trawl lines of pots are hauled to the surface. During this process, the line may snag on bottom features and organisms as it is dragged across the bottom. Current knowledge suggests that trap/pot fishermen minimize the distance at which gear is drawn across the sea floor when hauling in their gear, as this contact causes abrasion of the protective coating on the traps themselves. Hence, fishermen position their vessels above their gear, pulling sets up through the water column instead of across the sea floor. This practice minimizes the adverse impact of sinking and/or neutrally buoyant groundline on benthic habitat. Furthermore, the amount of bottom area that would be disturbed by sinking and/or neutrally buoyant groundline, and the frequency of disturbance in the exact same area from repeated contact with sinking and/or neutrally buoyant groundline, would be very small, allowing enough time for recovery of benthic communities that would potentially be affected. Therefore, any adverse impacts associated with the use of sinking and/or neutrally buoyant groundline would be temporary as well as minimal.

### 5.2.2.3 Weak Link and Anchoring Requirements

The increased use of weak links, as required by regulatory Alternatives 2 through 6 Final (Preferred), is unlikely to have a significant impact on essential fish habitat. It is possible, however, that weak links could benefit essential fish habitat by reducing the likelihood that an entangled whale would drag gear over sensitive areas. Instead, the weak link is expected to break, releasing the gear. To the extent this occurs, potential damage to the marine environment could be avoided.

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<sup>90</sup> This change presumably would be offset by a decrease in fishing pressure in other areas, with potentially beneficial implications for benthic habitat in these areas.

The gillnet anchoring requirements under consideration could have some adverse impact as a result of the contact between an anchor and the sea floor. Such impacts, however, would be minimal and temporary since an anchor would only be set at a specific location for a short period of time. There is also little risk that entangled whales would drag anchors and consequently damage habitat because weak links are expected to release the anchor if a whale becomes entangled.

### **5.2.3 Impacts to Directed Catch and Bycatch**

Like other regulations on commercial fishing, changes in ALWTRP requirements could have an impact on directed catch and bycatch in affected fisheries. Directed catch refers to the catch of species targeted by the fisheries currently or potentially subject to ALWTRP requirements (see list of affected fisheries in Chapter 4.2). Under the Magnuson-Stevens Fishery Conservation and Management Act, bycatch is defined as the harvest of fish that are not sold or kept for personal use, including economic and regulatory discards.

As described below, potential changes to the ALWTRP are unlikely to have a significant impact on directed catch or bycatch. The discussion is divided into three parts:

- Impacts associated with major gear modification requirements;
- Impacts associated with seasonal closures of newly regulated fisheries in restricted areas; and
- Impacts associated with changes to exempted waters in the Northeast and Mid-Atlantic.

#### **5.2.3.1 Major Gear Modification Requirements**

None of the major gear modification requirements specified under Alternatives 2 through 6 Final (Preferred) are likely to have a significant impact on directed catch or bycatch. The NMFS Gear Research Team reports that no significant changes in catch have been observed by or reported to them for any of the gear modifications currently required under the ALWTRP. The gear modification requirements envisioned under Alternatives 2 through 6 Final (Preferred) primarily involve the extension of such requirements to additional fisheries and/or new areas. Given the nature of the changes envisioned and experience with such requirements to date, no significant change in directed catch or bycatch is anticipated.<sup>91</sup>

As previously discussed and as summarized in detail in Exhibit 5-12, several major gear modification requirements, such as those pertaining to the use of sinking and/or neutrally buoyant groundline, have the potential to increase or decrease the loss of commercial fishing gear. To the extent that these changes occur, they could alter the effects of ghost fishing, with

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<sup>91</sup> A recent study investigated the effects of twine size, bridle elimination, and weak links on the structural integrity and target catch efficiency of coastal anchored gillnets in North Carolina. The results of this research to date indicate that the use of weak links has no impact on catch rates (Thorpe and Beresoff, 2006).

subsequent impacts on directed catch. While overall impacts are not expected to be significant, the potential for adverse impacts is greatest under Alternative 2, which requires the use of sinking and/or neutrally buoyant groundline in ALWTRP-regulated waters year-round. The potential for adverse impacts on directed catch would diminish under Alternative 4, which would make the use of sinking and/or neutrally buoyant groundline a seasonal requirement in the Southeast, and would diminish further under Alternatives 3\*, 6 Draft\*, and 6 Final (Preferred), which would make the use of sinking and/or neutrally buoyant groundline a seasonal requirement in both the Mid-Atlantic and Southeast. The potential for adverse impacts would be further reduced under Alternative 5, which would require the use of sinking and/or neutrally buoyant groundline under the expanded SAM program, but would not impose a broad-based requirement for its use in other areas. In addition, Alternatives 2 through 6 Final (Preferred) would remove SAM buoy line requirements that are believed to have an adverse impact on gear loss, and thus an adverse impact on directed catch. Alternatives 5, 6 Draft\*, and 6 Final (Preferred) would eliminate these requirements six months after publication of the final rule, while Alternatives 2 through 4 would eliminate them 12 months after the final rule is published.

### **5.2.3.2 New Fishery Closures in Restricted Areas**

With the exception of Alternative 1 (No Action), each of the regulatory alternatives under consideration would expand the scope of the ALWTRP to include the Atlantic mixed species trap/pot fishery, the Northeast anchored float gillnet fishery, and the Northeast driftnet fishery.<sup>92</sup> The newly-regulated fisheries would be subject to prohibitions on fishing activity in restricted areas. Specifically, fishermen would be prohibited from using gillnet gear inside the Cape Cod Bay Restricted Area from January 1 through May 15, trap/pot gear inside the Great South Channel Restricted Area from April 1 through June 30, or gillnet gear inside the Great South Channel Restricted Gillnet Area from April 1 through June 30.<sup>93</sup> The available data on these fisheries, however, show very little activity in Cape Cod Bay or the Great South Channel when the restrictions would be in effect. As a result, new restrictions on these fisheries would likely have minimal impact on their directed catch or bycatch.

### **5.2.3.3 Changes to Exempted Waters**

As discussed above, Alternatives 2 through 6 Draft\* would expand the waters that are specifically exempted from ALWTRP requirements; Alternative 6 Final (Preferred) would further expand exempted areas off the coast of Maine and in Long Island Sound. If vessels relocated their effort to exempted areas in order to avoid the costs of complying with ALWTRP requirements, more directed catch and bycatch in these waters could occur. As a result of this

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<sup>92</sup> The Atlantic blue crab trap/pot fishery would also become subject to ALWTRP requirements. This fishery, however, does not extend far enough north to be affected by the closures of the restricted areas addressed here.

<sup>93</sup> The prohibition on gillnet fishing in Great South Channel would apply only to the Great South Channel Restricted Gillnet Area. Gillnet fishing would be permitted year-round in the Great South Channel Sliver Restricted Area. Such activity would be subject to all applicable requirements of the ALWTRP (i.e., Northeast Gillnet Waters requirements).

increased fishing pressure, stocks of both targeted and bycatch species in these waters could be adversely affected.

#### **5.2.4 Summary of Impacts**

As the discussion above suggests, there is no significant difference among Alternatives 2 through 6 Final (Preferred) with respect to impacts on essential fish habitat, directed catch, or bycatch; in each case, the impact is expected to be minimal. In contrast, these alternatives differ with respect to the ancillary benefits they afford other protected species. The differences among these alternatives stem from differences in the extent to which they would mandate broad-based gear modifications, such as the use of sinking and/or neutrally buoyant groundline. Under Alternative 5, for example, many broad-based gear modification requirements would not be imposed; as a result, ancillary benefits to other protected species would be limited primarily to those associated with the expansion of SAM requirements to additional fisheries and additional areas. Under Alternative 2, however, broad-based gear modification requirements would be in effect in all ALWTRP-regulated waters at all times; thus, protected species that inhabit Mid-Atlantic or Southeast waters year-round, such as bottlenose dolphins, would benefit from these requirements throughout the year.

The alternatives that would establish broad-based gear modification requirements on a seasonal basis – Alternatives 3\*, 4, 6 Draft\*, and 6 Final (Preferred) – would vary with respect to the ancillary benefits they provide other protected species. Alternative 4, for example, would afford ancillary benefits to sea turtles migrating northward through the Mid-Atlantic from April through June. In contrast, Alternatives 3\*, 6 Draft\*, and 6 Final (Preferred) would only require the implementation of broad-based gear modifications through the end of May; thus, turtles migrating through the Mid-Atlantic in June would receive no additional protection. All of these alternatives, however, would afford sea turtles ancillary protection during their southward migration, which typically begins in September and concludes in the late fall; during this period, broad-based gear modification requirements would be in effect throughout the Mid-Atlantic. Such requirements would also be in effect in the Southeast from mid-November through mid-April, when turtle abundance in the area is highest.

With the exception of Alternative 1 (No Action), all of the regulatory alternatives under consideration would expand the area of coastal waters that would be exempted from ALWTRP requirements. This change would relieve previously regulated vessels from ALWTRP requirements, and thus could have an adverse impact on other protected species relative to the status quo. The practical impact of the potential change in exempted waters is unclear, since data on the number of vessels that currently fish in exempted waters are unavailable. Expansion of exempted waters in certain areas (e.g., Maine) could affect a relatively large number of vessels; however, the impact on other protected species would depend upon the gear modifications that such vessels have already implemented but would no longer be required to maintain. If these vessels have relied primarily upon weak links to comply with ALWTRP requirements – as seems likely – the impact of removing these requirements is likely to be negligible. Conversely, if

these vessels have met ALWTRP standards by switching to sinking and/or neutrally buoyant buoy line or groundline, the impact of exempting them from these standards could be greater.<sup>94</sup>

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<sup>94</sup> The discussion above focuses on the impacts of expanding exempted waters assuming that a significant number of fishermen might choose to fish exclusively within those waters, thus avoiding the need to comply with ALWTRP requirements. It is possible that fishermen would choose to modify their gear to comply with ALWTRP requirements in non-exempt waters, and would use the same gear in exempt areas. To the extent this occurred, the potential for any adverse impact on other protected species would be reduced.

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