NOAA FISHERIES

NEFSC

Abundance and PBR

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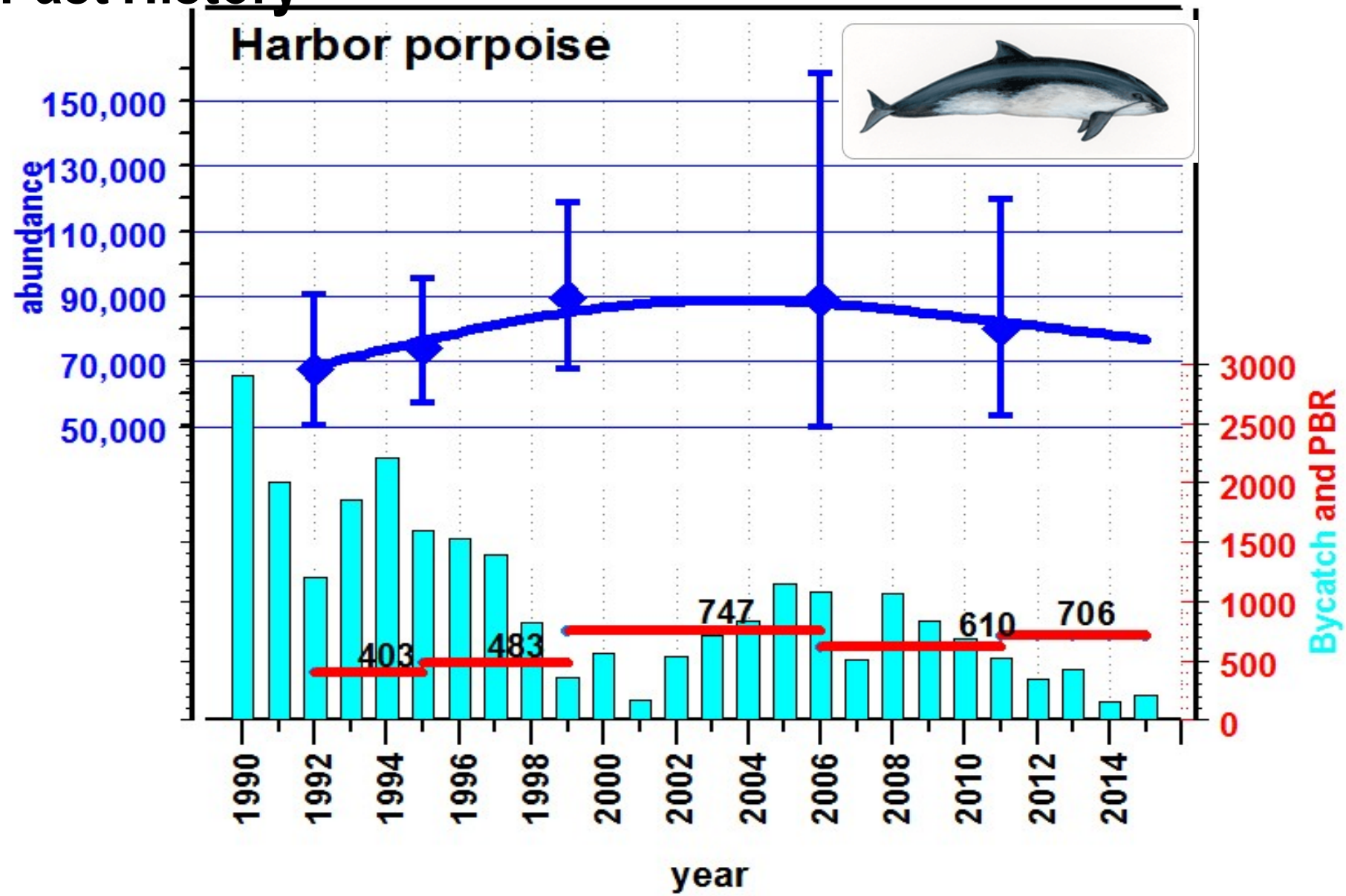
Protected Species Branch
Northeast Fisheries Science Center
Woods Hole, MA

30 November 2016
Harbor Porpoise Take Reduction Team Conference Call

Past History



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Harbor Porpoise

$$PBR = N_{min} \cdot 1/2\, R_{max} \cdot F_R$$

Year	N_{best}	$CV(N_{best})$	N_{min}	R_{max}	PBR
1991	37,500	0.29	--	--	--
1992	67,500	0.23	40,297*	0.040	403
1995	74,000	0.20	48,289**	0.040	483
1999	89,700	0.22	74,695	0.040	747
2006	89,054	0.47	60,970	0.040	610
2011[1]	79,883	0.32	61,415	0.046	706

* Average of 1991 and 1992

** Average of 1991, 1992, and 1995

[1] http://www.nefsc.noaa.gov/publications/crd/crd1229/

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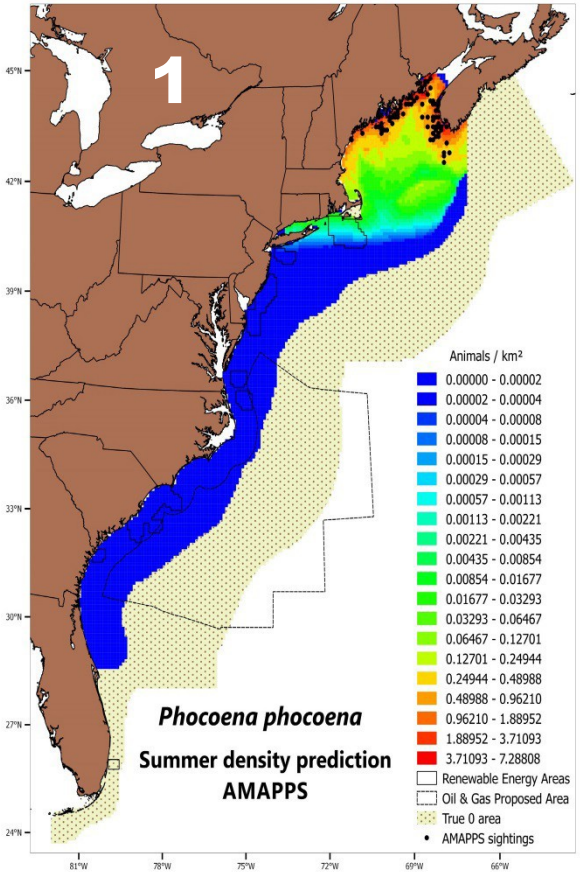
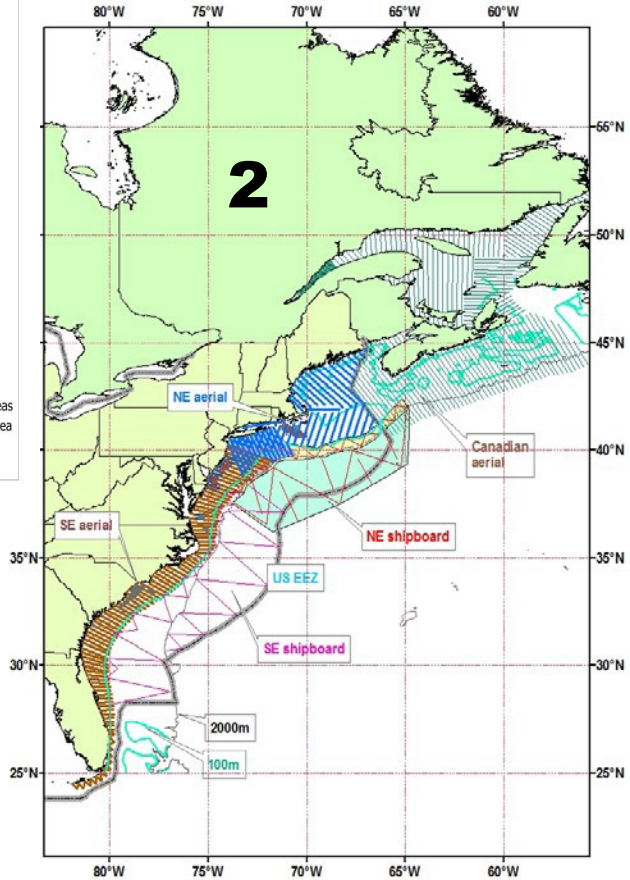
Near Future

1. During 2010-2016 periodic seasonal surveys within have been collected. Used data in Generalized Additive Models to create spatial- and temporal-specific distribution-habitat models and abundance estimates.

2. Summer 2016 US and Canadian scientists conducted line transect sighting surveys from Florida to Newfoundland. Goal is to estimate a new abundance estimate of the Gulf of Maine/Bay of Fundy harbor porpoise stock (plus other species).





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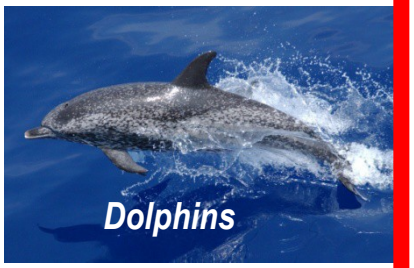
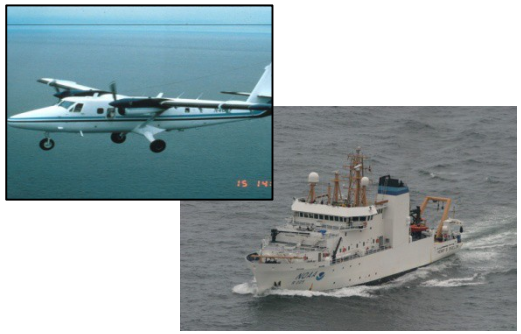
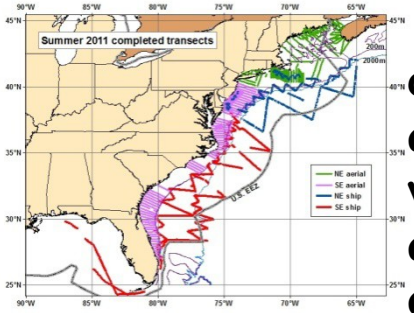
Atlantic Marine Assessment Program for Protected Species (AMAPPS) 2010 – 2019 (+?)

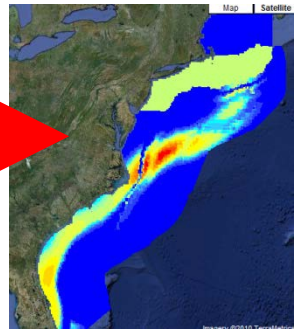






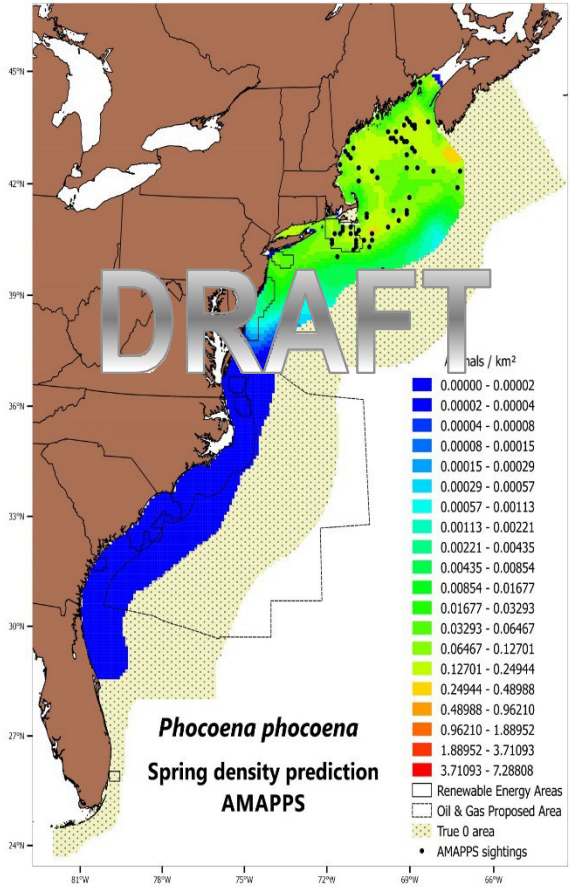
Quarterly collect distribution and abundance data via shipboard and aerial visual and acoustic surveys

Tag turtles, seals and seabirds to correct visual abundance data for animals not seen

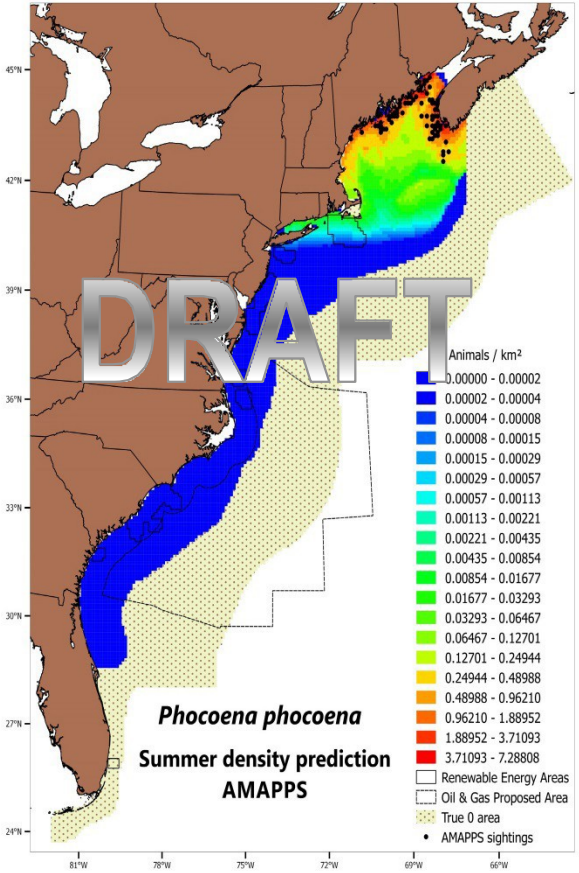


Model seasonal, spatially-explicit density estimates incorporating habitat characteristics

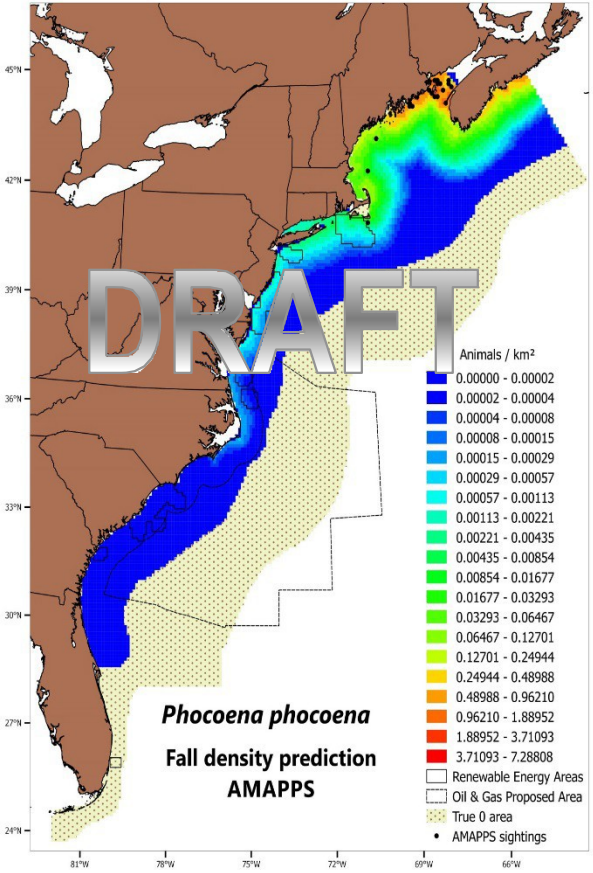
Results: Average seasonal maps of density 17 marine mammal species



Spring



Summer



Fall

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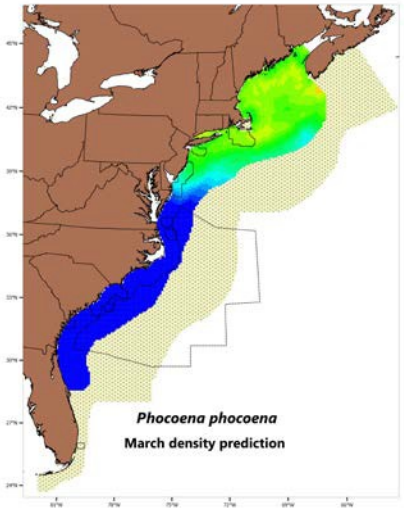
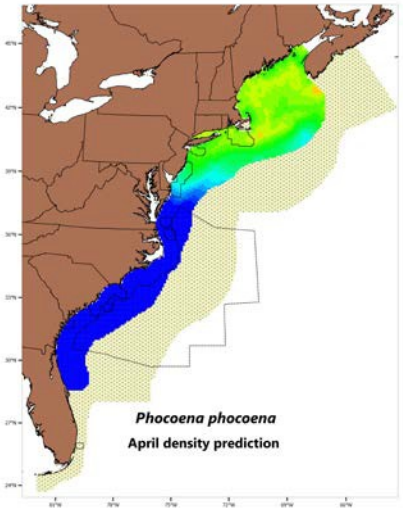
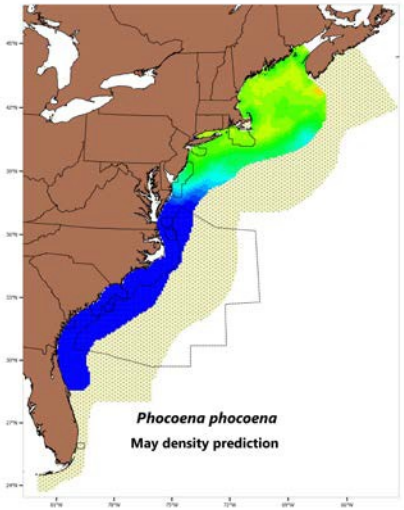
Monthly average distribution maps and associated abundance estimates



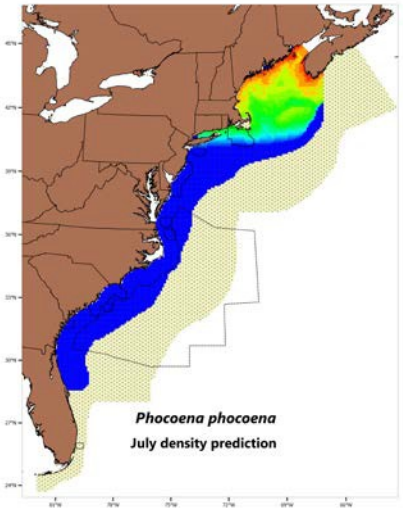
March



April

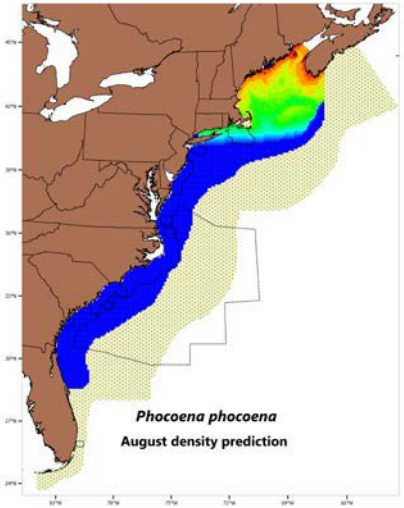


May

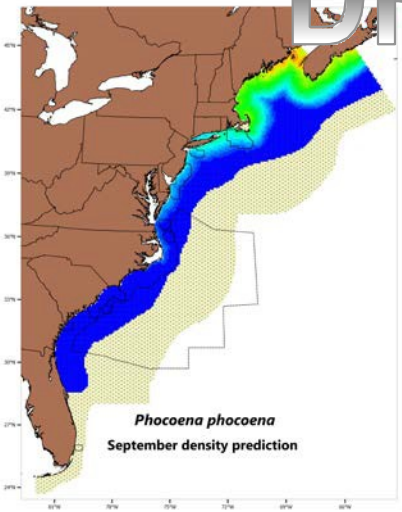


July

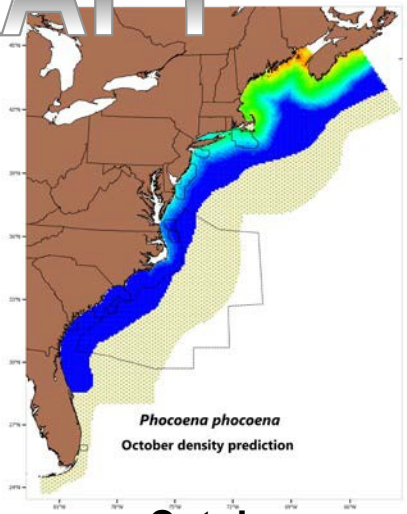
DRAFT



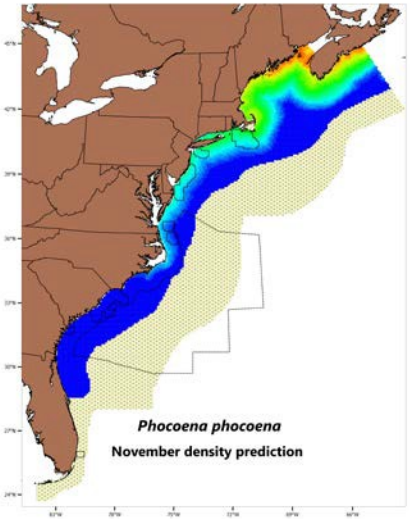
August



September



October



November

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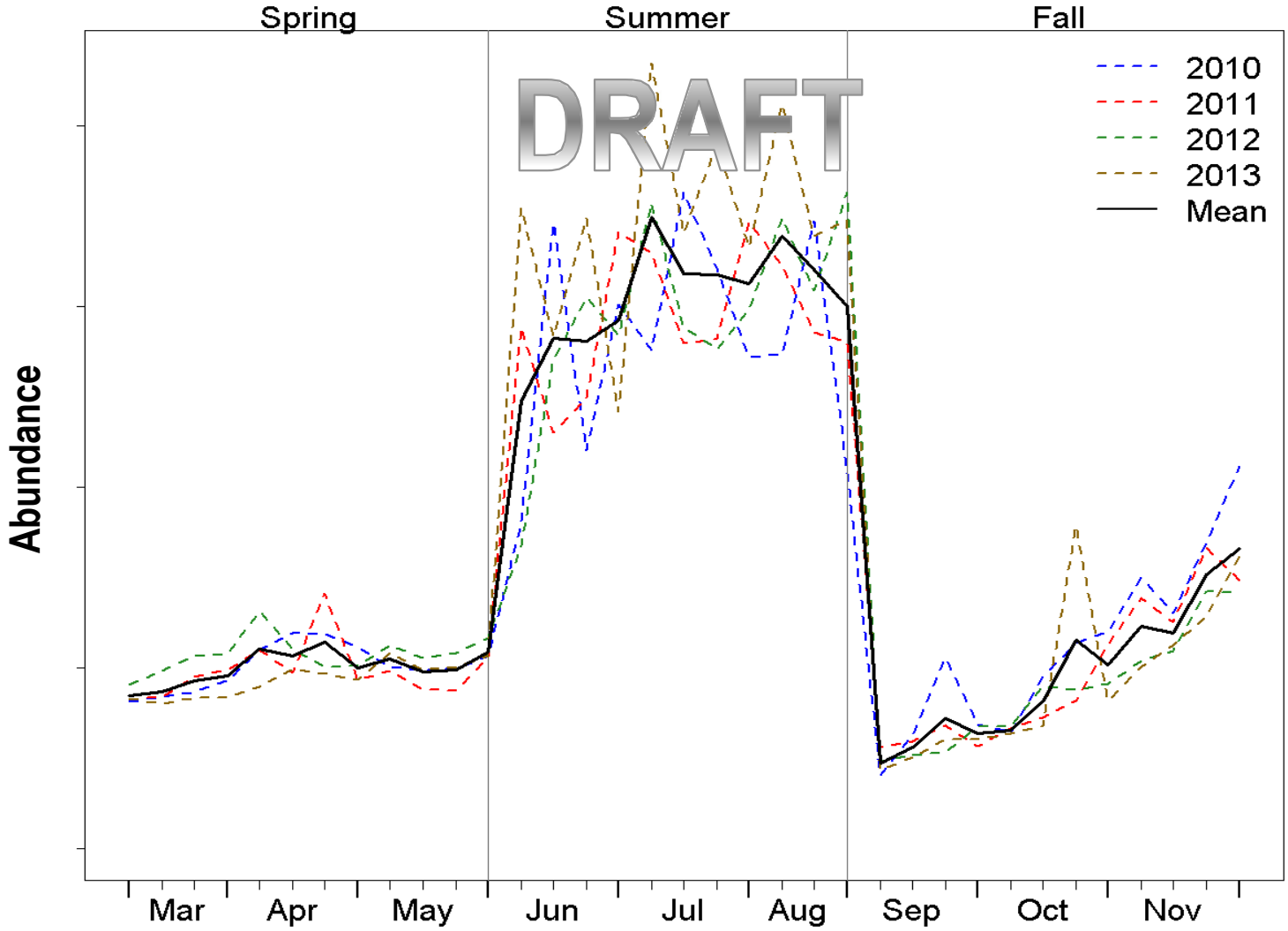
Results: Trends over years and within the year



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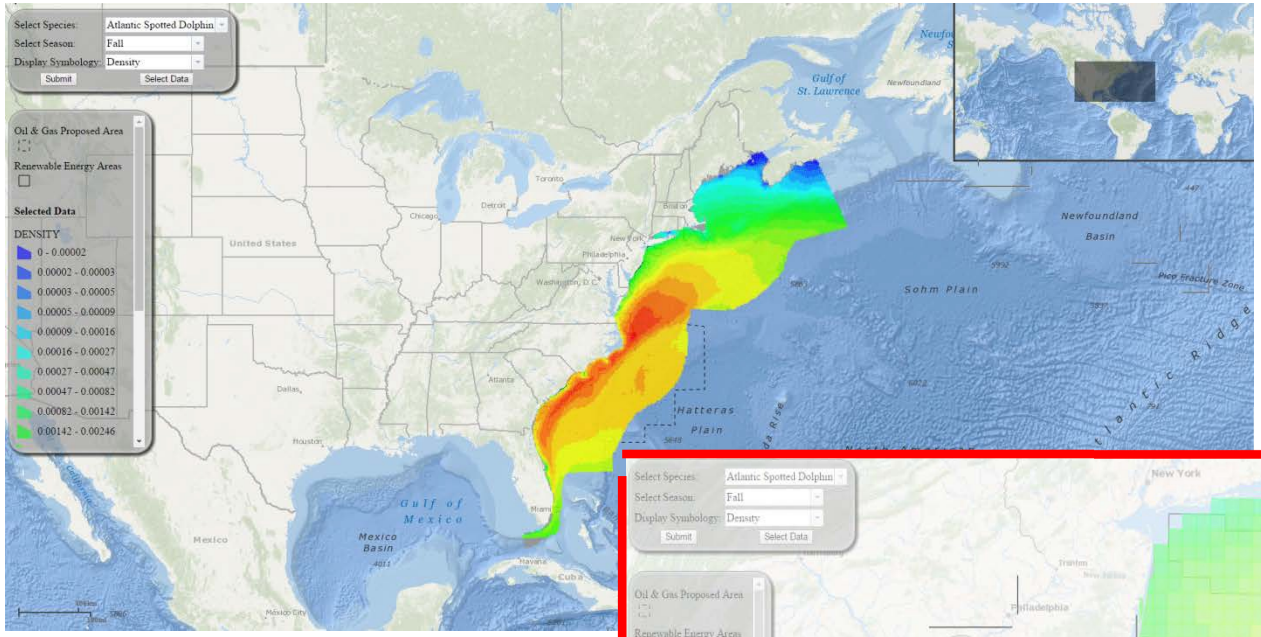
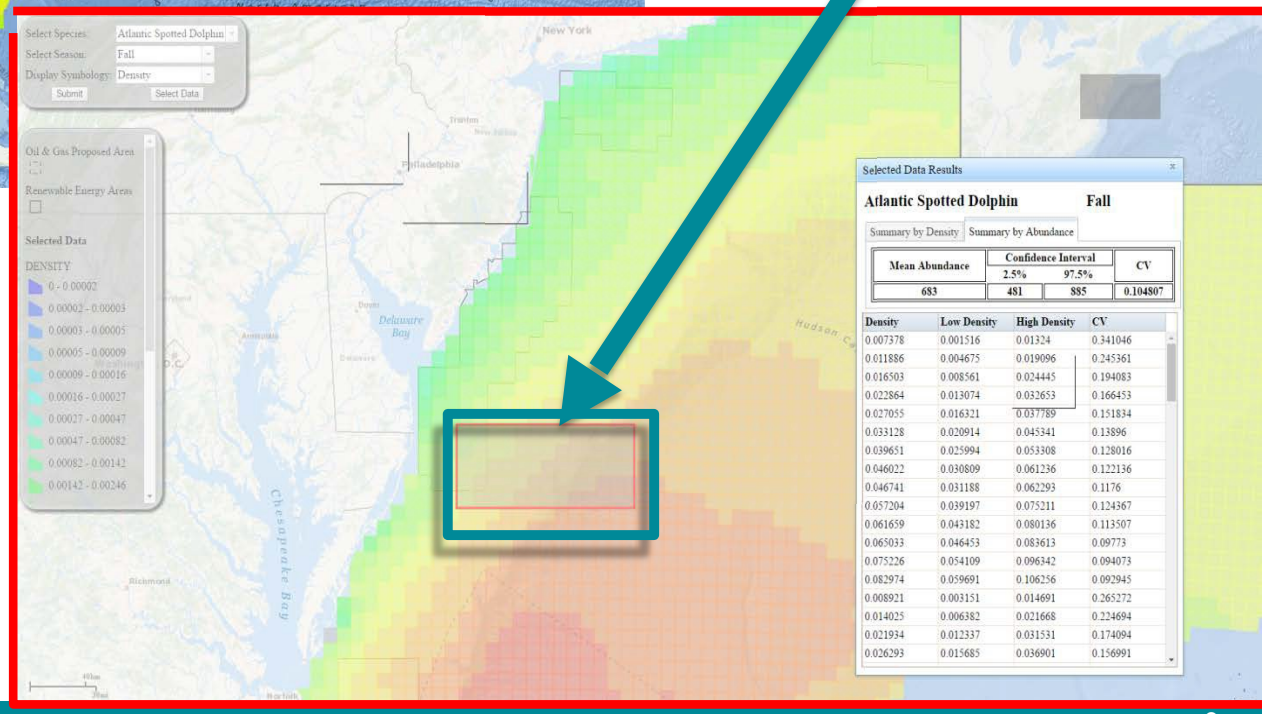
Data available on website



User created area of interest

User able to draw area of interest and get density and abundance data for each grid cell



Mean Abundance	Confidence Interval		CV
	2.5%	97.5%	
683	481	885	0.104807

Density	Low Density	High Density	CV
0.007378	0.001516	0.01324	0.341046
0.011886	0.004675	0.019096	0.245361
0.016503	0.008561	0.024445	0.194083
0.022864	0.013074	0.032653	0.166453
0.027055	0.016321	0.037789	0.151834
0.033128	0.020914	0.045341	0.13896
0.039651	0.025994	0.053308	0.128016
0.046022	0.030809	0.061236	0.122136
0.046741	0.031188	0.062293	0.1176
0.057204	0.039197	0.075211	0.124367
0.061659	0.043182	0.080136	0.113507
0.065033	0.046453	0.083613	0.09773
0.075226	0.054109	0.096342	0.094073
0.082974	0.059691	0.106256	0.092945
0.008921	0.003151	0.014691	0.265272
0.014025	0.006382	0.021668	0.224694
0.021934	0.012337	0.031531	0.174094
0.026293	0.015685	0.036901	0.156991

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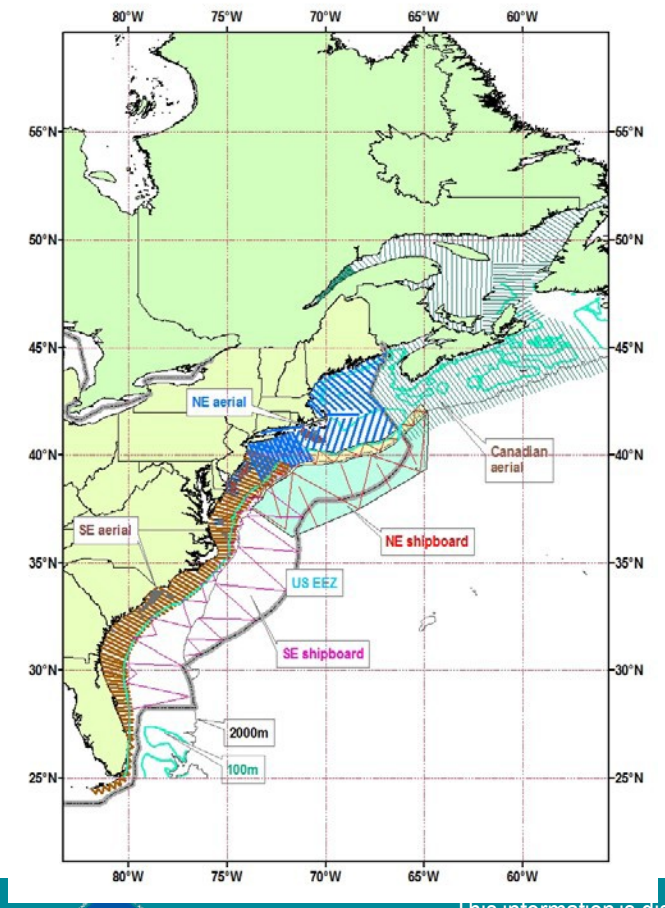
2. Multispecies abundance survey

- Jun – Sep 2016
- Using 2 ships and 4 aerial surveys
- Planning to get abundance estimates in next 6 months



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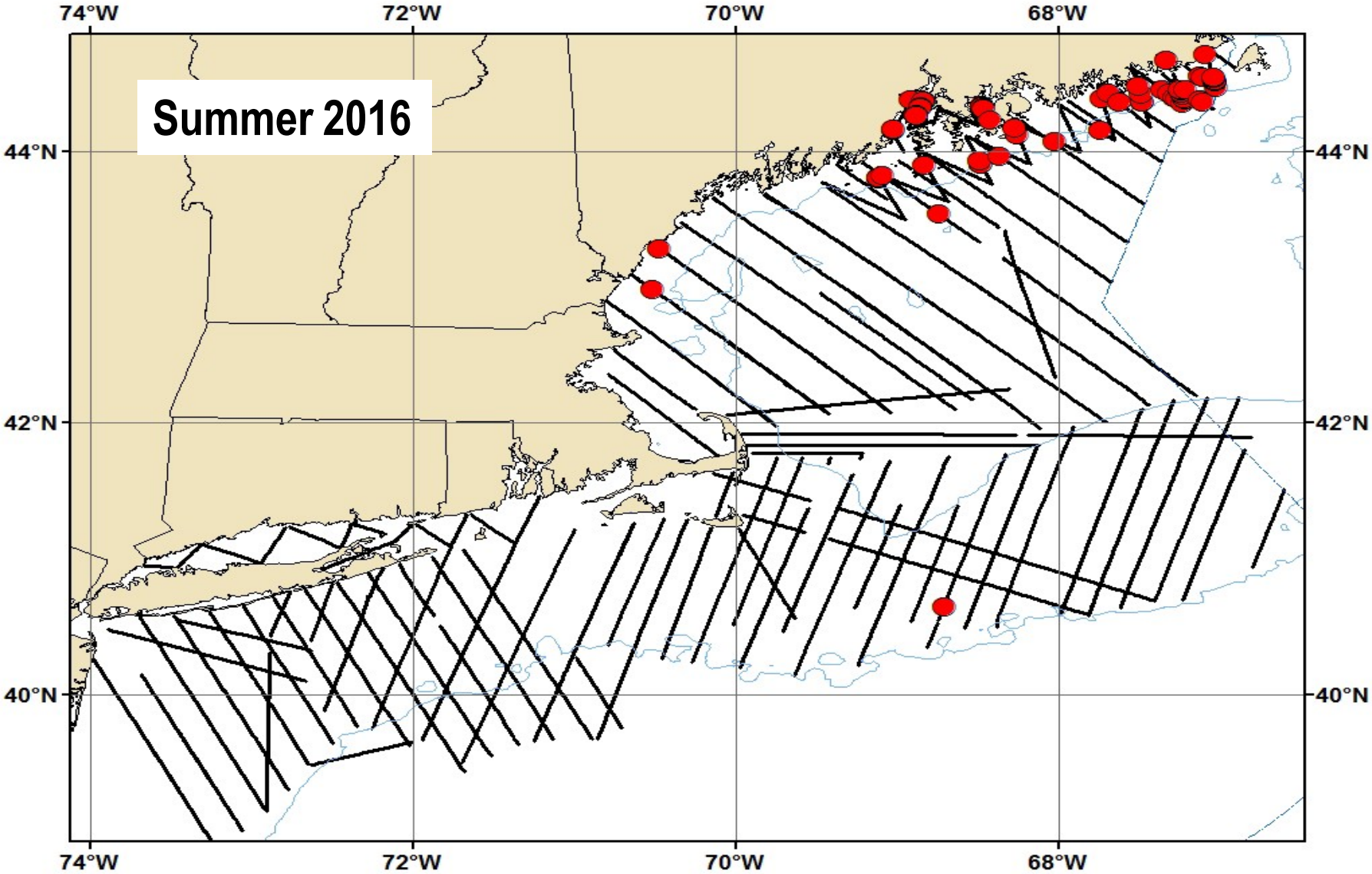
Locations of harbor porpoise sightings in US waters



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