1.0 AFFECTED ENVIRONMENT

1.1 ATLANTIC SEA SCALLOP RESOURCE

The Atlantic sea scallop (*Placopetcen magellanicus*) is a bivalve mollusk that is distributed along the continental shelf, typically on sand and gravel bottoms from the Gulf of St. Lawrence to North Carolina (Hart and Chute, 2004). The species generally inhabit waters less than 20^{o} C and depths that range from 30-110 m on Georges Bank, 20-80 m in the Mid-Atlantic, and less than 40 m in the near-shore waters of the Gulf of Maine. Although all sea scallops in the US EEZ are managed as a single stock per Amendment 10, assessments focus on two main parts of the stock and fishery that contain the largest concentrations of sea scallops: Georges Bank and the Mid-Atlantic, which are combined to evaluate the status of the whole stock.

The scallop assessment is a very data rich assessment. The overall biomass and recruitment information are based on results from several surveys including: the NEFSC federal survey; SMAST video survey; VIMS paired tow dredge survey; and towed camera survey conducted by Arnie's Fishery. These data sources are combined in the assessment of the resource and in models used by the Scallop PDT to set fishery allocations.

1.1.1 Benchmark Assessment

The sea scallop resource just had a benchmark assessment in 2014 (SARC59, 2014). Therefore, all of the data and models used to assess the stock were reviewed. The final results from that assessment have been incorporated into this action, including updated reference points for status determination (See Section ???). Overall, a handful of issues were updated as a result of the assessment and are summarized below. The full benchmark assessment and summary report can be found at: http://www.nefsc.noaa.gov/publications/crd/crd1409/ .

The major highlights from the benchmark assessment include:

1. several changes to the dredge index;
2. use of a separate Habcam index;
3. splitting out GB open and GB closed subareas;
4. several model parameter adjustments (a. increased estimates for natural mortality; b. increased natural mortality for larger scallops; and c. new growth estimates for three different time periods); and
5. new reference points based on these modifications.

Several changes were reviewed and approved related to the dredge survey index: 1) VIMS survey data was integrated for all areas from 2005-2013; 2) tows were standardized to one nautical mile in length instead of using a vessel correlation factor that was used in the last assessment; and 3) marginal areas on GB were dropped from the survey index. Adding the VIMS survey data had modest effects on the index, but improved the overall CV.

Habcam data used as a separate survey index for the first time in this assessment (GB 2011-2013 and MA 2012 and 2013). Previously simple kriging was completed with Habcam data to estimate access area biomass in scallop actions. But this assessment used a more complex a three step model (GAM plus ordinary kriging) to obtain biomass and abundance estimates. A

stratified mean was also used as a backup estimate or "sanity check". Paired habcam/dredge tows were used to obtain survey dredge efficiency estimates.

The GB model results were unstable; therefore the region was divided into two sub-regions: GB open and GB closed. Model for GB open performed very well, no retrospective patterns. For GB closed, the model does not believe the large survey years, so underestimates biomass for those years. The assessment panel discussed that density dependence juvenile mortality could be causing this, but that issue was not fully tested in this assessment.

Three model parameters were adjusted: 1) natural mortality increased in all areas, and was increased from 0.12 to 0.16 on GB and from 0.15 to 0.2 in the MA; 2) natural mortality for the plus group was assumed to be 1.5 times that of other size classes (i.e., 0.24 for GB and 0.3 for MA); and 3) different growth estimates used for different time periods. Analyses were completed to support all of these adjustments.

Based on all these changes the assessment approved new reference points for status determination. See a summary of that below (Section 1.1.1.1).

1.1.1.1 Stock status

The scallop stock is considered overfished if F is above Fsmy, and overfishing is occurring if biomass is less than ½ Bmsy. The previous estimate of Fmsy was 0.38 and Bmsy was 125K mt (1/2 Bmsy = 62K mt). SARC59 revised these reference points and increased Fmsy to 0.48 and reduced Bmsy to 96,480 mt (½ Bmsy = 48,240 mt). A comparison of the reference points are described in Table 1.

Table 1 – Summary of old and new reference points

	SARC 50 (2010)	SARC 59 (2014)
OFL	F = 0.38	F = 0.48
ABC/ACL (25% chance of exceeding OFL)	F = 0.32	F = 0.38
ACT for LA fishery (25% chance of exceeding ABC)	F = 0.28	F = 0.34
Bmsy (1/2 Bmsy)	125,358 (62,679)	96,480 (48,240)

Four types of mortality are accounted for in the assessment of the sea scallop resource: natural, discard, incidental, and fishing mortality. The updated stock assessment established new values for natural mortality on both stocks; it was increased from 0.12 to 0.16 on GB and from 0.15 to

0.2 in the MA. In addition, natural mortality for the plus group was assumed to be 1.5 times that of other size classes (i.e., 0.24 for GB and 0.3 for MA).

Discard mortality occurs when scallops are discarded on directed scallop trips because they are too small to be economically profitable to shuck or due to high-grading during access area trips to previously-closed areas. Total discard mortality (including mortality on deck) is uncertain, but was estimated at 20% in this assessment, as well as the previous two assessments.

Incidental mortality is non-landed mortality associated with scallop dredges that likely kill and injure some scallops that are contacted but not caught by crushing their shells, and this source of mortality is highly uncertain. The last benchmark assessment in 2010 used 0.20 on Georges Bank and 0.10 in the Mid-Atlantic (NEFSC, 2010), compared to earlier values of 0.15 on Georges Bank and 0.04 for Mid-Atlantic. There is no new information to modify the values used in 2010, but several studies are in process, and SARC59 did run some sensitivity analyses of this source of mortality. In general, incidental mortality does not have a very large impact on the overall assessment of the stock.

Finally, fishing mortality, the mortality associated with scallop landings on directed scallop trips, is calculated separately for Georges Bank and the Mid-Atlantic because of differences in growth rates. Fishing mortality peaked for both stocks in the early 1990s, but has decreased substantially since then as tighter regulations were put into place including area closures, and biomass levels recovered. shows F and biomass estimates for the combined stock overall through 2013.

SARC 59 included a formal stock status update through FY2013, and the reference points were updated in this benchmark assessment. **The updated estimates for 2013 are: F=0.32 and B=132K, so the stock is not overfished and overfishing is not occurring, under both the old and new reference points** (Figure 1 and Table 2). The main driver for the increase in Fmsy is due to increases in natural mortality and weakening of MA stock recruit relationships. In general Fsmy is uncertain because the Fmsy curve for MA is very flat, uncertain where Fmax is for that region.

Based on these results from the benchmark assessment the reference points for this fishery have been updated and the details are summarized in Section ???.

The Scallop PDT met in August 2014 to review updated survey information for Framework 26. A stock status update for 2014 will not be completed for this action because the 2014 fishing year is not over yet. Instead, the results from SARC59, through 2013, will be used to assess the status of the stock for this action.

Figure 1 - Whole stock estimate of fishing mortality through 2013 (SARC59) Fishing mortality (red line) and biomass estimates (y^{-1}, gray bars) from the CASA model

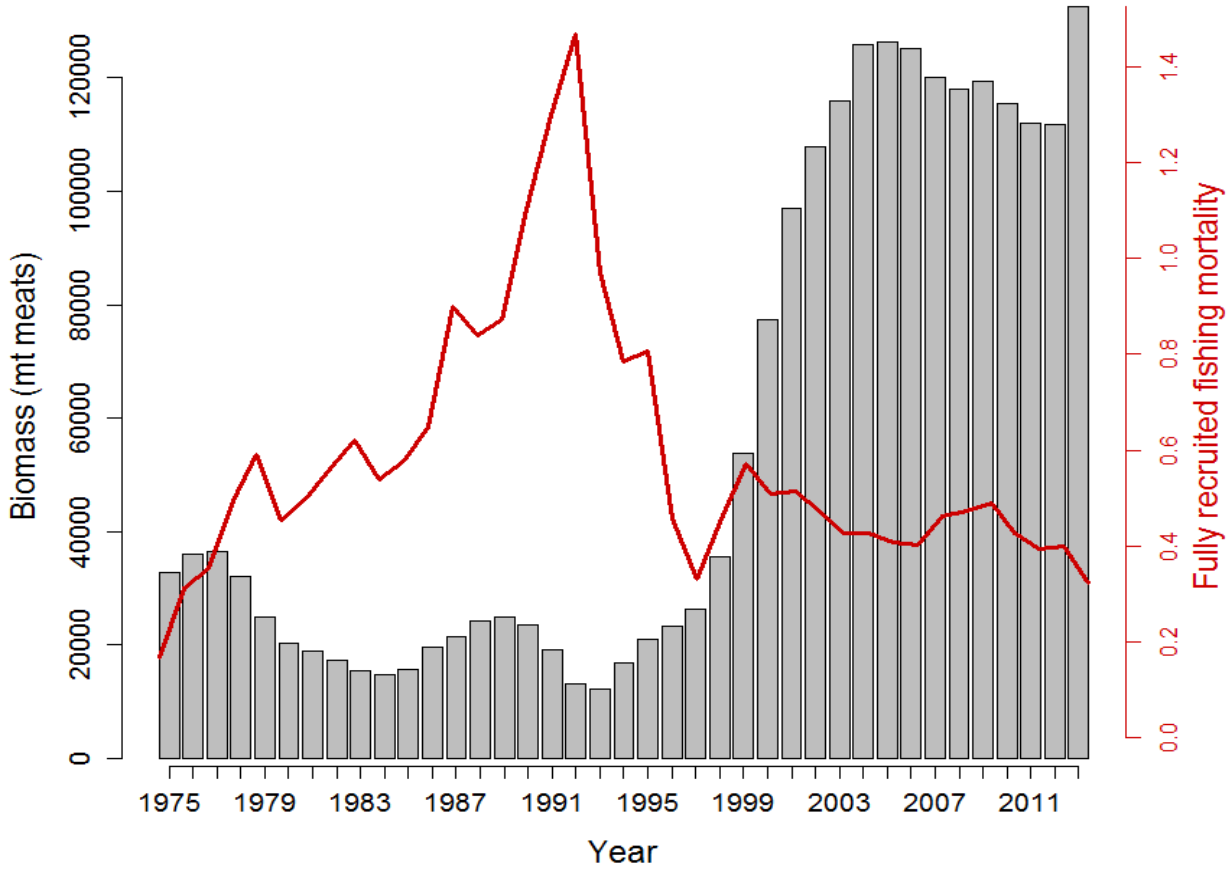


Figure 2 – Fully recruited annual fishing mortality rate for scallops from 1975-2013
Note that trends are different for partially recruited scallops because of changes in commercial size selectivity. SARC59 Fmsy is shown with green dashed line for the most recent period; Fmsy would have been smaller in past years when selectivity was different.

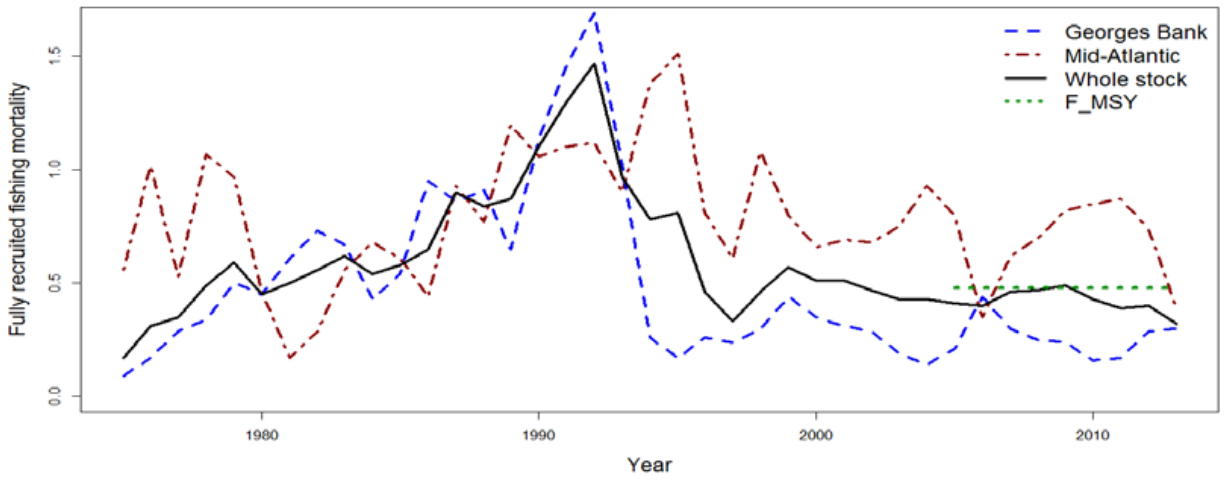


Table 2 – 2013 sea scallop stock status – overfishing is not occurring and the resource is not overfished

	Total 2013 Estimate	Stock Status Reference Points
Biomass (in 1000 mt)	133	½ Bmsy = 48,240
F	0.32	OFL = 0.48

1.1.2 Summary of 2014 surveys

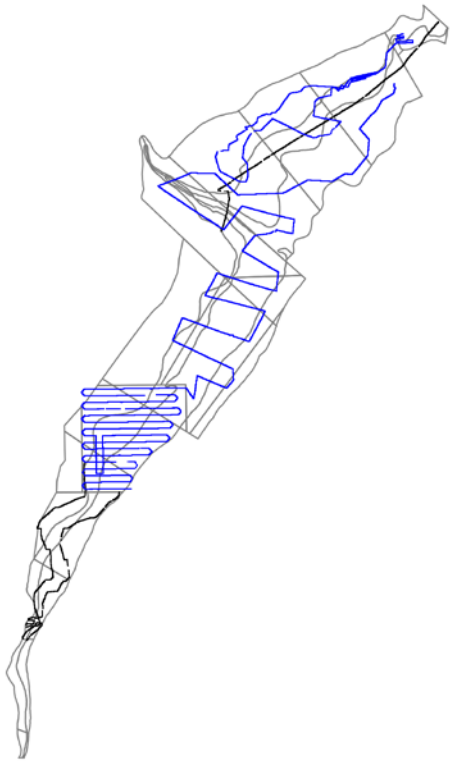
The Scallop FMP is fortunate to have access to several different survey methods. First, the NEFSC has had a dedicated dredge survey since 1977 that has sampled the resource using a stratified random design. More recently, the NEFSC scallop survey has evolved into a combined dredge and optical survey (Habcam Version 4), and is conducted on the R/V Sharp. Ideally, both dredge tows and habcam are used in each stratum, and there are three separate legs of the combined federal scallop survey. In 2014, the federal survey faced some logistical issues, which caused the overall survey to be about ten days shorter than planned and it was completed about two weeks later than scheduled. In the end, a full habcam survey was conducted in both regions (GB and MA), but essentially no federal dredge tows were completed in the MA region and about 120 federal dredge tows were completed in GB (Figure 3).

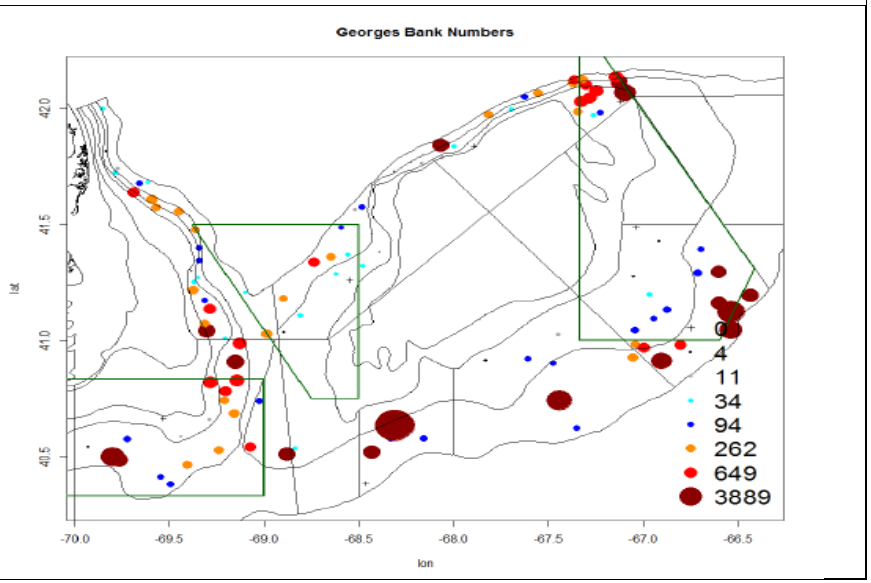
In addition, SMAST has conducted video surveys of various parts of the resource area. In most years since 2003, including 2014, SMAST completed a broadscale video survey of most of the resource area. In addition to a broadscale survey of most of the resource area, SMAST also completed a more intensive survey of the sliver north of the scallop access area within CA1. The 2014 SMAST season included about 2,000 stations on seven separate cruises (Figure 4).

Third, VIMS conducts a grid design survey towing two dredges, one commercial dredge and one survey dredge, in various areas that tend to vary from year to year. In 2014 VIMS completed 565 stations on three separate research cruises (Figure 4).

Finally, Arnie's Fisheries has completed very intensive optical surveys of discrete areas using Habcam Version 2. The areas vary from year to year, and in 2014 the areas covered were Elephant Trunk, areas with high concentrations of small scallops in and around NL and south of Long Island, as well as areas on the southern flank of GB and from Hudson Canyon proper to Elephant Trunk (Figure 3).

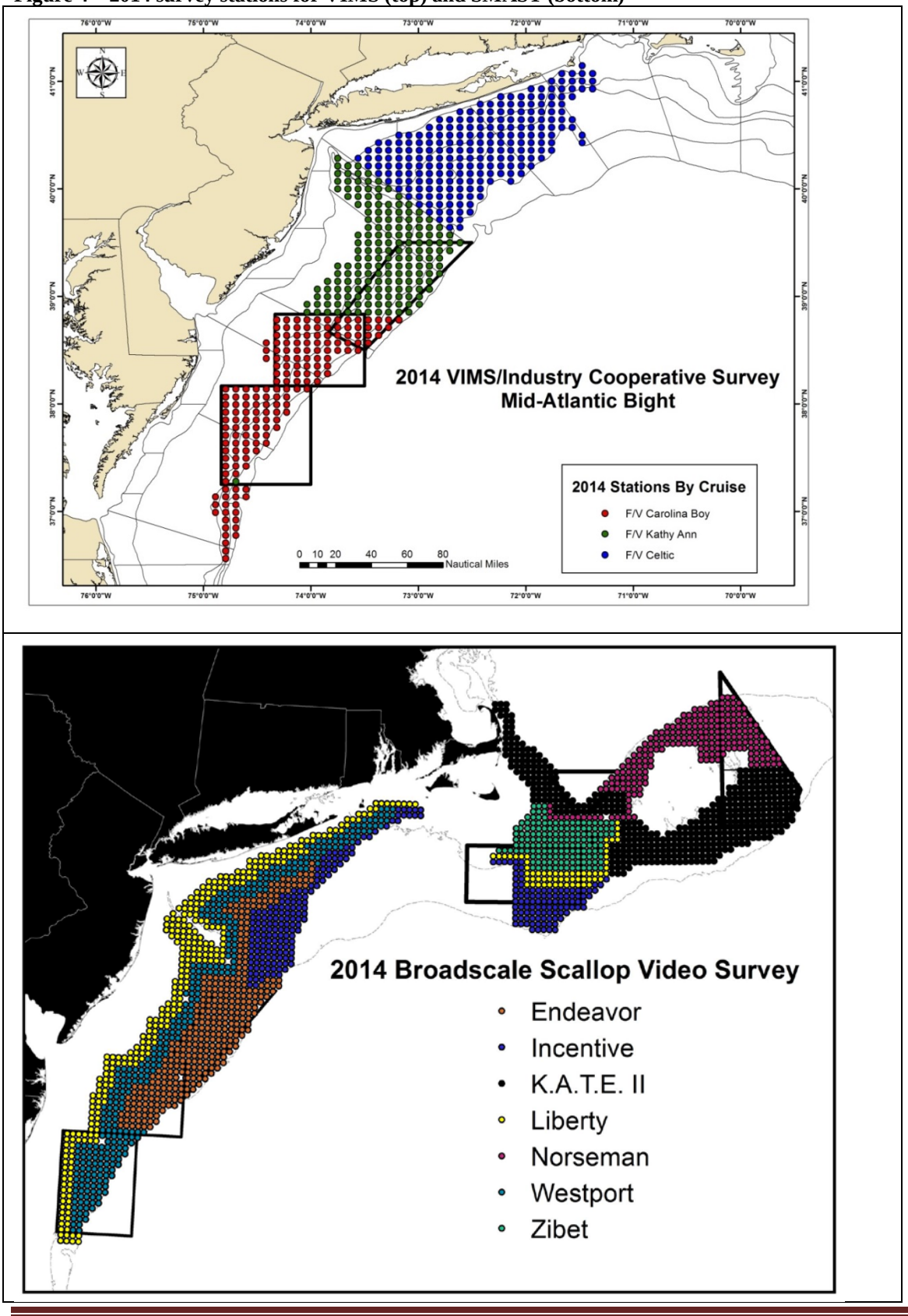
Figure 3 – 2014 NEFSC survey coverage





Federal Habcam V4 (black tracklines)
Arnie's Habcam V2 (blue tracklines)
Federal dredge stations on GB (bottom right)

Figure 4 – 2014 survey stations for VIMS (top) and SMAST (bottom)



The Scallop PDT combines the results from all available surveys to estimate sea scallop biomass and recruitment on an annual basis. The PDT met on August 26, 2014 and reviewed results from all the surveys described above.

1.1.3 Updated estimates of scallop biomass and recruitment

1.1.3.1 Georges Bank

The scallop abundance and biomass on Georges Bank increased from 1995-2000 after implementing closures and effort reduction measures. Biomass and abundance then declined from 2006-2008 because of poor recruitment and the reopening of portions of groundfish closed areas. Biomass increased on Georges Bank in both 2009 and 2010, mainly due to increased growth rates and strong recruitment in the Great South Channel, along with continuing concentrations on the Northern Edge and in the central portion of Closed Area I, especially just south of the "sliver" access area.

In 2012, GB biomass was primarily concentrated in NL, the Channel, and cod HAPC within CA2. In 2013, GB biomass declined in all areas, especially the Channel. In 2014 abundance was very high on GB, but mostly from small scallops observed throughout most of the resource area. In particular, large settlement areas were observed along the southern flank of GB, and in some cases in areas that do not typically have high densities of scallops. Figure 5 - Figure 10 show the survey results for scallop biomass and abundance for GB from various surveys of the area. Note in Figure 5 that 2014 is displaying scallop numbers and 2013 results are in terms of biomass, so they are not comparable. Overall, GB biomass has been increasing since 2010 (Figure 10 and Figure 15). However, exploitable biomass has been declining on GB since 2005. It is expected to increase over the next few years if smaller scallops grow and survive on GB.

Table 3 summarizes the biomass estimates per area based on 2014 surveys.

Figure 5 - Total scallop biomass (g/tow) on GB from the 2014 NEFSC dredge tows (TOP) compared to 2013 biomass from both VIMS and NEFSC dredge tows combined (BOTTOM)

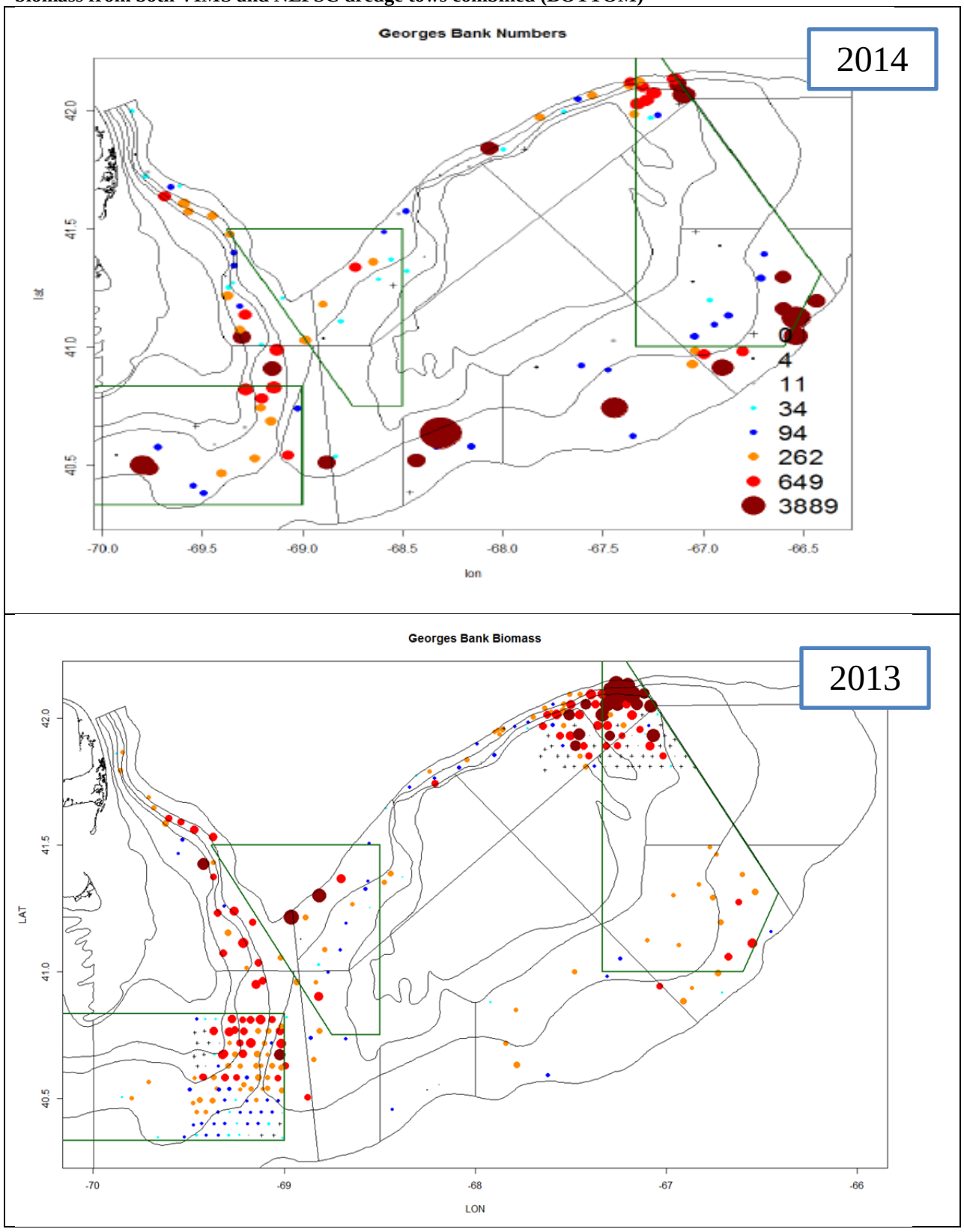


Figure 6 - Total scallop abundance (numbers per station) on GB (2014 SMAST video survey)

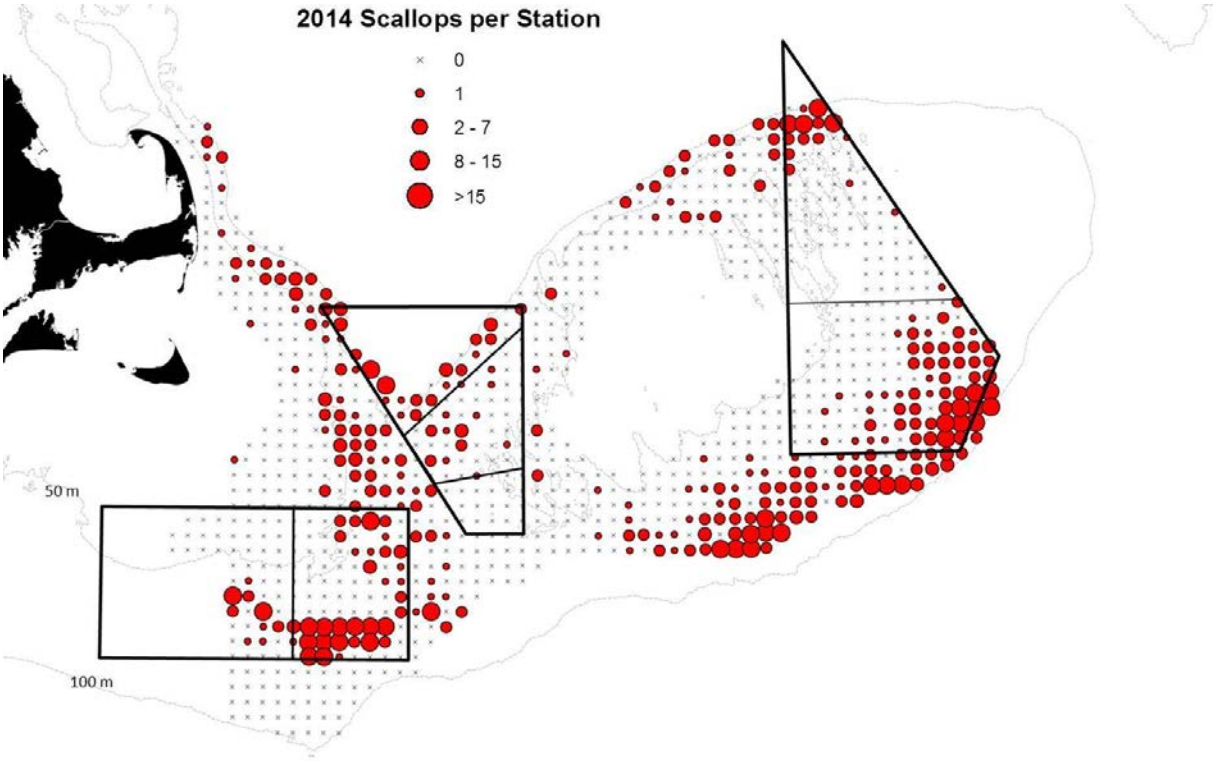


Figure 7 - Total scallop abundance (numbers per station) for recruits (less than 75mm) in the GB region from the 2014 SMAST video survey

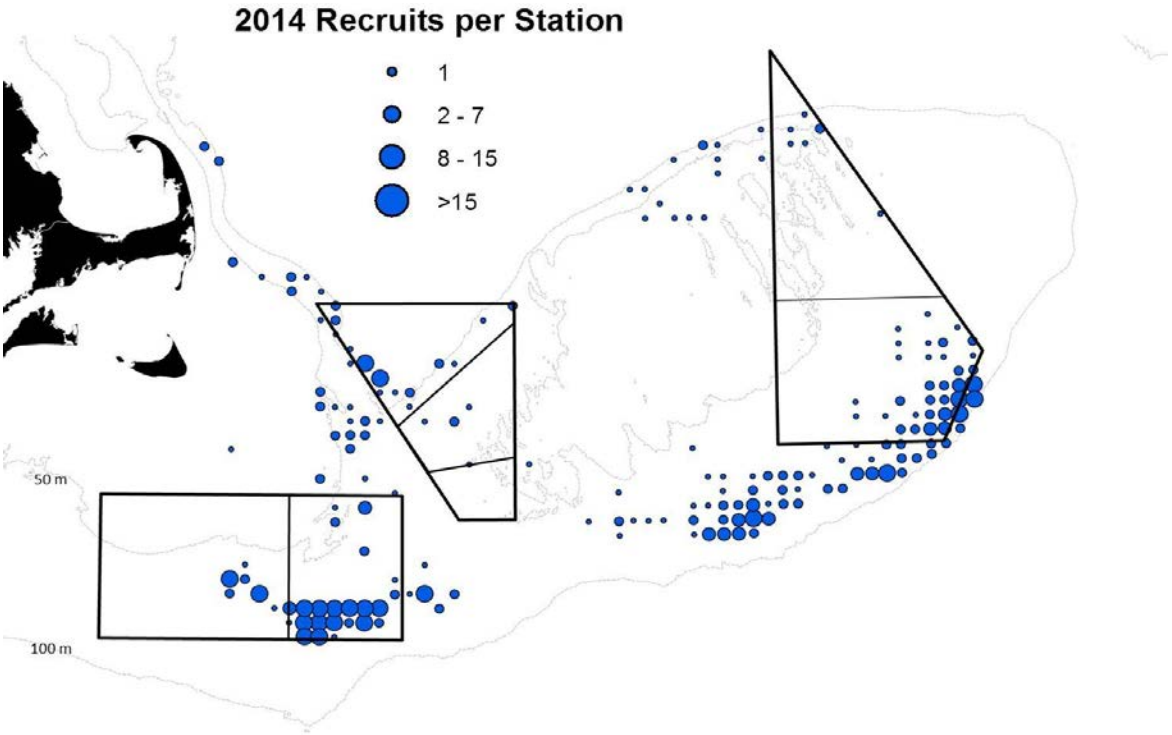


Figure 8 - Total scallop biomass in areas on GB combining optical survey results from 2014 NEFSC Habcam Version 4 and Arnie's Fishery Habcam Version 2

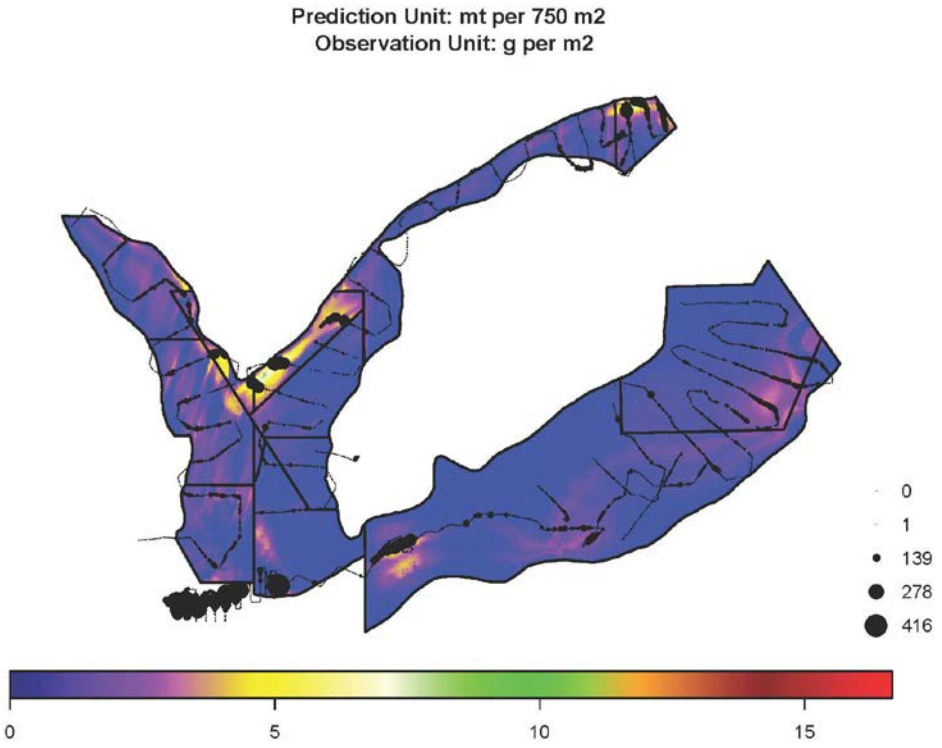


Figure 9 – Distribution of scallops by shell height from 2014 Arnie's Fishery Habcam Version 2

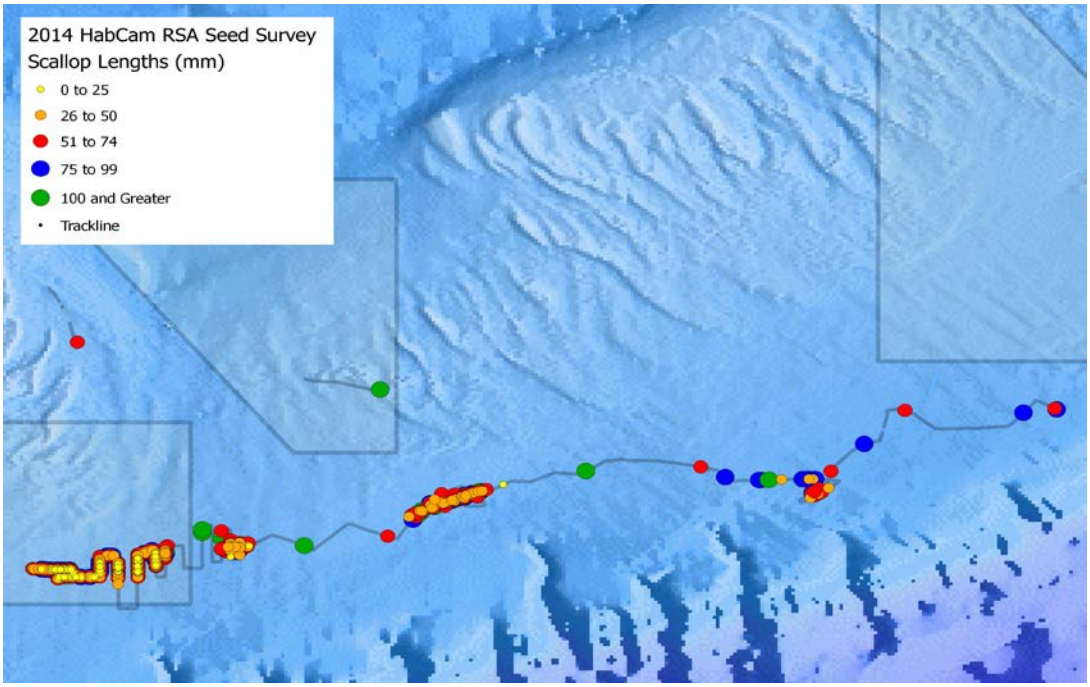
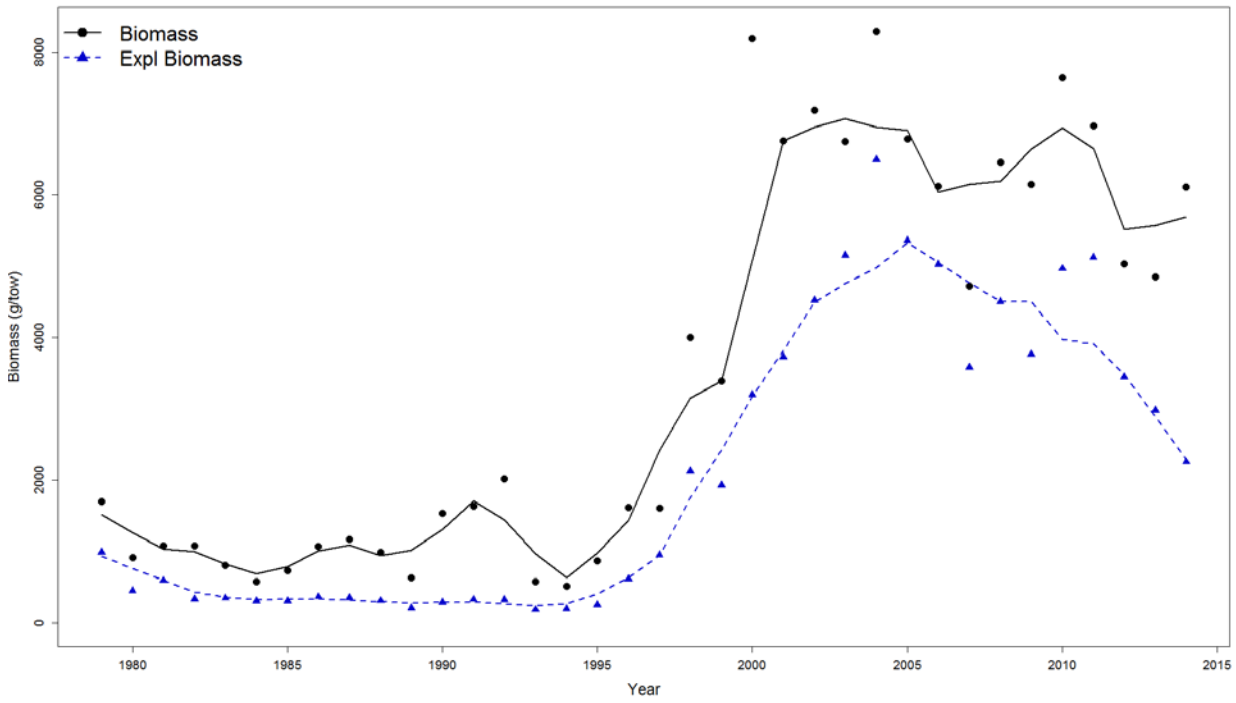


Figure 10 – GB dredge survey biomass and exploitable biomass time series (1979-2014)



1.1.3.2 Mid-Atlantic

In general, Mid-Atlantic biomass was declining since 2009, and has been steadily increasing as smaller scallops grow (Figure 14). The decline in exploitable biomass from 2006-2014 was primarily from depletion of the large biomass in Elephant Trunk and several years of poor recruitment in that area (2009-2011). However, stronger recruitment has been observed in 2012 and 2013. Once these scallops grow larger biomass in the Mid-Atlantic is expected to increase. Figure 11 through Figure 13 show 2014 survey results from various surveys of the area. The large number of small scallops observed in 2012 in all three MA access areas seems to have survived, and some of these animals will be ready for harvest in FY2015. Note that another set of smaller scallops was observed in several surveys in more shallow areas within the MA access areas. Overall MA scallop biomass is increasing as smaller scallops continue to grow in this area (Figure 15).

Table 3 summarizes the biomass estimates per area based on 2014 surveys.

Figure 11 - Total scallop abundance for the Mid-Atlantic from the 2014 VIMS dredge tows for smaller scallops (LEFT) and larger scallops (RIGHT)

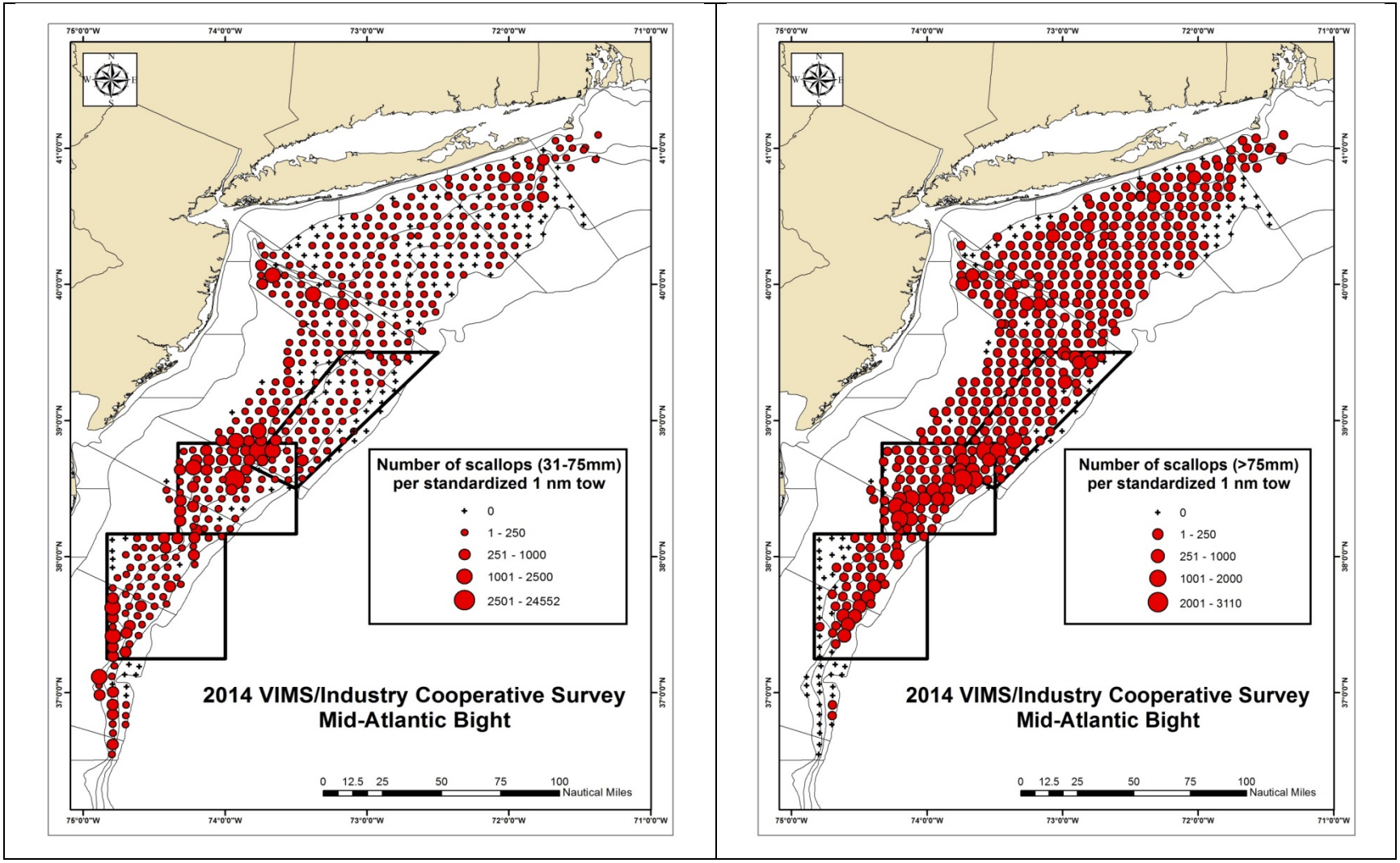


Figure 12 - Total scallop abundance (numbers per station) for MA region from the 2014 SMAST video survey (LEFT) and abundance of small scallops less than 75mm (RIGHT)

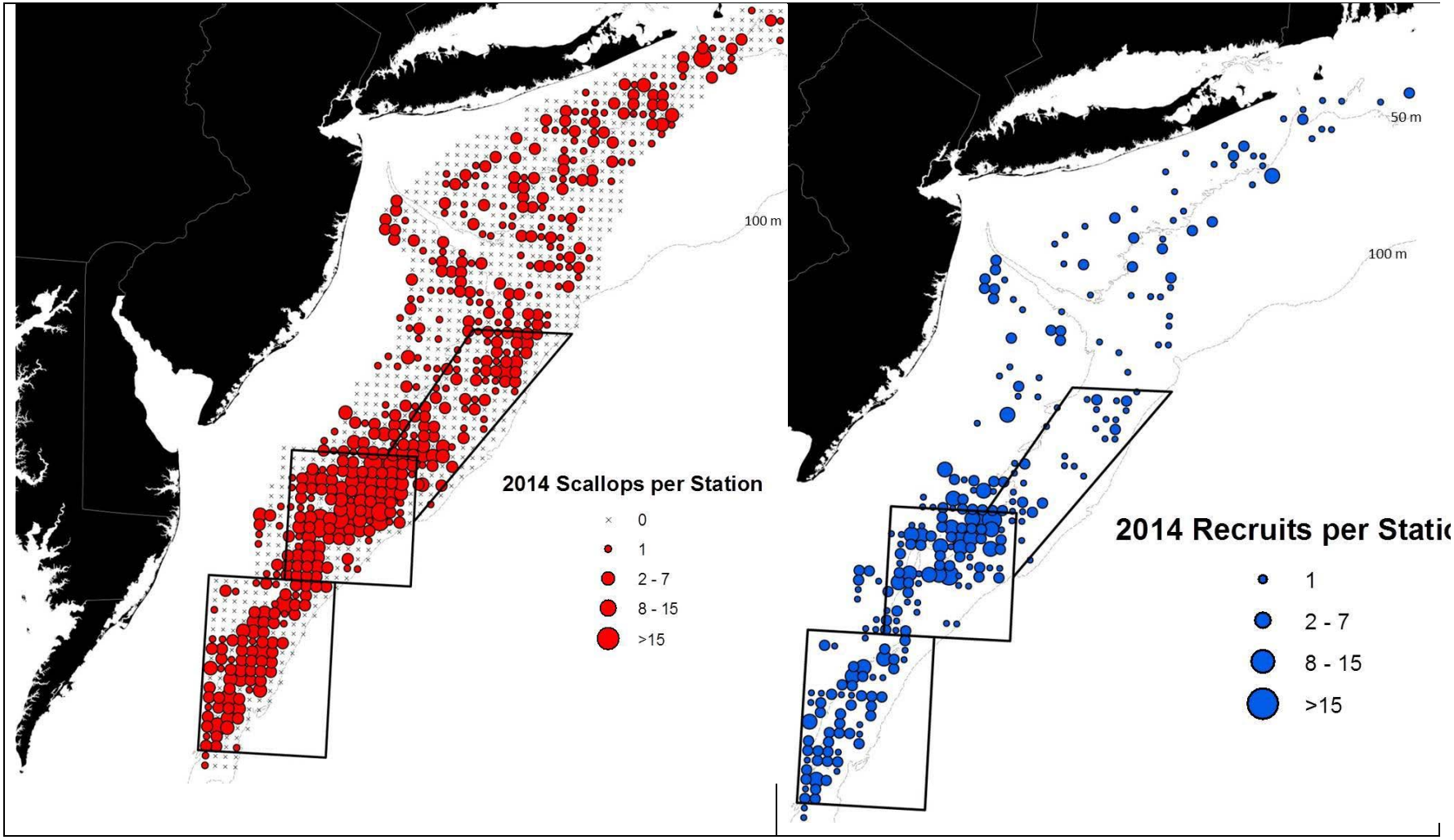


Figure 13 - Total scallop biomass for the Mid-Atlantic from the 2013 NEFSC optical survey (Seahorse)

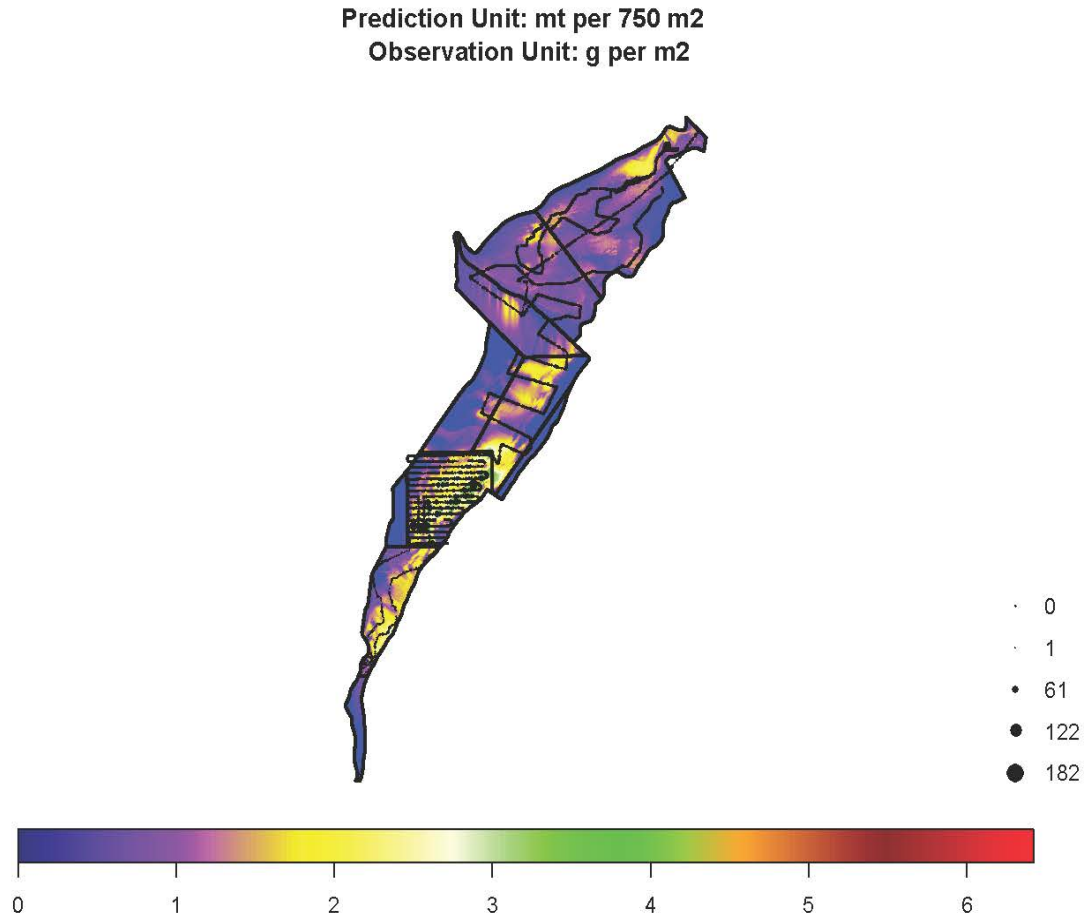


Figure 14 – MA dredge survey biomass and exploitable biomass time series (1979-2014)

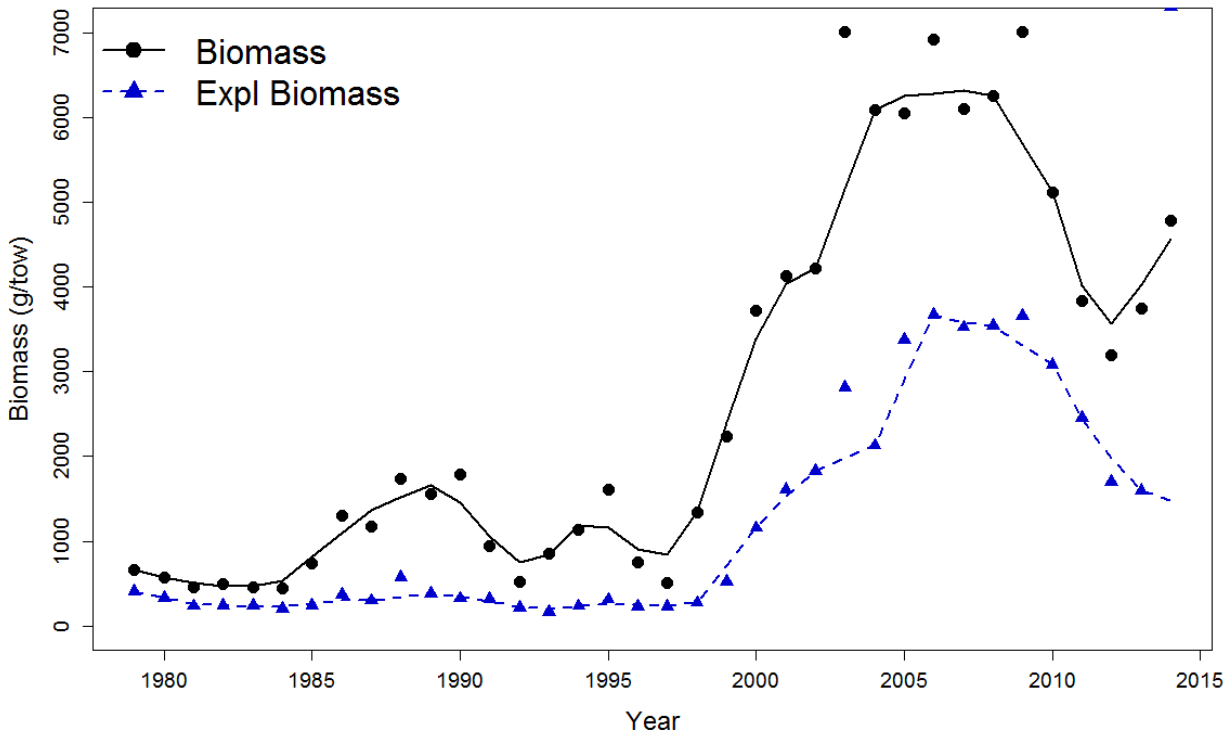


Figure 15 – NEFSC biomass survey indices (through 2014)

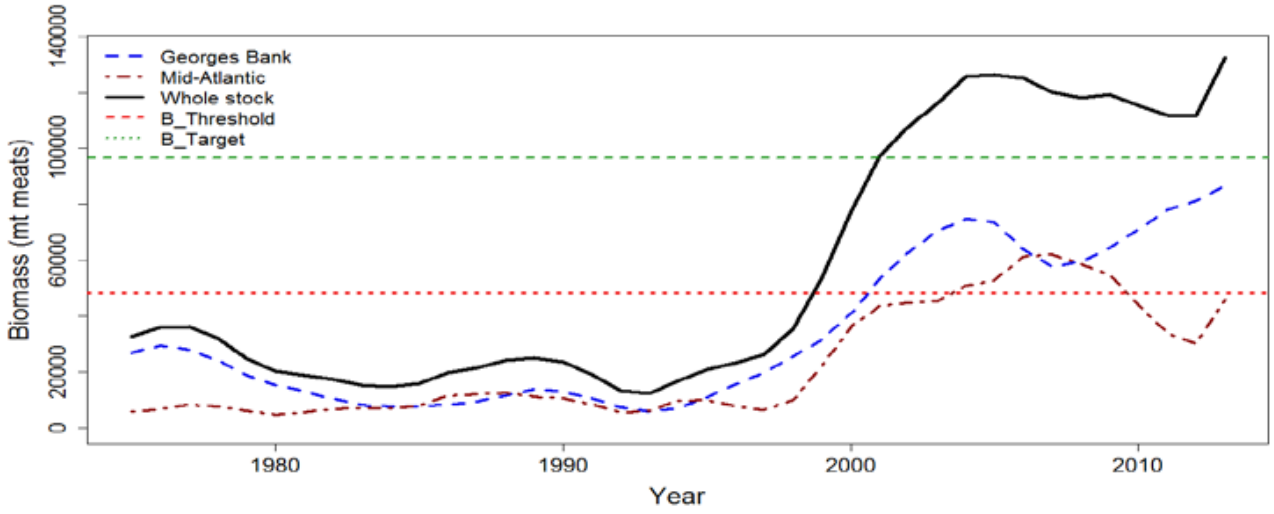


Table 3 – Summary of biomass estimates by SAMS area (2014 surveys)

		DREDGE			SMAST		Habcam			Totals	
Area	Bms	SE	Ebms	Bms	SE	Ebms	Bms	SE	Bms	SE	Ebms
Delmarva	4707	778	2080	9626	1093	3935	10598	2526	8310	1651	3008
Elephant Trunk	16392	3426	8067	24799	2909	12938	36154	14729	25782	8891	10503
HCS	5805	1206	3044	7381	1021	3143	18041	6752	10409	4004	3094
Virginia	279	79	3	NS	NS	NS			279	79	3
NYB	6822	1656	4140	6900	867	2119	12756	6082	9415	3674	3130
Long Island	11966	816	8438	10269	950	6402	14305	11131	12950	6467	7420
NYB Ext	1766	332	757	*	*	4013	*		*		2385
Block Island	939	206	535	1372	671	521	*		*		528
Mid-Atlantic Total	**48676**	**4167**	**27064**	**60347**	**3612**	**33071**	**91854**	**20577**	**67145**	**12374**	**30069**
CL-I NA	2163	649	1854	5115	3004	3091	21378	4510	9984	3151	2473
CL-1 Acc	333	59	246	962	375	190	*		*	219	218
CL-2 NA	8989	3190	7061	5550	2054	4191	7087	1486	7209	2353	5626
CL-2 Acc	7848	2462	3642	8197	2570	929	9835	3681	8627	2956	2286
NLS-NA	2240	1142	675	5211	4650	677			3726	2765	676
NLS-Acc	1637	327	854	30052	6534	3091	3231	626	11640	3794	1973
GSch	17689	1875	9485	11134	7849	4949	15994	3825	14939	5156	7217
SEP	15434	9833	2862	7026	1359	2476	16038	4019	12833	6183	2669
NEP	7752	9302	3837	5863	1483	2259	4330	861	5982	5461	3048
Georges Bank Total	**64085**	**14311**	**30516**	**79110**	**12246**	**21853**	**77893**	**19008**	**74938**	**11446**	**26185**
TOTALS	**112761**	**14906**	**57580**	**143066**	**12767**	**54924**	**159149**	**28013**	**142083**	**16856**	**56253**
* Included in other areas											

Table 4 – Summary of biomass estimates by SAMS area (2013 surveys)

Mid-Atlantic Bight	**Dredge**	**SE**	**Habcam**	**SE**	**SMAST**	**SE**	**Mean**	**SE**
Hudson Canyon South	7839	1126	7528	1097			7684	786
Delmarva	4559	605	6067	655	6249	803	5625	400
Elephant Trunk	14317	1758	19063	1993			16690	1329
Inshore of ET	109	421	868	825			489	463
Virginia Beach	1208	605	395	388			802	359
NYB/LI (includes str 21)	20662	2468	29816	2485			25239	1751
Block Island	N/S	N/S	1655	364			1655	364
TotalMA Rotational	26715	2173	32658	2367			29687	1607
TotalMA Open	21979	2575	31079	2647			26529	1847
Total MidAtlantic	**48694**	**3370**	**63737**	**3551**			**56216**	**2338**
Georges Bank								
Closed Area I Acc	494	108	3340	401			1917	208
Closed Area I NA	16940	5750	4553	747			10747	2899
Closed Area II Acc	5552	1042	9845	1221	5148	1049	6848	639
Closed Area II NA	9041	1220	8497	765			8769	720
NLS Acc	3271	342	4098	584			3685	338
NLS NA	90	28	N/S	N/S			90	28
S Channel	11711	2842	13496	1130			12603	1529
Southern Flank	5704	1197	11445	1946			8575	1142
Northern Edge	4425	580	3160	537			3793	395
Total GB Clsd/Acc	35389	5980	30333	1771			32861	3119
Total GB Open	21840	3138	28101	2313			24970	1949
Total Georges Bank	**57229**	**6754**	**58434**	**2913**			**57027**	**7899**
TOTAL	**105923**	**7548**	**122171**	**4593**			**113242**	**8238**

1.1.4 Performance of ACL management

In the first under ACL management, fishery allocations essentially kept landings right below ACL (landings 98% of ACL). In 2012 and 2013 landings were closer to 90% of the ACL. This is not surprising since fishery allocations are actually set at ACT, a substantially lower level to account for management uncertainty. For example, in 2014 the ACT for the LA fishery was 15,567mt and the LA ACL was 18,885, about a 3,000mt buffer. FY2014 is not over yet, but preliminary estimates suggest that landings will be below ACL, and potentially closer to 80% of ACL. This is probably driven by a handful of reasons: LPUE may be lower in open areas than projected, in the past projections of catch per day were underestimated by the model used by the PDT and it may be possible that the model is getting closer to realized catch levels, carryover measures may have been utilized more than average trends, etc.

Table 5 – Summary of landings compared to ACL/ABC

	OFL	ABC (including discards)	Discards	ABC available to fishery = ACL (after discards removed)	Actual Landings	% of ACL (landings/ACL)	Total Catch (landings plus assumed discards)	% of ABC (including discards)
	A	B	C	A-C = D	E	E/D	E+C=F	F/B
2011	32,387	31,279	4,009	27,269	26,795	98.30%	30,804	98.50%
2012	34,382	33,234	4,266	28,961	26,160	90.30%	30,426	91.60%
2013	31,555	27,370	6,366	21,004	18,303	87.14%	24,669	90.13%
2014	30,419	26,240	5,458	20,782	16,500 (17,447)	79.4% (84.0%)	21,958 (22,905)	83.7% (87.3%)
2015 (default)	34,247	29,683	5,701	23,982				
2015 proposed	39127	32119	6240	25879				
2016 proposed	48489	39836	5964	33872				

- 2014 Actual landings is a projection only – the fishing year is only half over.
- PDT estimated catch using trends from NMFS Monitoring website (and second estimate in parentheses is the projected catch from FW25).

1.1.5 Northern Gulf of Maine

The PDT has included an updated section for this region with state water landings and biomass information since Framework 26 is considering changes to the NGOM management program and state water fisheries.

1.1.5.1 Federal waters in NGOM management area

As part of the recent scallop benchmark assessment the biomass within the federal portion of the Gulf of Maine was assessed. Appendix 7 includes the details of the assessment of the resource in this area. In general, the NGOM region has limited fishery-independent data available. There was an offshore survey administered by the Maine Department of Marine Resources in 1974 (Spencer 1974), and in 1983 and 1984 NMFS sampled some areas in this region on their annual survey (Serchuk 1983; Serchuk and Wigley 1984), but no broad-scale surveys were completed between the early 1980s and 2008 when the region was first managed under a TAC. Given the lack of recent fishery independent data, the initial allowable catch was determined using historical federal Gulf of Maine landings (NEFMC 2008). More recently, Maine Department of Marine Resources/University of Maine scallop surveys in 2009 and 2012, along with UMass Dartmouth video scallop surveys that occasionally sample in this area (e.g., Stokesbury et al. 2010) have offered fishery-independent sources of information to aid in generating the TAC.

SARC59 reviewed these surveys and estimated biomass based on the cooperative survey that was conducted by Maine DMR and the University of Maine in 2012. The results suggest that biomass is about 164.19 MT, and increase from 115.40 MT in 2009. Based on these biomass estimates the exploitation rate in weight (landings/stock biomass, assuming harvested scallops greater than 102 mm shell height and a dredge efficiency of 43.6%) during 2012 was 2.1% with a 90% confidence interval from 1.3% to 4.7%.

1.1.5.2 State water fisheries and biomass

Many states do not have sea scallops in state waters; therefore, there are no specific permits or management programs in place. However, some states do have some basic measures in place and a handful have many that are similar to federal regulations. The only states in the North Atlantic that seem to have sea scallops consistently in state waters are Massachusetts (MA) and Maine (ME).

1.1.5.2.1 Massachusetts

In Massachusetts, no person can possess scallops in excess of recreational limits (1 bushel) unless licensed as a commercial fisherman. An individual can harvest scallops commercially by hand if they have a commercial permit endorsed for sea scallop diving permit or with mobile gear if they have a limited access Coastal Access Permit (CAP).

Federal scallopers may be dually permitted (i.e., hold federal scallop permit and a state CAP permit) thereby enabling them to fish mobile gear for scallops in state and federal waters or they may be federal-only (i.e., hold a federal scallop permit but no CAP) thereby limiting their mobile gear fishing for scallops to federal waters. Federal-only scallopers landing in MA must hold some state landing permit (e.g., boat permit). LAGC vessels likely make up the majority of dual permit holders while LA vessels dominate the federal-only permit class in Massachusetts.

The state amended state waters sea scallop dredge measures in the fall of 2011 to constrain daily catches of sea scallops within the state waters fishery and require gear modifications to reduce bycatch. Originally implemented by permit conditions, a suite of state waters sea scallop regulations (322 CMR 4.10 and 6.05) were codified in the summer of 2013. All vessels fishing in state waters under the authority of a CAP are subject to the following regulations:

1. Trip Limit.

* CAP holders may not retain or possess more than 200 lbs. of sea scallop meats or 2,000 lbs. of whole (shell-on) sea scallops per 24-hour day or per trip, whichever is longer;
* In those instances when a vessel has both shucked meats and whole scallops, the weight of the whole scallops will be multiplied by 0.10 to determine its equivalency in meats;
* Exceptions: i) Federally permitted scallop vessels that hold a CAP, may fish in state waters but must adhere to the state trip limit while fishing in state waters. ii) Federal sea scallop permit holders may possess sea scallops in excess of these limits provided the dredge gear is stowed and they are transiting state waters for the purpose of landing their catch.
* Compliance with the whole in-shell sea scallop trip limit will be determined through a volumetric equivalency: one level-filled standard fish tote is the equivalent to 100 pounds of whole in-shell sea scallops. For mixed landings of in-shell and shucked sea scallops, the weight of whole in-shell sea scallops is multiplied by 0.10 to determine its equivalent shucked sea scallop weight. Federal sea scallop permit holders may possess sea scallops in excess of these limits provided the dredge gear is stowed and they are transiting state waters for the purpose of landing their catch.
* Lastly, it is now unlawful by state regulation (in addition to federal regulation) for commercial fishermen who have only a state permit to fish in federal waters. Moreover, the discard of live sea scallops is prohibited in the harbors and estuaries known as the inshore restricted waters and defined at 322 CMR 4.02(2).

2. Gear Modifications to reduce by catch.

* Effective January 1, 2012, it shall be unlawful to fish with or have aboard a sea scallop dredge with rings less than 4 inches in inside diameter;
* Also effective on January 1, 2012, it shall be unlawful to fish with or have aboard a sea scallop dredge with twine top that has square or diamond mesh openings smaller than 10 inches; no additional material is allowed to cover the twine top to restrict the mesh openings to less than 10 inches in diameter.

It remains unlawful to catch scallops in MA with a shell less than 3.5-inches with a 10% tolerance for undersized scallops and no scallops can be landed in-shell unless the area fished is approved by the National Shellfish Sanitation Program.

1.1.5.2.1.1 Massachusetts state fishery and survey information

In summary, there are about 160 state water only permits in MA, and about 60 permits that have dual permits (state and federal permit). The vast majority, about 90%, of state water harvest is from vessels with state water only permit, no federal permit.

Total Number of Permits Issued by Type

PERMIT TYPE	2010	2011	2012	2013
SW Only	167	165	164	162
SW & LA	3	3	3	3
SW & IFQ (A)	29	29	25	25
SW & NGOM (B)	12	9	11	10
SW & Incidental (C)	19	20	20	16
Total Active	230	226	223	216
Dual Permit Total	63	61	59	54

Source: MADMF and NMFS Permitting

Total State Waters Sea Scallop Harvest by Permit Category - Calendar Year, Live Lbs

PERMIT TYPE	2010	2011	2012	2013
SW Only	1,365,073	2,021,463	1,855,161	1,681,241
SW & LA	0	0	0	0
SW & IFQ (A)	94,533	252638	107,907	154171
SW & NGOM (B)	0	0	4206	18284
SW & Incidental (C)	2,916	0	133	0
Total Catch	1,462,522	2,274,101	1,967,407	1,853,696
Dual Permit Total	97,449	252,638	112,246	172,455
%SW Harvest by Dual	6.7%	11.1%	5.7%	9.3%

Source: MA Trip Level Reports and NMFS VTR's

Total State Waters Sea Scallop Harvest by Area - Calendar Year, Live Lbs

Area	2010	2011	2012	2013
1	12,537	52,584	2,207	57,752
2	0	825	5,331	72,968
3	25,967	***	17,580	***
4	***	9,794	***	***
5	48,202	65,567	110,884	95,480
6	89,973	93,661	50,212	77,918
7	335,380	409,327	222,926	320,603
8	791,576	1,212,361	1,312,009	1,023,271

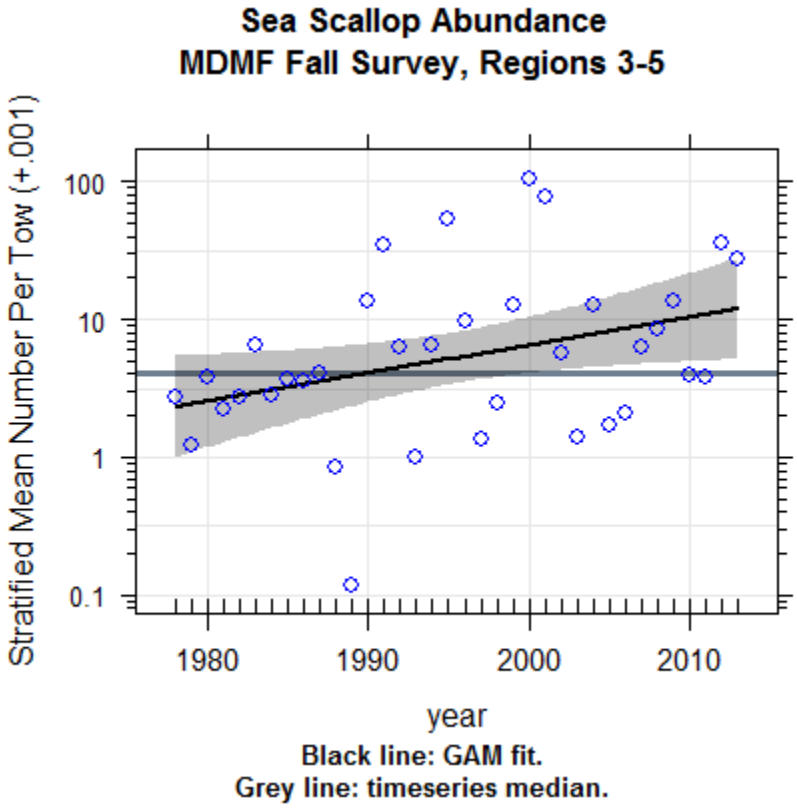
9	149,156	412,655	230,693	166,764
10	***	9,417	***	***
11	0	0	0	0
12	0	0	***	***
13	0	6,673	0	***
14	128	***	0	***
Total	**1,462,521**	**2,274,101**	**1,967,408**	**1,853,697**

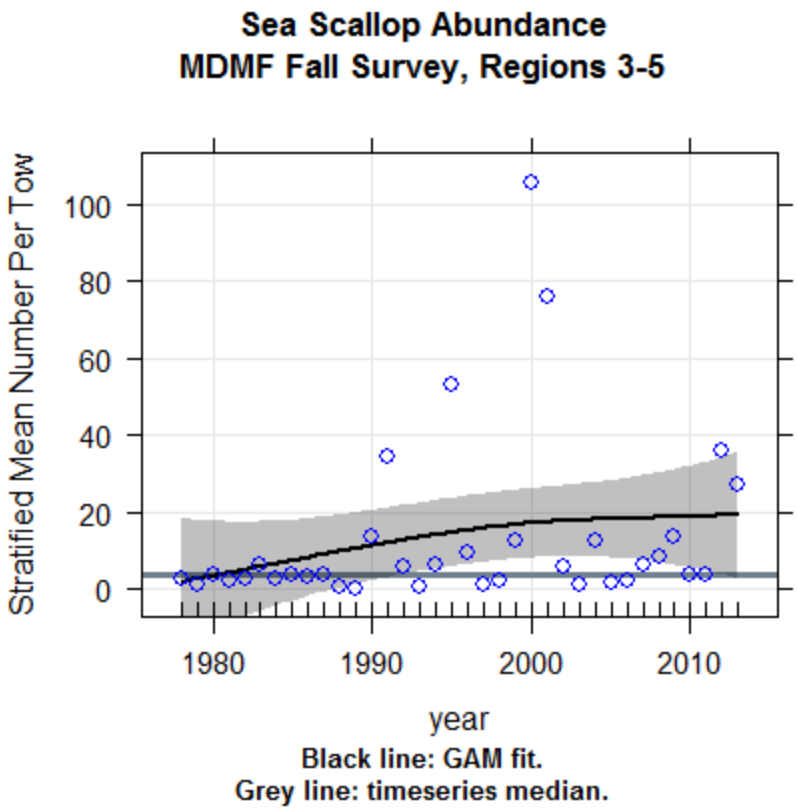
Source: MA Trip Level Reports & NMFS VTR's

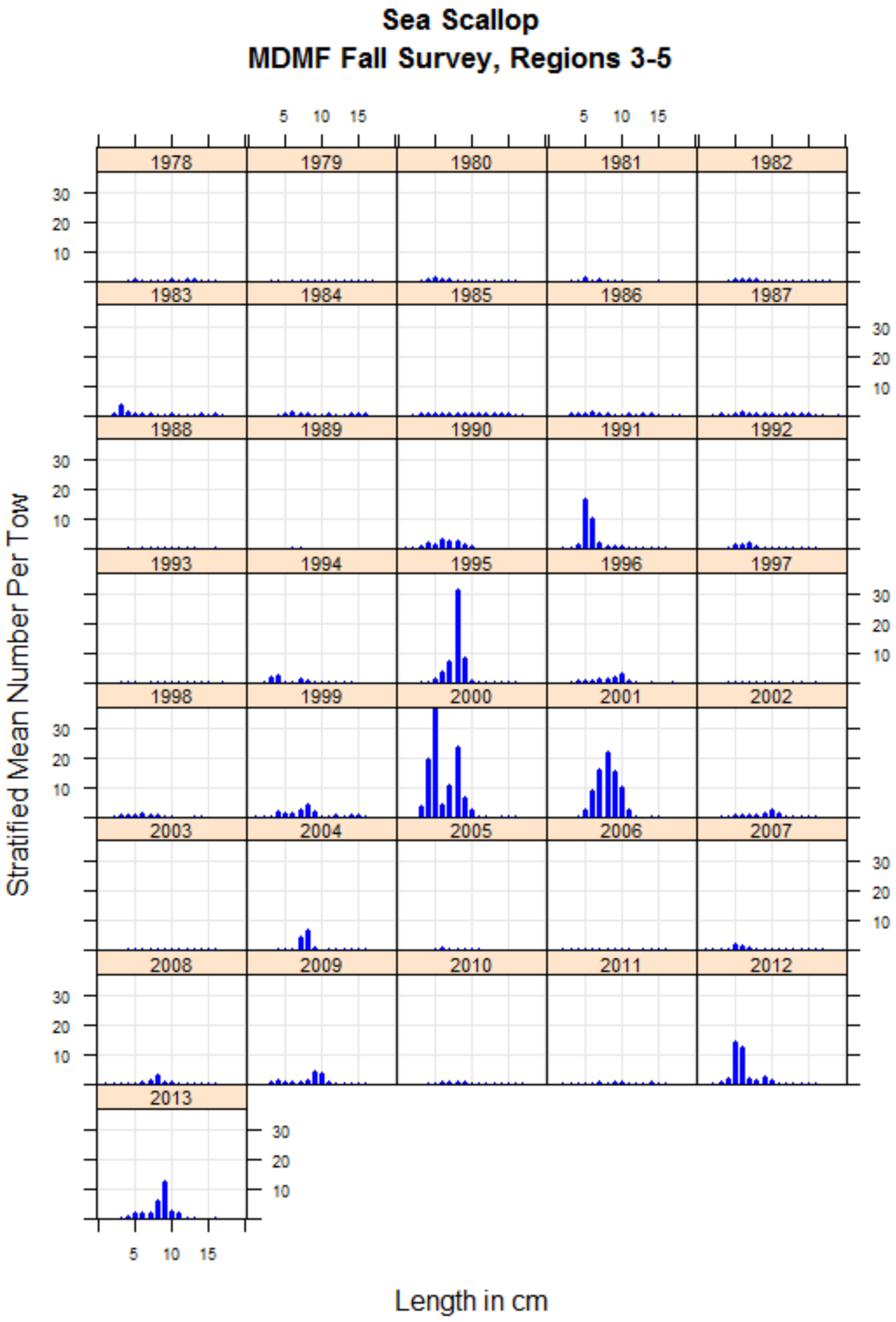
*** = Confidential

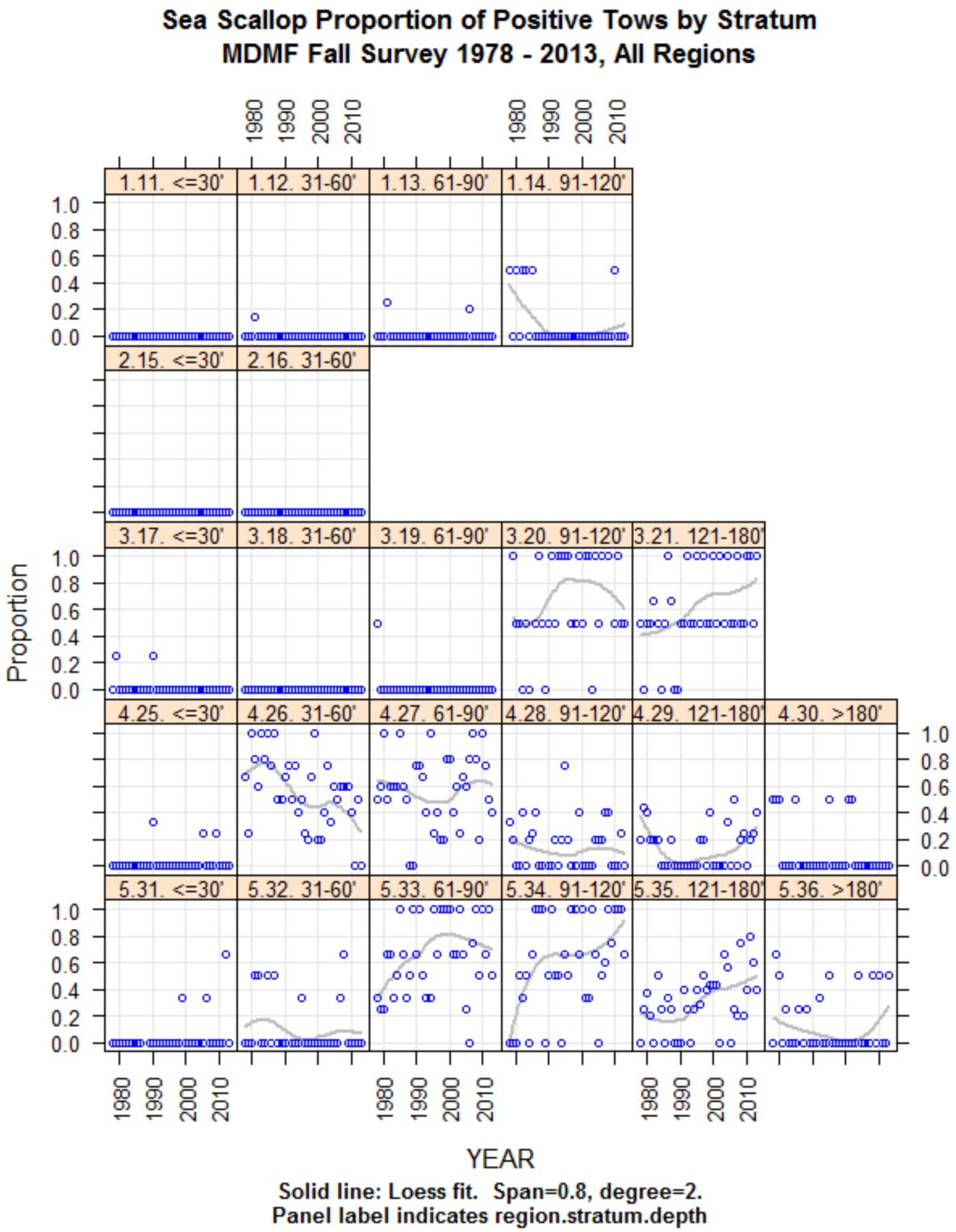
See: http://www.mass.gov/eea/docs/dfg/dmf/commercialfishing/statarea.pdf for Map of Areas

The state of MA does not have a scallop survey, but the spring and fall state bottom trawl survey does catch scallops from time to time in certain places. It is not sufficient to estimate biomass in state waters, but does provide some spatial abundance information. Larger catches observed in 2000 and 2008 in the spring survey north of Cape Anne, in Cape Cod Bay, and a few places east of Cape Cod. The fall survey picked up scallops in 1991, 1995, 2000, 2001, and 2012. These data will be included in the SAFE Report for FW26.



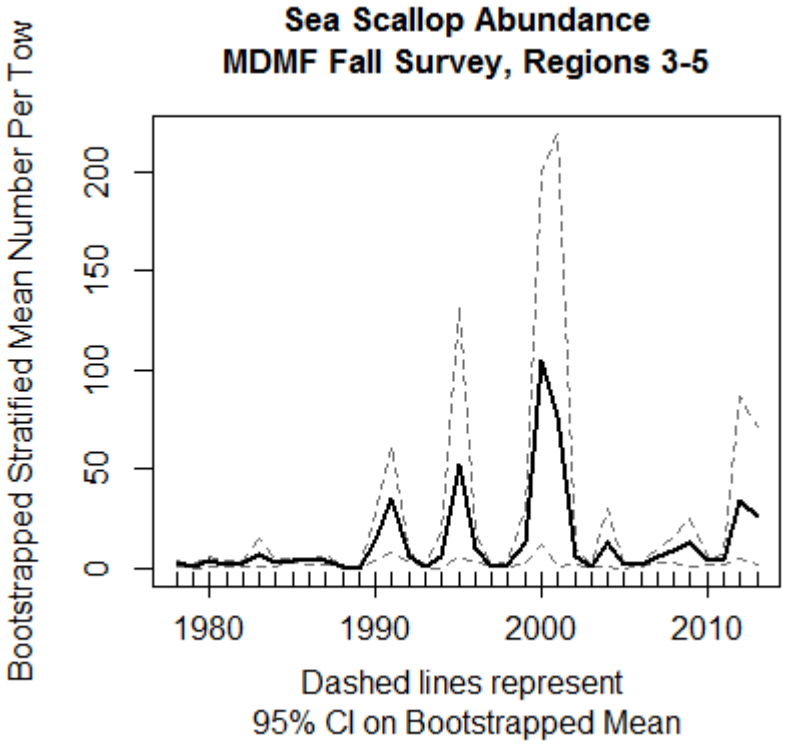

Sea Scallop Abundance
MDMF Fall Survey, Regions 3-5
Stratified Mean Number Per Tow
0
20
40
60
80
100
1980
1990
2000
2010
year
Black line: GAM fit.
Grey line: timeseries median.

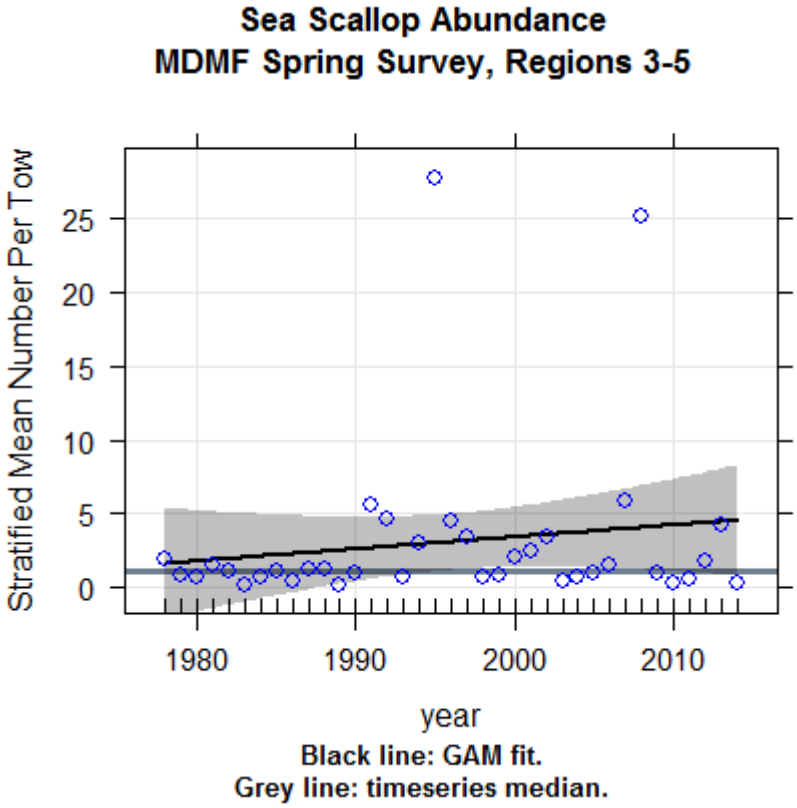

Sea Scallop
MDMF Fall Survey, Regions 3-5
Stratified Mean Number Per Tow
Length in cm
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013

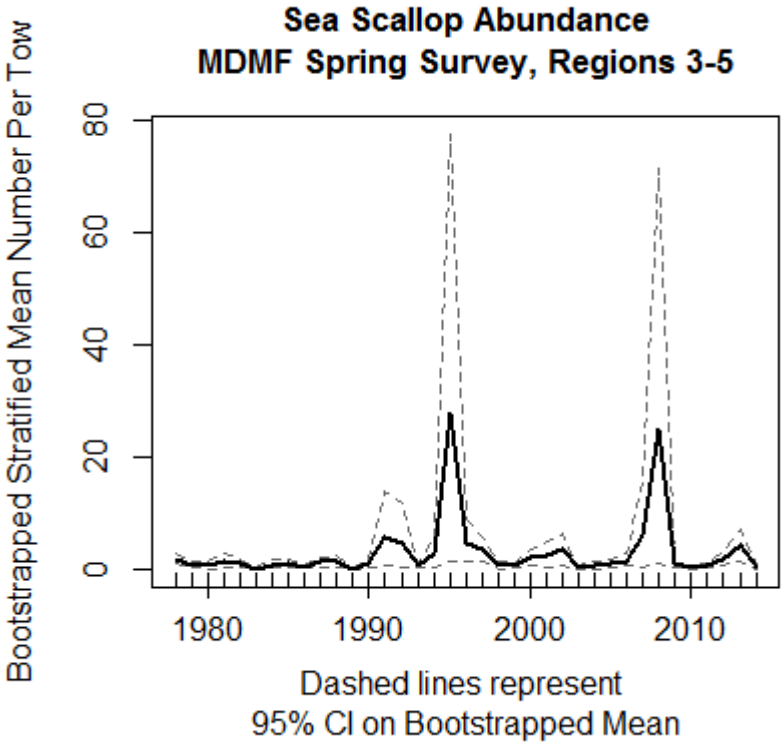

Sea Scallop Proportion of Positive Tows by Stratum
MDMF Fall Survey 1978 - 2013, All Regions
1.11. <=30'
1.12. 31-60'
1.13. 61-90'
1.14. 91-120'
2.15. <=30'
2.16. 31-60'
3.17. <=30'
3.18. 31-60'
3.19. 61-90'
3.20. 91-120'
3.21. 121-180'
4.25. <=30'
4.26. 31-60'
4.27. 61-90'
4.28. 91-120'
4.29. 121-180'
4.30. >180'
5.31. <=30'
5.32. 31-60'
5.33. 61-90'
5.34. 91-120'
5.35. 121-180'
5.36. >180'
Proportion
YEAR
Solid line: Loess fit. Span=0.8, degree=2.
Panel label indicates region.stratum.depth

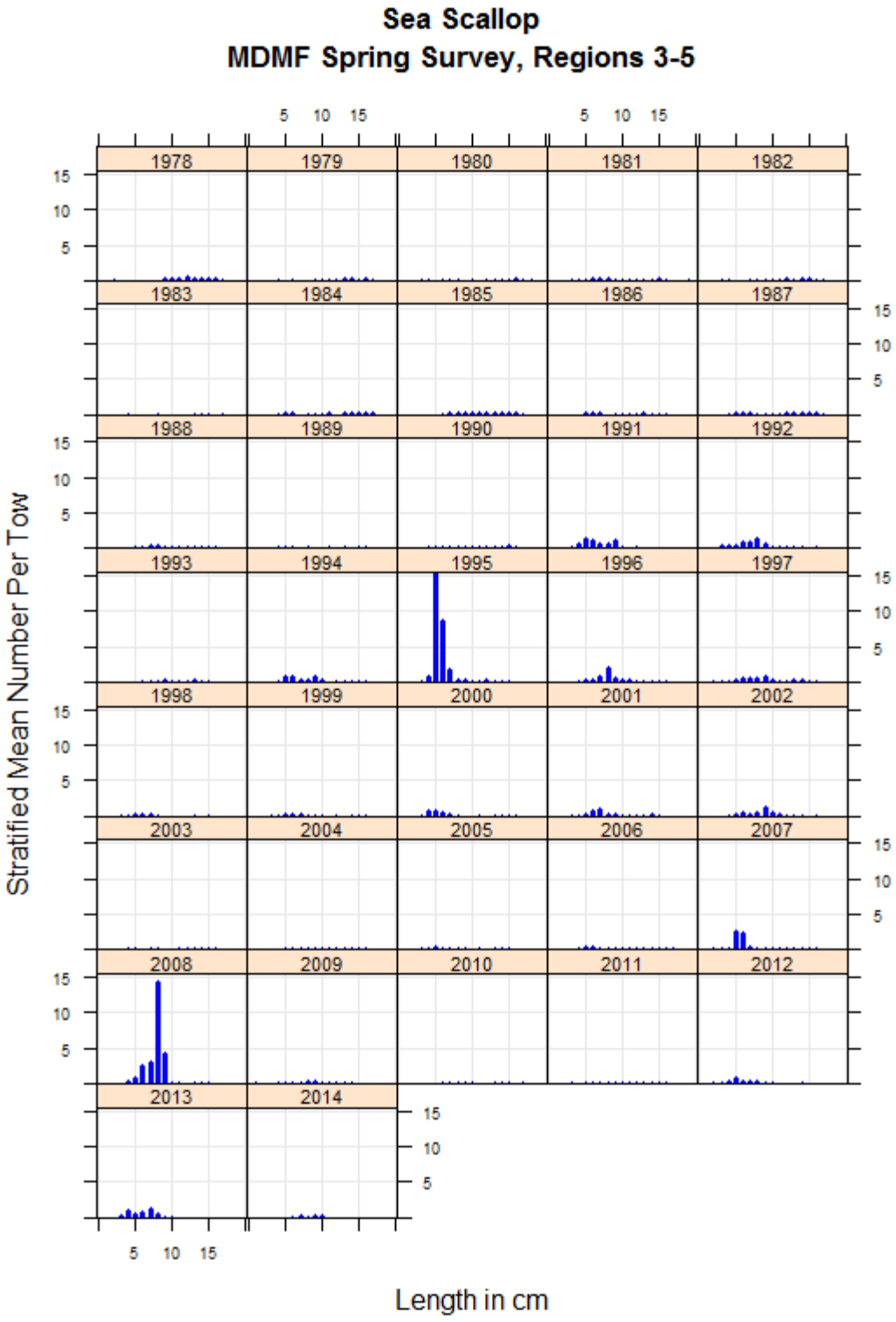
MDMF Fall Survey, Regions 3-5

Year	Wt. per tow (kg)	Std.Err.Wt.	Number per tow	Std.Err.N
1978	0.54	0.37	2.70	1.10
1979	0.30	0.15	1.23	0.55
1980	0.33	0.06	3.75	1.69
1981	0.07	0.03	2.26	1.27
1982	0.29	0.08	2.72	1.02
1983	0.36	0.07	6.54	4.48
1984	0.39	0.17	2.78	1.08
1985	0.61	0.11	3.69	0.72
1986	0.31	0.08	3.56	1.12
1987	0.52	0.22	4.05	1.59
1988	0.14	0.08	0.85	0.42
1989	0.00	0.00	0.12	0.05
1990	0.48	0.27	13.73	6.72
1991	1.13	0.47	34.60	22.11
1992	0.39	0.13	6.18	1.78
1993	0.16	0.07	0.99	0.52
1994	0.21	0.16	6.53	5.91
1995	3.40	2.75	53.37	42.05
1996	0.78	0.51	9.60	4.97
1997	0.19	0.05	1.34	0.33
1998	0.09	0.03	2.49	1.14
1999	0.79	0.35	12.59	8.60
2000	3.51	2.59	105.79	78.74
2001	4.83	4.64	75.88	72.75
2002	0.64	0.26	5.67	2.57
2003	0.29	0.11	1.38	0.45
2004	0.74	0.46	12.88	9.95
2005	0.09	0.07	1.70	0.83
2006	0.21	0.06	2.06	0.58
2007	0.30	0.10	6.27	2.20
2008	0.71	0.23	8.56	3.88
2009	1.10	0.86	13.59	11.80
2010	0.54	0.12	3.99	1.15
2011	0.62	0.19	3.85	1.59
2012	1.15	0.60	35.91	26.43
2013	1.95	1.82	27.02	22.85


Sea Scallop Abundance
MDMF Fall Survey, Regions 3-5
Bootstrapped Stratified Mean Number Per Tow
0
50
100
150
200
1980
1990
2000
2010
Dashed lines represent
95% CI on Bootstrapped Mean


Sea Scallop Abundance
MDMF Spring Survey, Regions 3-5
Stratified Mean Number Per Tow
0
5
10
15
20
25
1980
1990
2000
2010
year
Black line: GAM fit.
Grey line: timeseries median.


Sea Scallop Abundance
MDMF Spring Survey, Regions 3-5
Bootstrapped Stratified Mean Number Per Tow
0
20
40
60
80
1980
1990
2000
2010
Dashed lines represent
95% CI on Bootstrapped Mean


Sea Scallop
MDMF Spring Survey, Regions 3-5
1978
1979
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1983
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1987
1988
1989
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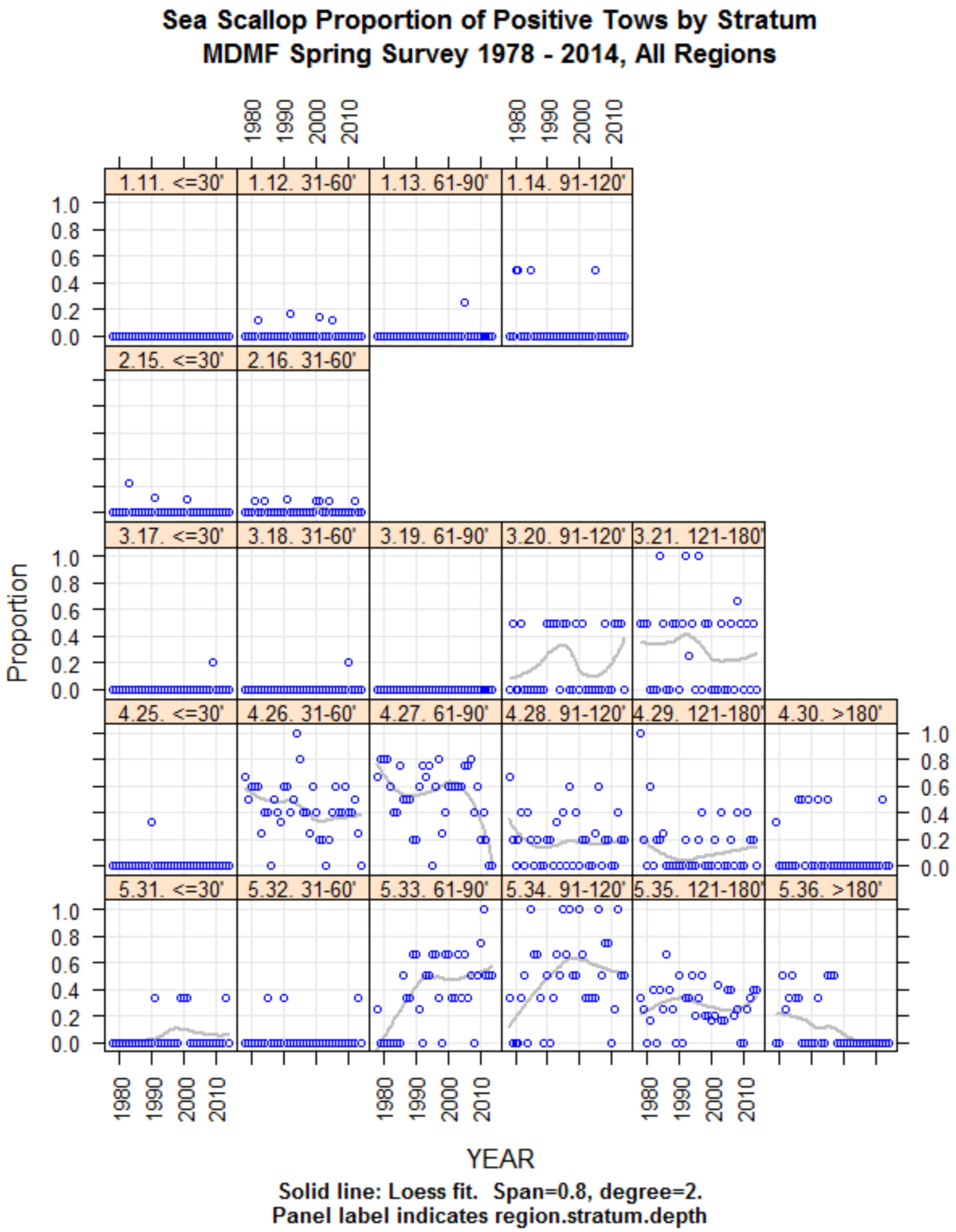
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Stratified Mean Number Per Tow
Length in cm


Sea Scallop Proportion of Positive Tows by Stratum
MDMF Spring Survey 1978 - 2014, All Regions
1.11. <=30'
1.12. 31-60'
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3.18. 31-60'
3.19. 61-90'
3.20. 91-120'
3.21. 121-180'
4.25. <=30'
4.26. 31-60'
4.27. 61-90'
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4.29. 121-180'
4.30. >180'
5.31. <=30'
5.32. 31-60'
5.33. 61-90'
5.34. 91-120'
5.35. 121-180'
5.36. >180'
Proportion
YEAR
Solid line: Loess fit. Span=0.8, degree=2.
Panel label indicates region.stratum.depth

MDMF Spring Survey, Regions 3-5

Year	Wt. per tow (kg)	Std.Err.Wt.	Number per tow	Std.Err.N
1978	0.59	0.18	1.95	0.60
1979	0.27	0.12	0.81	0.35
1980	0.31	0.18	0.72	0.34
1981	0.33	0.10	1.59	0.70
1982	0.36	0.19	1.08	0.46
1983	0.05	0.03	0.15	0.06
1984	0.24	0.11	0.79	0.45
1985	0.35	0.12	1.15	0.48
1986	0.10	0.05	0.50	0.18
1987	0.41	0.19	1.30	0.51
1988	0.19	0.11	1.29	0.64
1989	0.05	0.03	0.16	0.07
1990	0.31	0.20	1.02	0.53
1991	0.24	0.21	5.59	4.16
1992	0.30	0.19	4.70	3.66
1993	0.17	0.06	0.75	0.26
1994	0.22	0.12	3.01	1.63
1995	0.70	0.44	27.75	25.03
1996	0.42	0.15	4.50	2.35
1997	0.43	0.13	3.43	1.25
1998	0.03	0.02	0.69	0.43
1999	0.07	0.03	0.81	0.32
2000	0.09	0.02	2.14	0.92
2001	0.20	0.06	2.50	1.36
2002	0.27	0.16	3.49	1.91
2003	0.05	0.02	0.49	0.19
2004	0.18	0.10	0.69	0.36
2005	0.10	0.04	1.01	0.45
2006	0.22	0.08	1.58	0.66
2007	0.24	0.15	5.81	4.76
2008	1.41	1.27	25.17	22.89
2009	0.08	0.03	0.97	0.40
2010	0.06	0.04	0.30	0.13
2011	0.15	0.06	0.60	0.20
2012	0.04	0.02	1.84	0.80
2013	0.11	0.05	4.24	1.67
2014	0.02	0.01	0.33	0.14

1.1.5.2.2 Maine

The state of Maine has a very developed state water management program that has evolved over time and has changed dramatically in recent years following implementation of the federal NGOM program. Overall the current state plan is very consistent with the federal management program. The fishery became limited entry in 2008 and since that time there has been mandatory dealer and vessel reporting requirements. There is a 70 day fishing season for state waters, except Cobscook Bay which is a 50 day season, between December and March with specific weekdays that are prohibited during those months and prohibition on fishing at night as well.

There are a handful of gear requirements including but not limited to: ring size restriction of 4-inches, twine top minimum of 5.5 inches, limits on number of rows in the dredge based on dredge width, and no chafing gear or cookies allowed. Areas such as Cobscook Bay and Gouldsboro Bay have maximum dredge widths (5.5 ft. and 4.5 ft., respectively). In-shell scallops must be 4-inches, there is a possession limit of 15 gallons of meats (~135 pounds) per day per vessel (10 gallons or ~90 pounds in Cobscook Bay), and non-commercial licenses may not possess more than 1 gallon of scallop meats per day. Finally, license holder must be on board when vessel is scallop fishing.

In 2012, the state implemented 3 scallop management zones, allowing for different rebuilding strategies to be employed in each (Figure 32). For Zone 1, the western part of the state, the previously closed areas (Figure 33) were retained as Limited Access Areas with fishing restricted to 1 day per week and well as targeted closures aimed at protecting broodstock scallops. In Zone 2, the eastern part of the state, a 10 year rotational management plan is currently being phased in, where 2/3rd of the bottom will be closed for rebuilding and 1/3 open. In Zone 3, the Cobscook Bay area, the previously closed area was retained as a Limited Access Area with 1 day per week harvest and a reduced season of 50 days and limit of 10 gallons of meats has been implemented.

The Limited Access Areas are governed by a trigger mechanism whereby when in-season data indicate that 30-40% of the harvestable biomass has been removal, the area will close. Also, the Limited Access Areas are currently being retained in Zone 2, but will phase out when the full rotational management plan in implemented. Finally, seasonal targeted closures are implemented each season to protect high concentrations of sublegal scallops as well as broodstock scallops in Zone 1.
For more information about the 2013-14 Maine state waters fishery see:
http://www.maine.gov/dmr/rm/scallops/management/2013-14/index.htm

Figure 16 – Three scallop management zones in Maine state waters

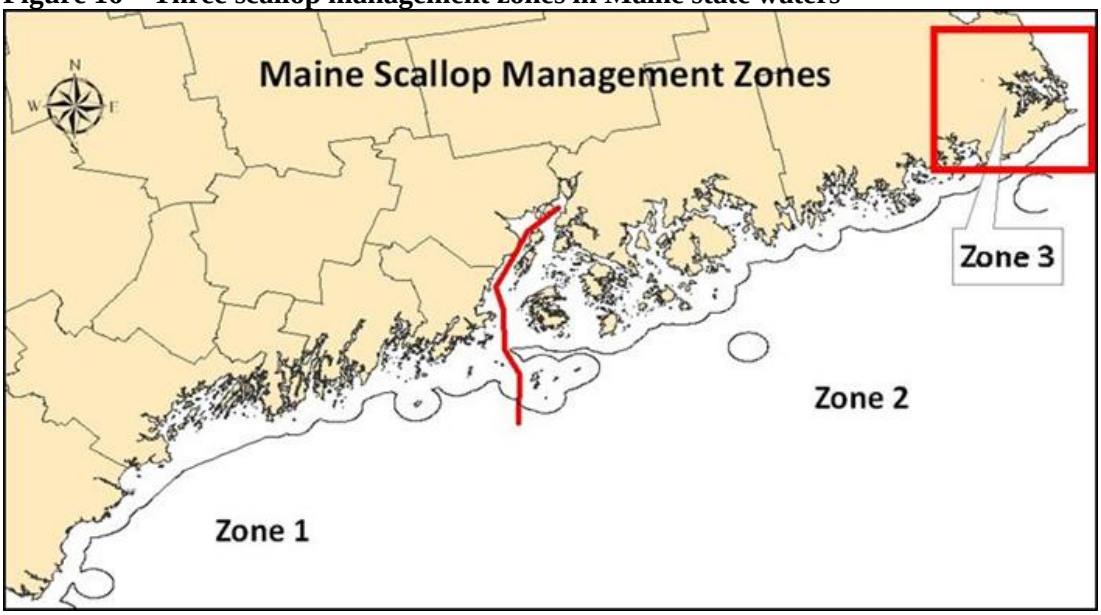
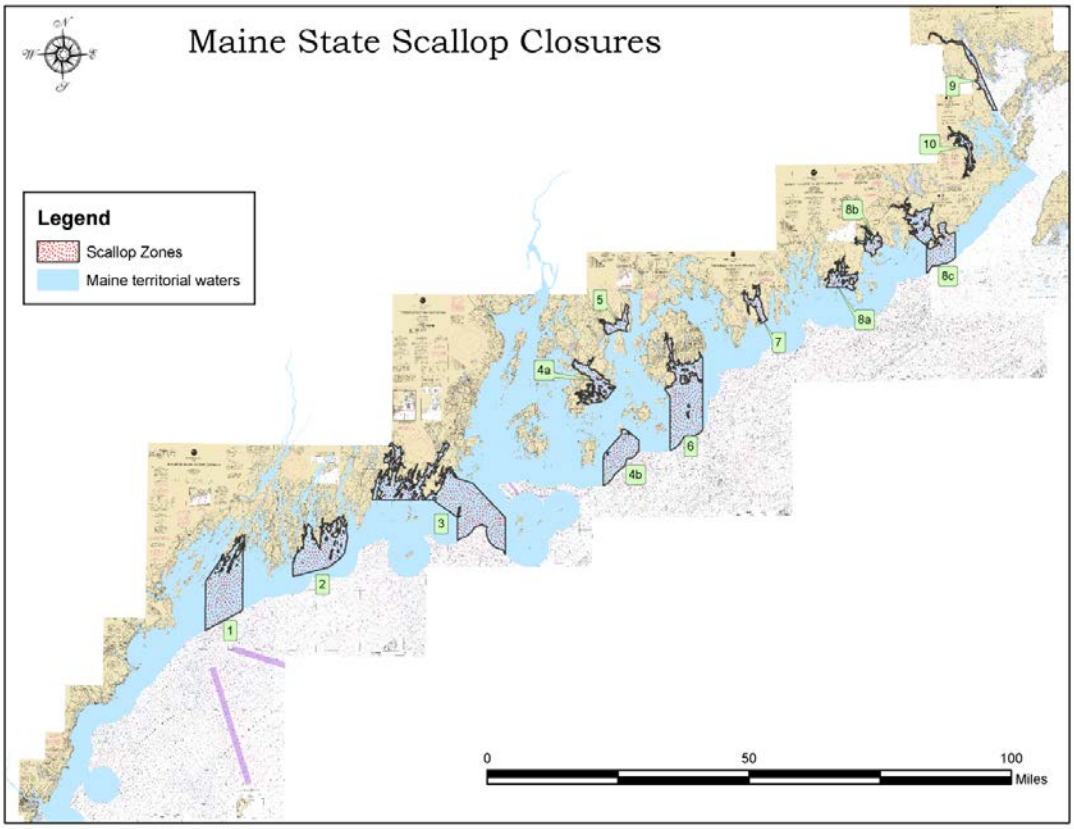


Figure 17 – Scallop conservation areas in Maine state waters



1.1.5.2.2.1 Maine state fishery and survey information

Scallop effort has increased in Maine state waters in recent years. There has been a relatively large amount of reactivated effort in the state fishery primarily due to: 1) the newly rebuilt closed areas reopening last year; 2) the high price for scallops; and 3) the decline in the multispecies fishery and the northern shrimp moratorium. All of these factors have likely lead to the increase in scallop fishing effort within state waters. The new participants and reopening of the newly rebuilt closed areas resulted in a 9 year landings high in 2012 of 289,827 pounds, which is an eight fold increase from the all-time low in 2005 (Figure 34) with the December 2012 landings being higher than the entire 2009 landings (Figure 35). However, those landings were caught by approximately 150 additional participants compared to previous years (Figure 36).

ME DMR – do we want to update these figures with 2013 data?

Figure 18 - Maine scallop landings from 1950 to 2012. Landings are reported in meat pounds.

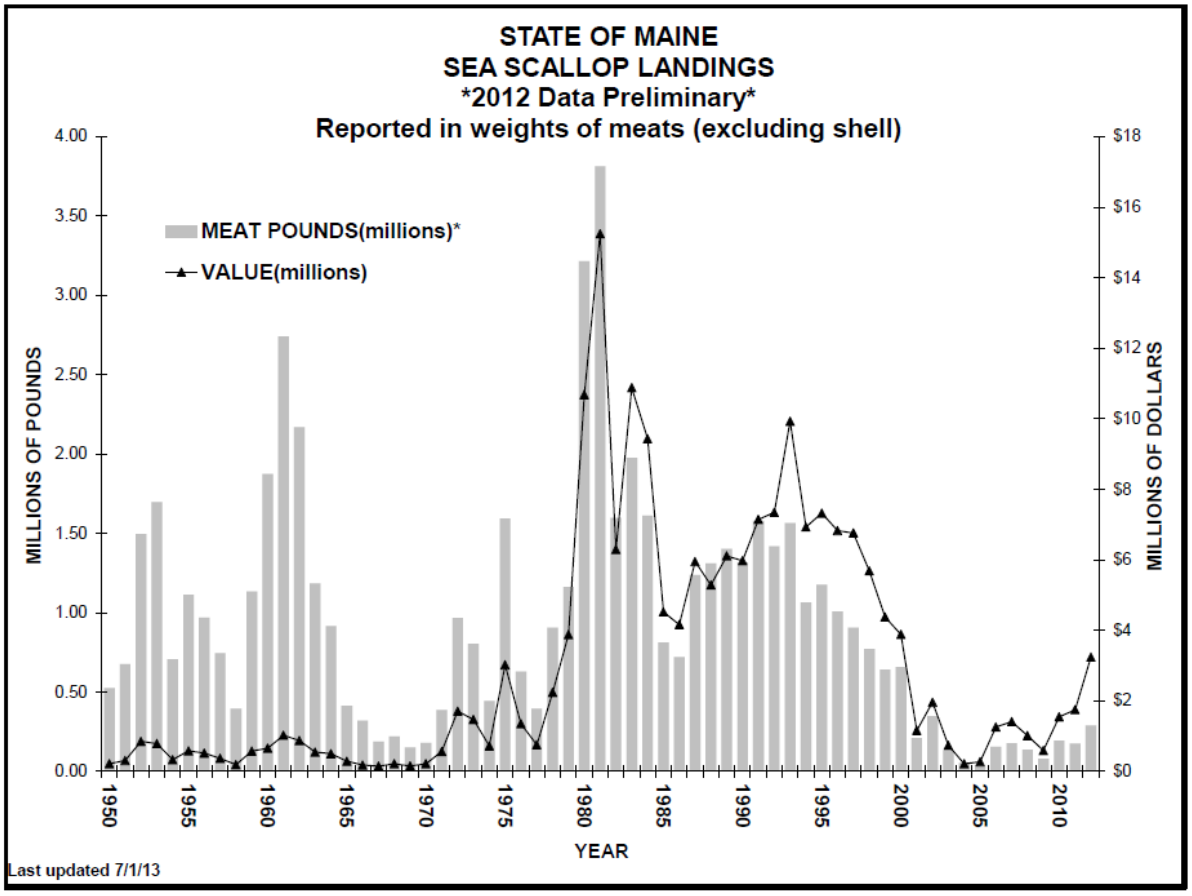


Figure 19 – Monthly scallop landings (2008-2012) (in meat pounds)

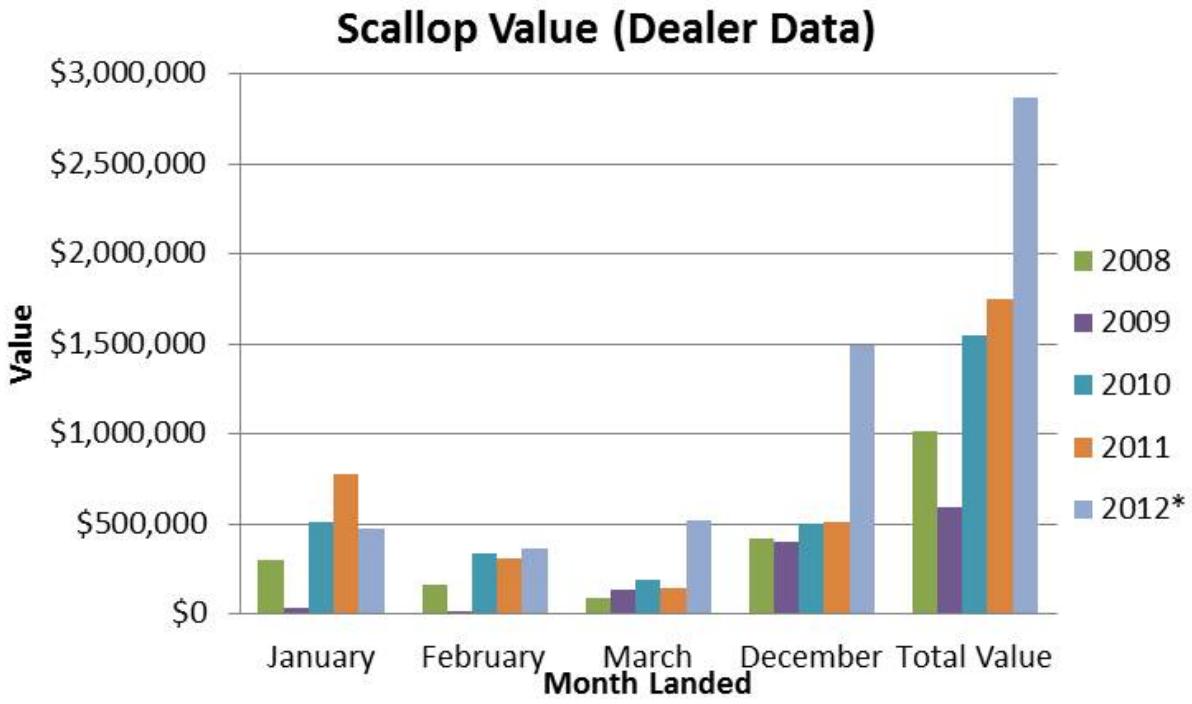


Figure 20 – Number of active ME state water license holders in each season for the past five years

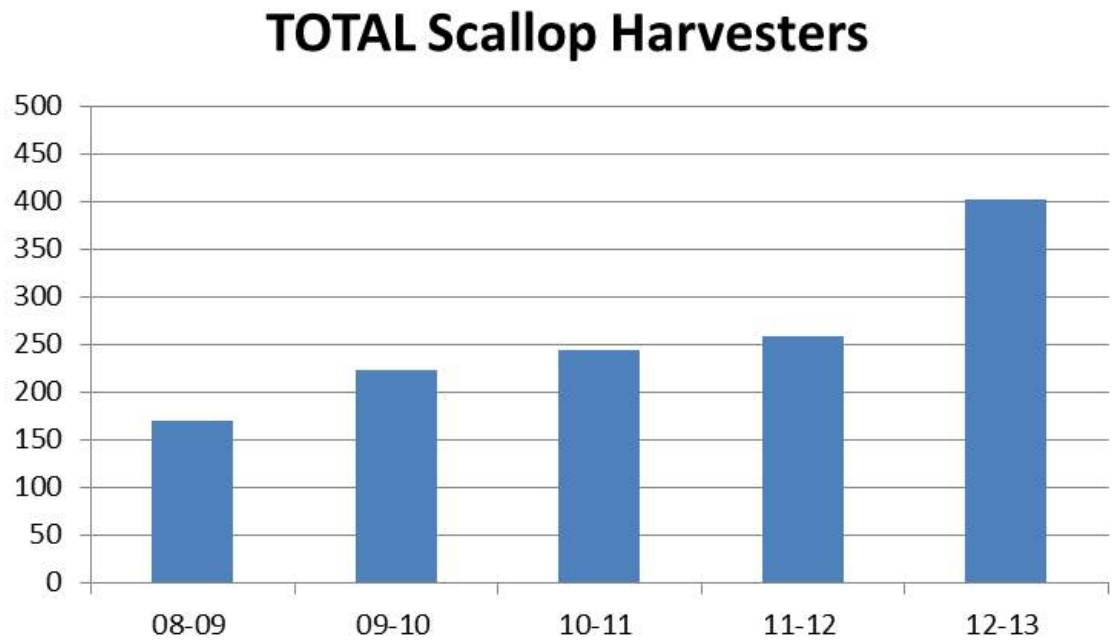


Table 6 – Summary of scallop landings from state waters for harvesters in Maine by permit held

2011-2013 Harvester Reported Scallop Landings and Value*

Maine	State water only			NGOM			IFQ		
	Lbs.	Value	# Harvesters	Pounds	Value	# Harvesters	Pounds	Value	# Harvesters
2011	256,036	$2,555,239	305	4,073	$40,649	5			
2012	377,059	$4,200,437	386	12,886	$143,550	7	1,601	$17,835	3
2013**	489,481	$5,991,247	385	34,413	$421,215	12	1,831	$22,411	3

*Data pulled from harvester reported data (State and Federal). Value was calculated using average price paid each year from dealer reported data.
**2013 data is preliminary and subject to change without notice.
Data pulled 8/7/2014
All pounds are reported in meat weights.

Email about potential impacts:

On the state side, what complicates things is that the fishery is NOT an owner-operator fishery; the permit holder just needs to be on board during fishing operations. The license holder does have to declare a vessel at the time of the license being issued, but can send the license back in at any time to change that vessel declaration. So, all vessels with a federal permit have the possibility of being impacted.

Results from Recent Maine state water sea scallop surveys

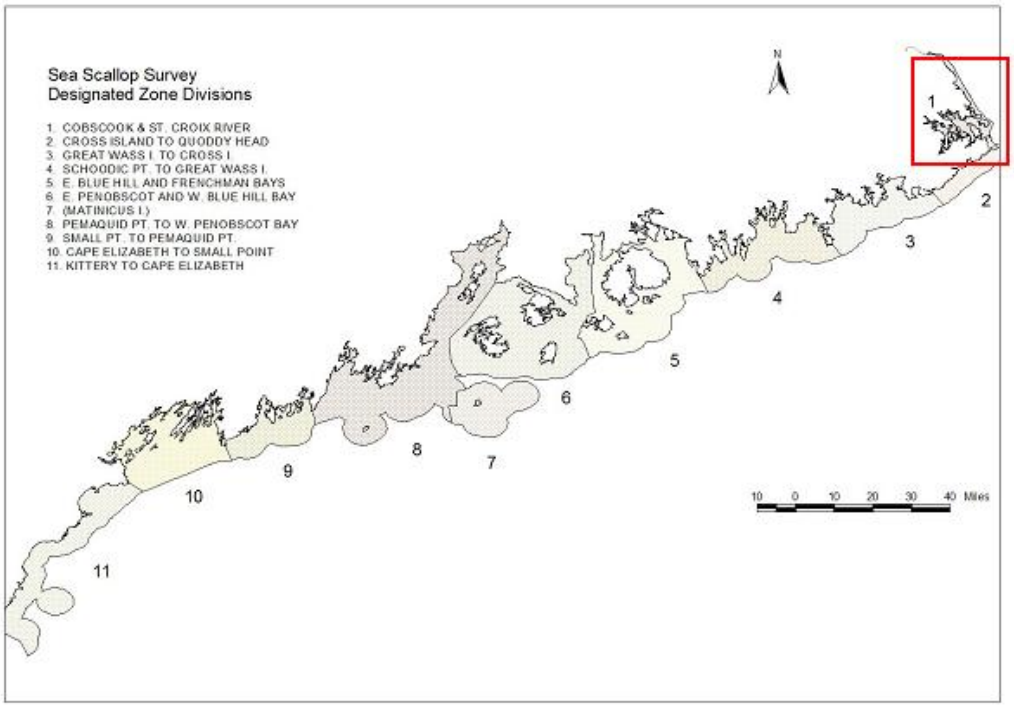
An annual dredge-based fishery-independent survey by the Maine Department of Marine Resources (DMR) of the scallop resource within Maine state waters has been conducted since 2002 (with the exception of 2004). This survey provides information on size distribution, the shell height-meat weight relationship, abundance, spatial distribution and harvestable biomass of scallops from nearshore waters. For the first two years (2002, 2003) the entire coast was surveyed. Subsequent to this one of three (1.) New Hampshire border to western Penobscot Bay, 2.) eastern Penobscot Bay to Quoddy Head, and 3.) Cobscook Bay/St. Croix River) major sections of the coast has been surveyed each year on a rotating basis with a more intensive survey in each area than in 2002-03. A spring survey of management zone 2 (eastern Maine) was begun in 2013. The change to the spring allowed for time to enact management actions for the upcoming season based on survey results. The following is a chronology of survey coverage by year:

Year	Area surveyed
2002	Coastwide, including Cobscook Bay
2003	Coastwide, including Cobscook Bay
2004	no survey
2005	New Hampshire border to western Penobscot Bay
2006	eastern Penobscot Bay to St. Croix River, including Cobscook Bay
2007	Cobscook Bay
2008	Matinicus Is. to W. Quoddy Head
2009	New Hampshire border to western Penobscot Bay, and Cobscook Bay and St. Croix River, Mt. Desert Is. and Machias Seal Is.
2010	Cobscook Bay and St. Croix River
2011	Matinicus Is. to W. Quoddy Head, and closed portions of western Maine coast
2012	Cobscook Bay and St. Croix River, Mt. Desert Is. and Machias Seal Is.
2013	eastern Penobscot Bay to Cutler shore – open portions and limited access areas (spring); Cobscook Bay/St. Croix River (fall)
2014	upper Penobscot Bay to W. Quoddy Head – open portions (spring)

- **Cobscook Bay**

Cobscook Bay (Fig. 1) has the most productive scallop fishery within Maine waters and is thus sampled with the most frequency and with the highest intensity of the survey zones. A direct assessment of scallop abundance for Cobscook Bay is made using a systematic grid design. There are six (6) survey subareas within Cobscook Bay (South Bay, Johnson Bay, Whiting Bay/Dennys Bay, Pennamaquan River, East Bay, Moose Is.).

Figure 21 - Survey strata - ME DMR scallop survey (with Cobscook Bay area highlighted)



In 2013 Cobscook Bay had the second highest amount of harvestable ($\geq$ 4 in. shell height) meat biomass (452,200 $\pm$ 27,200 lbs.) observed since the survey began in 2002 (Fig. 2). Meat weight in relation to shell height was slightly greater than the previous survey (2012) of Cobscook Bay and the highest since 2002-03.

Harvestable biomass in the Whiting Bay/Dennys Bay limited access area (LAA) decreased 13% between 2012 and 2013 but was still the second highest of the time series (Fig. 3). Whiting Bay/Dennys Bay had the highest density (0.331 per m^2) of harvestable scallops in Cobscook Bay in 2013.

South Bay had the largest proportion (53%) of harvestable biomass in Cobscook Bay in 2013. Harvestable density decreased in South Bay in 2013 but was still the second highest of the time series. Highest densities of both seed (0.101 per m^2) and sublegals (0.333 per m^2) were in Johnson Bay.

Figure 22 - Biomass (meat weight, with standard error) of harvestable (legal-size) scallops in Cobscook Bay, 2003-13

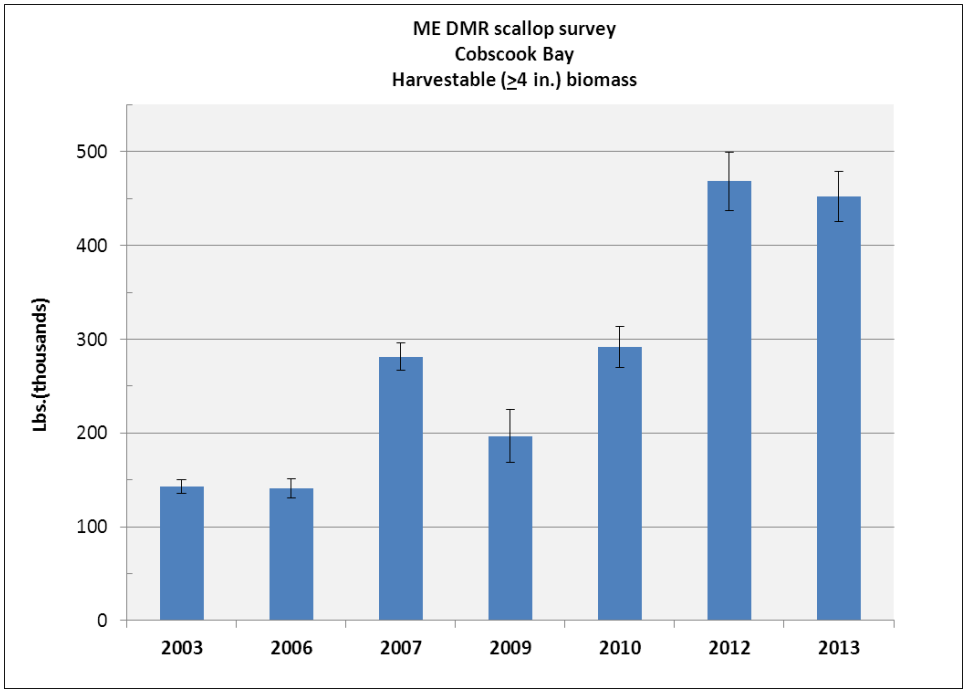
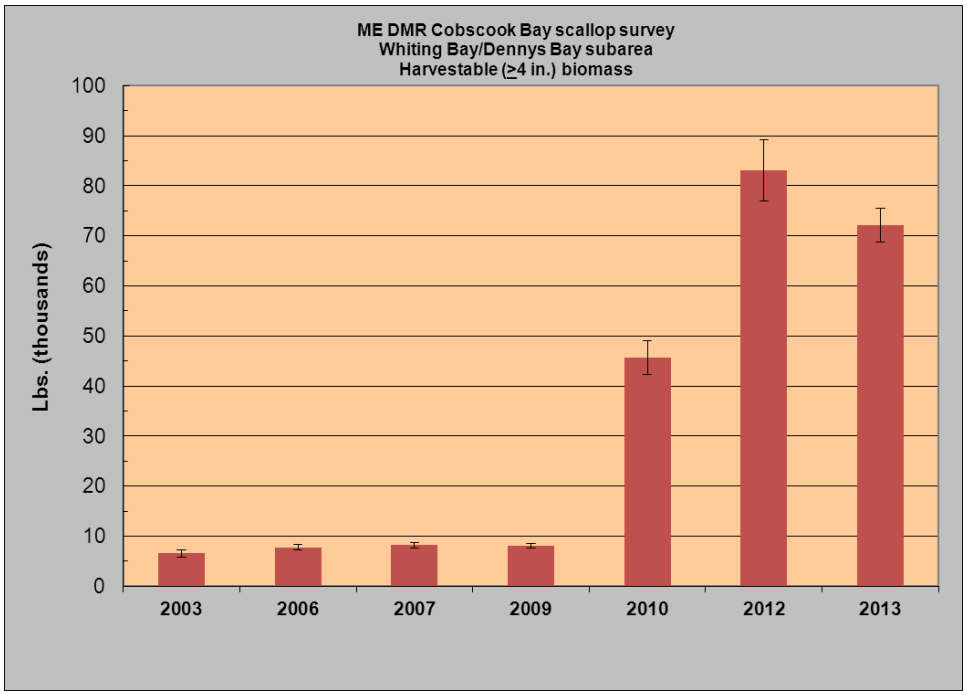


Figure 23 - Biomass (meat weight, with standard error) of harvestable (legal-size) scallops in Whiting Bay/Dennys Bay, 2003-13



- **Eastern Maine**

Seven (7) areas along the Maine coast were closed by DMR to scallop fishing in 2009 (Fig. 4). These closures were re-opened in 2012-13 as LAAs and were the focus of the spring 2013 survey. The policy of DMR since 2012 has been to ensure that not more than 30-40% of the harvestable biomass will be removed from the LAAs during the fishing season.

Machias Bay LAA realized an increase in harvestable scallop biomass of 33% between fall 2011 and fall 2013 (projected) (Fig. 5). Density of harvestable scallops within the Machias Bay LAA was over 2X higher than the adjacent open area.

Chandler Bay LAA harvestable scallop abundance declined 58% since 2011. Moosabec Reach LAA realized an over 2X increase in harvestable abundance since 2011. Seed were also observed in this area in 2013.

Harvestable biomass within Gouldsboro Bay declined over 40% from the 2011 estimate and over 60% from the 2012 estimate.

Only 37 scallops were caught in 20 tows in Mt. Desert LAA. E. Penobscot Bay LAA harvestable scallop abundance declined 76% since 2011.

Blue Hill LAA had a 96% decline in harvestable density between fall 2011 and fall 2013 (projected) and appeared to suffer a significant loss in biomass prior to opening to fishing in December 2012.

Figure 24 - Maine scallop limited access areas (LAAs) surveyed in spring 2013

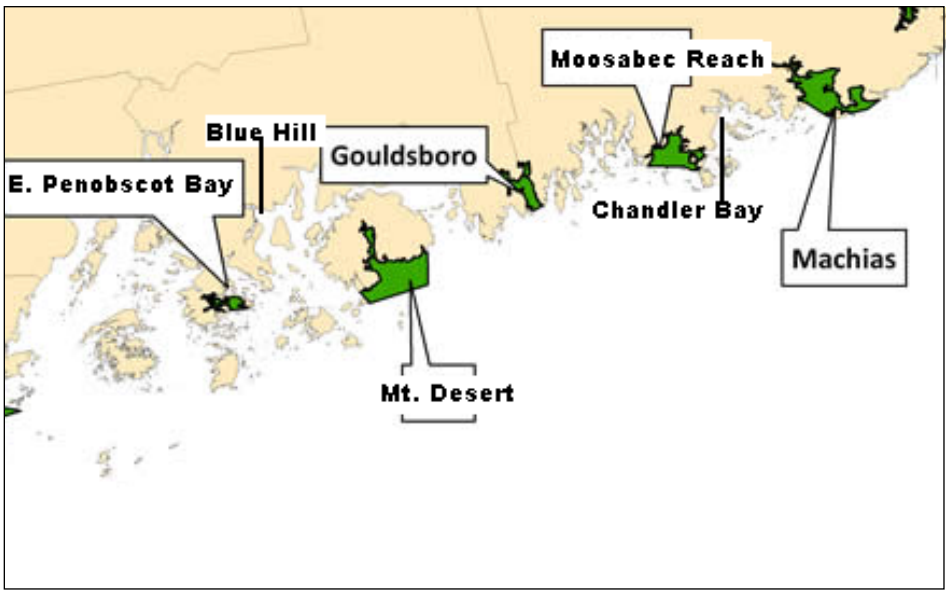


Figure 25 - Estimated mean harvestable scallop biomass (meat lbs.), Machias Bay LAA, 2011-13

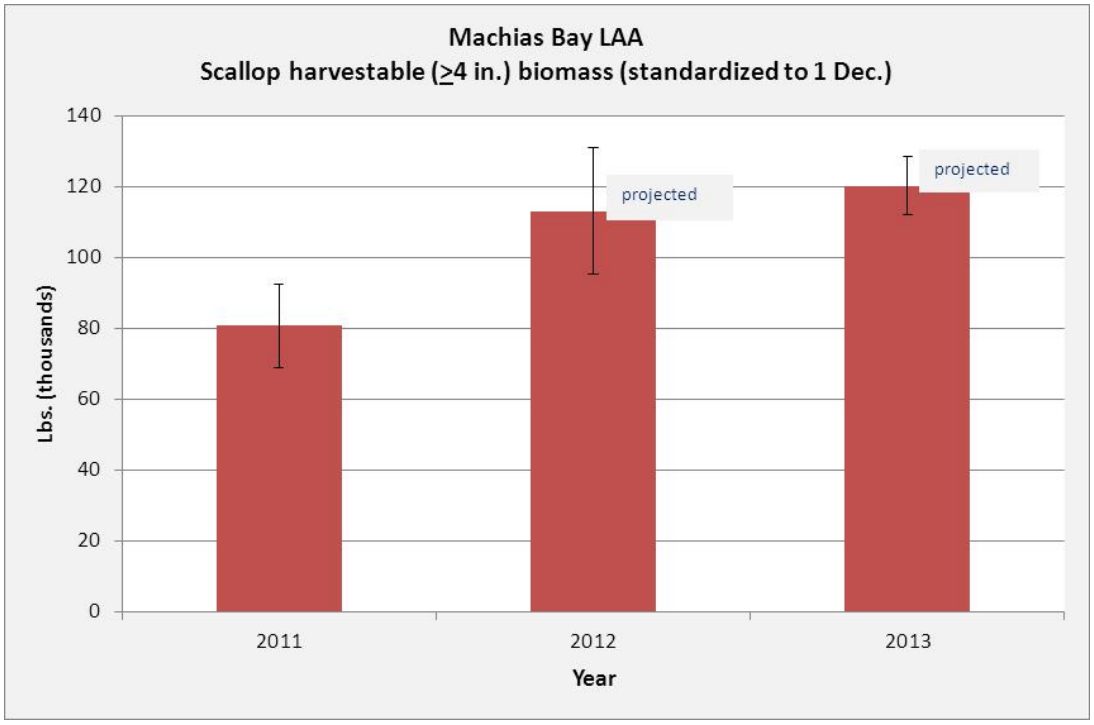
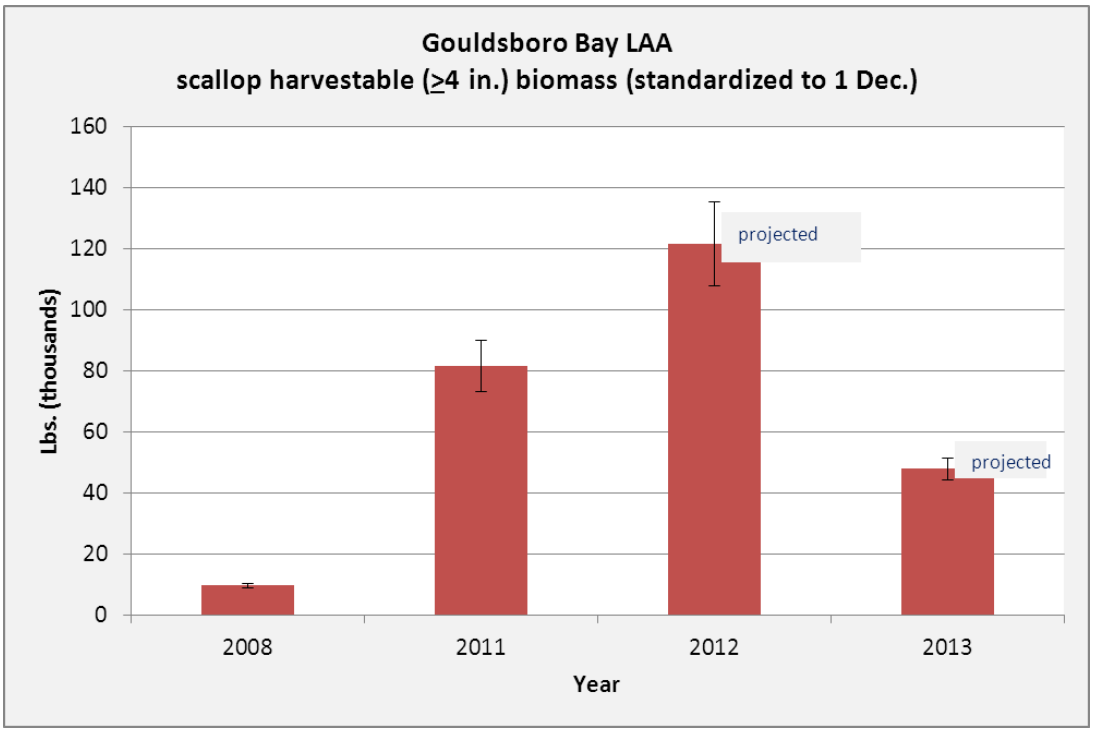


Figure 26 - Estimated mean harvestable scallop biomass (meat lbs.), Gouldsboro Bay LAA, 2008-13



1.1.5.2.3 State water fishery trends

Table 28 is a summary of the number of known fishers that have state only permitted vessels that land scallops. All states have been combined, except Maine, the only state with a substantial number of state only permitted vessels. Table 29 is a summary of sea scallop catch from state permitted vessels from state waters in 2008-2012. Most states do not have any reported landings, and some information is confidential because it is from a small number of vessels and/or dealers.

Table 7 – Number of known fishers that contribute to state only scallop catch (calendar year 2008-2012) (Source: ACCSP).

	Number of Known Fishers			
	2009	2010	2011	2012
ME Dealer Reports	119	179	209	353
ME Harvester Reports**	228	238	265	338
Other States	30	24	29	26

Table 8 - Calendar year scallop landings from state permitted vessel that do <u>not</u> have a federal permit (Source: ACCSP). Small landings from several other states not listed.

Year	2008	2009	2010	2011	2012
Massachusetts	28,986	167,865	121,416	205,933	132,869
Maine (Harvester reports)*	87,808	132,769	244,603	212,331	353,541

**Maine Department of Marine Resources did not have mandatory harvester reporting until December 2008, no not all harvester landings for 2008 are complete for that calendar year.*

1.2 PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT

The Northeast U.S. Shelf Ecosystem includes the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream to a depth of 2,000 m (Figure 41, Sherman et al. 1996). Four distinct sub-regions are identified: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The physical oceanography and biota of these regions were described in the Scallop Amendment 11. Much of this information was extracted from Stevenson et al. (2004), and the reader is referred to this document and sources referenced therein for additional information. Primarily relevant to the scallop fishery are Georges Bank and the Mid-Atlantic Bight, although some fishing also occurs in the Gulf of Maine. The link with more information about the EFH description for Atlantic sea scallop can be found at: http://www.nero.noaa.gov/hcd/scallops.pdf.

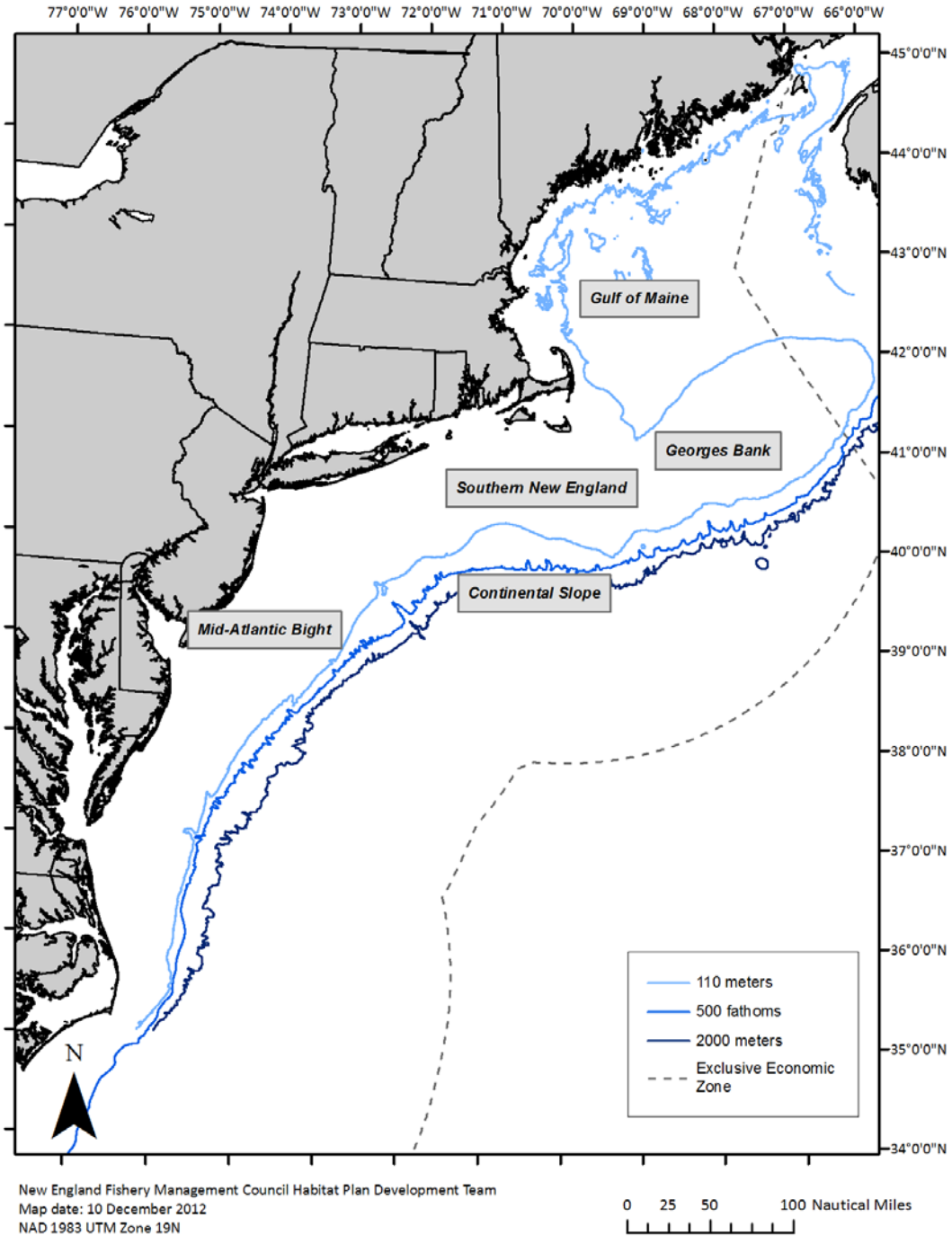
The Atlantic sea scallop fishery is prosecuted in concentrated areas in and around Georges Bank and off the Mid-Atlantic coast, in waters extending from the near-coast out to the edge of the continental shelf. Atlantic sea scallops occur primarily in depths less than 110 meters on sand, gravel, shells, and cobble substrates (Hart et al. 2004). This area, which could potentially be affected by the preferred alternative, has been identified as EFH for various species. These species include American plaice, Atlantic cod, Atlantic halibut, Atlantic herring, Atlantic sea scallop, Atlantic surfclam, Atlantic wolfish, barndoor skate, black sea bass, clearnose skate, haddock, little skate, longfin squid, monkfish, ocean pout, ocean quahog, pollock, red hake, redfish, rosette skate, scup, silver hake, smooth skate, summer flounder, thorny skate, tilefish, white hake, windowpane flounder, winter flounder, witch flounder and yellowtail flounder. For more information on the geographic area, depth, and EFH description for each applicable life stage of these species, the reader is referred to Table 45 of the scallop Amendment 15 EIS.

Most of the current EFH designations were developed in NEFMC Essential Fish Habitat Omnibus Amendment 1 (1998). Most recently, Amendment 16 to the Northeast Multispecies FMP adds Atlantic wolffish to the management unit and includes an EFH designation for the species. For additional information, the reader is referred to the Omnibus Amendment and the other FMP documents listed in Table 28 of the scallop Amendment 15 EIS. In addition, summaries of EFH descriptions and maps for Northeast region species can be accessed at http://www.nero.noaa.gov/hcd/list.htm.

Designations for all species are being reviewed and updated in NEFMC Omnibus Essential Fish Habitat Amendment 2 (OA2). Another purpose of OA2 is to evaluate existing habitat management areas and develop new habitat management areas. To assist with this effort, the Habitat PDT developed an analytical approach to characterize and map habitats and to assess the extent to which different habitat types are vulnerable to different types of fishing activities. This body of work, termed the Swept Area Seabed Impact approach, includes a quantitative, spatially-referenced model that overlays fishing activities on habitat through time to estimate both potential and realized adverse effects to EFH. The approach is detailed in this document, available on the Council webpage: http://www.nefmc.org/habitat/planamen/efh_amend_2/appendices%20-%20dec2013/Appendix%20D%20-%20Swept%20Srea%20Seabed%20Impact%20approach.pdf.

During 2014, the Council plans to finalize OA2, including development of updated management areas to address habitat and groundfish related objectives. The current timeline for this action is have Council final action at the April 2015 meeting, with implementation sometime after that (potentially early 2016).

Figure 27 – Northeast U.S Shelf Ecosystem and geographic extent of the US sea scallop fishery



1.3 PROTECTED RESOURCES

The following protected species are found in the environment in which the sea scallop fishery is prosecuted. A number of them are listed under the Endangered Species Act of 1973 (ESA) as endangered or threatened, while others are identified as protected under the Marine Mammal Protection Act of 1972 (MMPA). An update and summary is provided here to facilitate consideration of the species most likely to interact with the scallop fishery relative to the preferred alternative.

A more complete description of protected resources inhabiting the action area is provided in Amendment 15 to the Sea Scallop FMP (See Amendment 15 to the Atlantic Sea Scallop Fishery Management Plan, Section 4.3, Protected Species, for a complete list. An electronic version of the document is available at http://www.nefmc.org/scallops/index.html.).

Cetaceans	***Status***
North Atlantic right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Beaked whale (*Ziphius* and *Mesoplodon spp.*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
Spotted and striped dolphin (*Stenella spp.*)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Bottlenose dolphin: coastal stocks (*Tursiops truncatus*)	Protected
Harbor porpoise (*Phocoena phocoena*)	Protected
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandica*)	Protected
Hooded seal (*Crystophora cristata*)	Protected
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered[1]

[1] *Green sea turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green sea turtles are considered endangered wherever they occur in U.S. waters.*

Loggerhead sea turtle – NWA DPS(*Caretta caretta*)	Threatened[2]

Fish

Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*)	
Gulf of Maine DPS	Threatened
New York Bight DPS, Chesapeake Bay DPS,	Endangered
Carolina DPS & South Atlantic DPS	Endangered
Cusk (*Brosme brosme*)	Candidate
Dusky shary (*Carcharhinus obscurus*)	Candidate

Has the status changed for any of these?

Candidate species are those petitioned species that NMFS is actively considering for listing as endangered or threatened under the ESA. Candidate species also include those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register.

Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. NMFS has initiated review of recent stock assessments, bycatch information, and other information for these candidate and proposed species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate/proposed species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information reviews. Please note that once a species is proposed for listing the conference provisions of the ESA apply (see 50 CFR 402.10).

Threatened and Endangered Species <u>Not</u> Likely to be Affected by the Alternatives under Consideration

According to the most recent Biological Opinion (Opinion) issued by NMFS on July 12, 2012, the agency has determined that species not likely to be affected by the Atlantic Sea Scallop FMP or by the operation of the fishery include the shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, and the following whales: North Atlantic right, humpback, fin, sei, blue, and sperm whales, all of which are listed as endangered species under the ESA. NMFS also concluded that the continued authorization of the sea scallop fishery would not have any adverse impacts on cetacean prey, and that it would not affect the oceanographic conditions that are conducive for calving and nursing of large cetaceans. The reader is referred to Section 4.3.1.1 of the scallop Amendment 15 EIS for a complete description regarding species not likely to be affected by the alternatives under consideration. These species descriptions include the cetaceans and pinnipeds listed above. In

[2] *NWA DPS = Northwest Atlantic distinct population segment which encompasses loggerheads found north of the equator, south of 60° N latitude, and west of 40° W longitude.*

addition, it is noted that according to the 2013 List of Fisheries (78 FR 53336), there have been no documented marine mammal species interactions with either the sea scallop dredge fishery or the Atlantic shellfish bottom trawl fishery; therefore, the scallop fishery is considered a Category III fishery under the MMPA (i.e., a remote likelihood or no known incidental mortality and serious injuries of marine mammals).

Threatened and Endangered Species Potentially Affected Adversely by the Alternatives under Consideration

Section 7 of ESA requires each Federal agency to insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or critical habitat of such species. Since the Scallop FMP is approved and implemented by the NMFS Greater Atlantic Regional Fisheries Office (GARFO), formerly the Northeast Regional Office (NERO), they requested intra-service section 7 consultation on February 28, 2012.

NMFS requested reinitiating consultation because of the 2012 listing of five distinct population segments (DPS) of Atlantic sturgeon under ESA as well as new information on sea turtle interactions with the sea scallop fishery. New information included: 1) new sources of information on the effects of the scallop fishery on sea turtles based on new estimates of average annual sea turtle bycatch (Murray (2011) and Warden (2011a)); 2) new information about levels of serious injury/mortality to sea turtles in the fishery (Upite 2011); 3) updated assessments of the likelihood of serious injury/mortality from new gear requirements (Milliken et al (2007), Smolowitz et al (2010) and Scallop PDT analyses in Framework 23); and 4) new management measures required in FW22 and FW23 that reduce impacts on sea turtles. Finally, the recent opinion explained the change in ESA listing of loggerhead sea turtles from a single species to nine separate DPSs, of which only the Northwest Altantic (NWA) DPS overlaps with and may be affected by the scallop fishery.

The 2012 consultation concluded that the continued operation of the scallop fishery may adversely affect, but is not likely to jeopardize the continued existence of NWA DPS loggerhead, leatherback, Kemp's ridley, or green sea turtles, or any of the five listed DPSs of Atlantic sturgeon. NMFS anticipates the incidental take of ESA-listed species in the scallop fishery as follows:

- **for the NWA DPS of loggerhead sea turtles, they anticipate (a) the annual average take of up to 161 individuals in dredge gear, of which up to 129 per year may be lethal in 20l2 and up to 46 per year may be lethal in 2013 and beyond,[3] and (b) the**

[3] The estimated mortality numbers presented in the Biological Opinion for scallop dredges with chain mats in 2012 are conservative in that they are overestimates of actual mortalities. Mortality rates used for 2012 are based on those estimated for observed turtle takes (e.g., turtles captured in the dredge and brought on deck), yet a percentage of the estimated takes are not observed (e.g., interactions where turtles were excluded by the chain mat) and these takes are considered to have a lower mortality rate.

annual average take of up to 140 individuals in trawl gear, of which up to 66 per year may be lethal;

- **for leatherback sea turtles, they anticipate the annual lethal take of up to two individuals in dredge and trawl gear combined;**
- **for Kemp's ridley sea turtles, they anticipate the annual take of up to three individuals in dredge and trawl gear combined (for 2012, up to three takes are anticipated to be lethal, while for 2013 and beyond, up to two takes are anticipated to be lethal);**
- **for green sea turtles, they anticipate the annual lethal take of up to two individuals in dredge and trawl gear combined;**
- **for Atlantic sturgeon, they anticipate the annual take of up to one individual from either the Gulf of Amine, New York Bight, Chesapeake Bay, Carolina, or South Atlantic DPS in trawl gear; once every 20 years this take is expected to result in mortality.**

NMFS is required to minimize the impact of these takes so several Reasonable and Prudent (RPMs) were identified. Terms and conditions were also included to specify how the RPMs should be implemented. Both RPMs and terms and conditions are non-discretionary and must be implemented by NMFS. The complete list of RPMs and terms and conditions can be found in the NMFS 2012 biological opinion on the scallop fishery located at http://www.nero.noaa.gov/prot_res/section7/NMFS-signedBOs/2012ScallopBiOp071212.pdf.

1.3.1 Updated information on loggerhead turtle distribution

The PDT has included updated information on loggerhead turtles since this action is considering modifications to measures designed to reduce impacts on sea turtles. During development of Framework 23 the PDT used various sources of information to develop the season options for the turtle deflector dredge. Primarily, satellite data, strandings data, and turtle bycatch data were summarized to help identify which months would be the most effective for this dredge requirement. Overall, the data suggest that turtles are most likely to be present in areas that overlap with the scallop fishery in the Mid-Atlantic between May and October. There is more uncertainty in the data available relative to the month of November, but some sources suggest there would be some level of overlap during that month as well, in particular Morreale, 1999 and Braun-McNeill et al., 2008. All of this information is summarized in Section 4.3.1 of Framework 23, and all new information about turtle bycatch, satellite data, and strandings data are summarized below.

1.3.1.1 Observed turtle takes (2004-2013)

There have been about five additional observed takes since data used in Framework 23. Overall the majority of takes from all years have been west of 71 W, but a handful of takes have occurred in waters east of that boundary; but only one has been in the month of November.

Table 9 – Summary of observed takes (2004-2013)
Note: Area A: east of 71^{0}W and south of 41.09^{0}N and Area B: west of 71^{0}W

Month Trip Landed	Area	No. of Interactions in Dredge Gear	No. of Interactions in Bottom Fishing Gear (Trawl, Dredge, Sink Gillnet)	No. of Interactions, all Gear Types
January				
	A	0	0	0
	B	0	20	20
February				
	A	0	0	0
	B	0	21	21
March				
	A	0	0	0
	B	0	1	1
April				
	A	0	0	0
	B	0	2	2
May				
	A	0	1	1
	B	0	3	3
June				
	A	0	1	1
	B	4	26	27
July				
	A	0	6	6
	B	2	18	19
August				
	A	1	3	3
	B	6	19	19
September				
	A	0	1	1
	B	5	34	34
October				
	A	0	0	0
	B	5	42	42
November				
	A	0	0	0
	B	0	20	20
December				
	A	0	0	0
	B	1	28	29
TOTAL		24	246	249
	A			12
	B			237

The data above were plotted in several maps for all years, as well as the last 10 years only (Figure 1 through Figure 6). The maps do not include all gear types. The focus in on bottom tending gears including: scallop dredge, drift sink gillnet, fixed sink gillnet, bottom otter trawl (fish, scallop and twin). Gear excluded from the maps are: drift float, drift large pelagic gillnet, haul seines, pound nets, purse seine, longline, and midwater trawl. These maps also exclude moderately and severely decomposed animals.

Figure 28 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of May – October (all years)

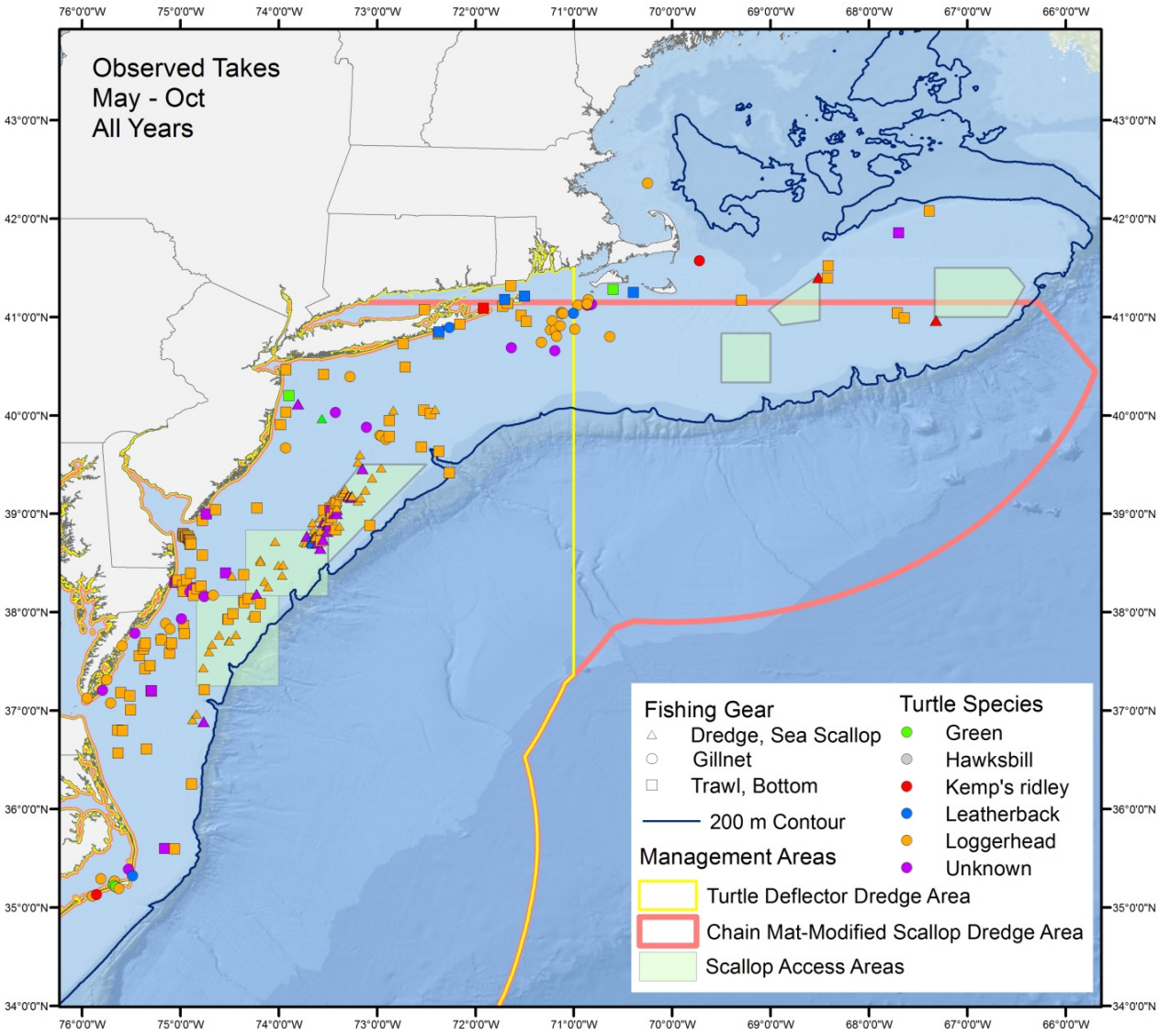


Figure 29 – Observed location of turtle interactions on bottom tending gears in the Northeast in the month of November (all years)

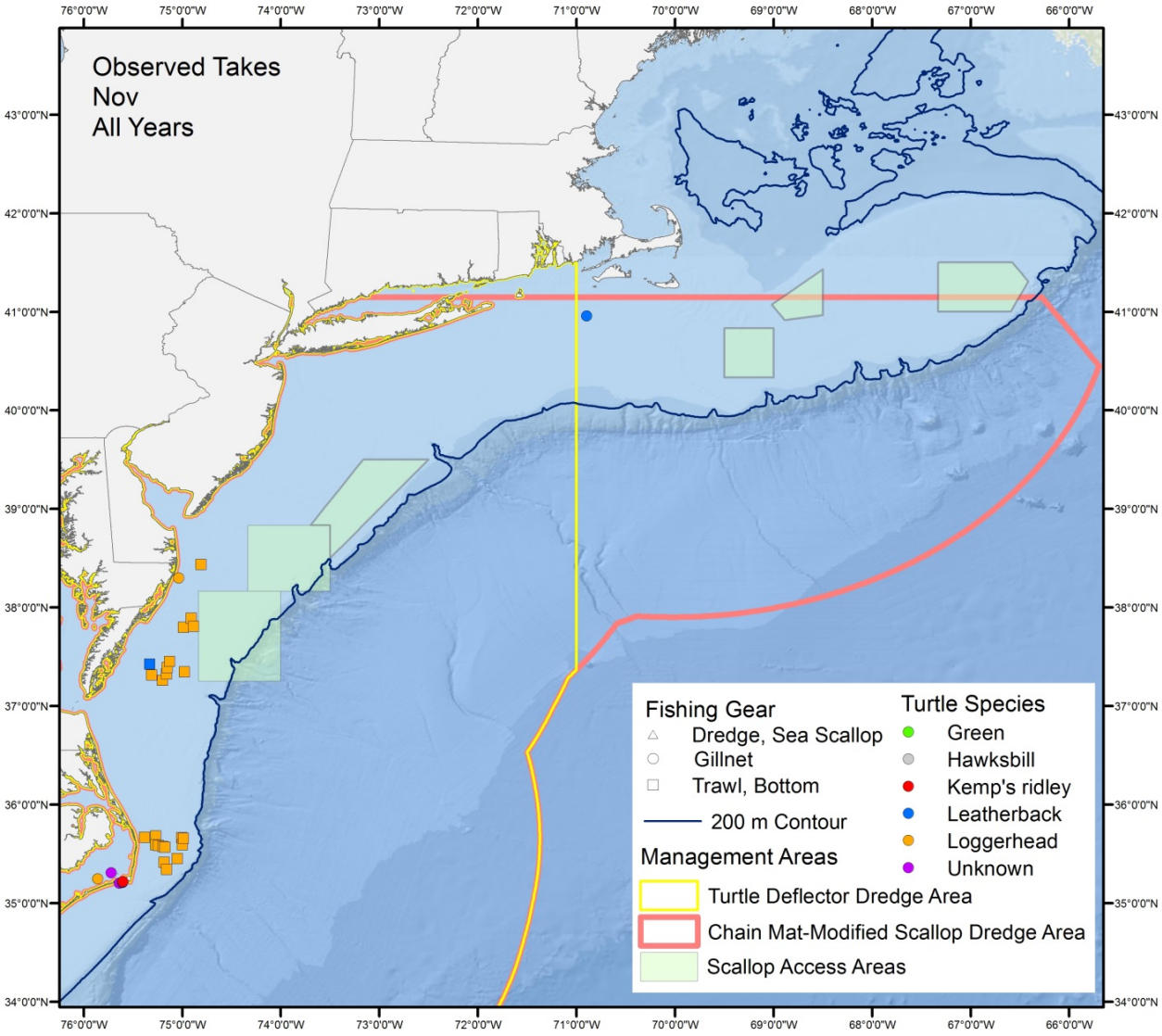


Figure 30 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of December – April (all years)

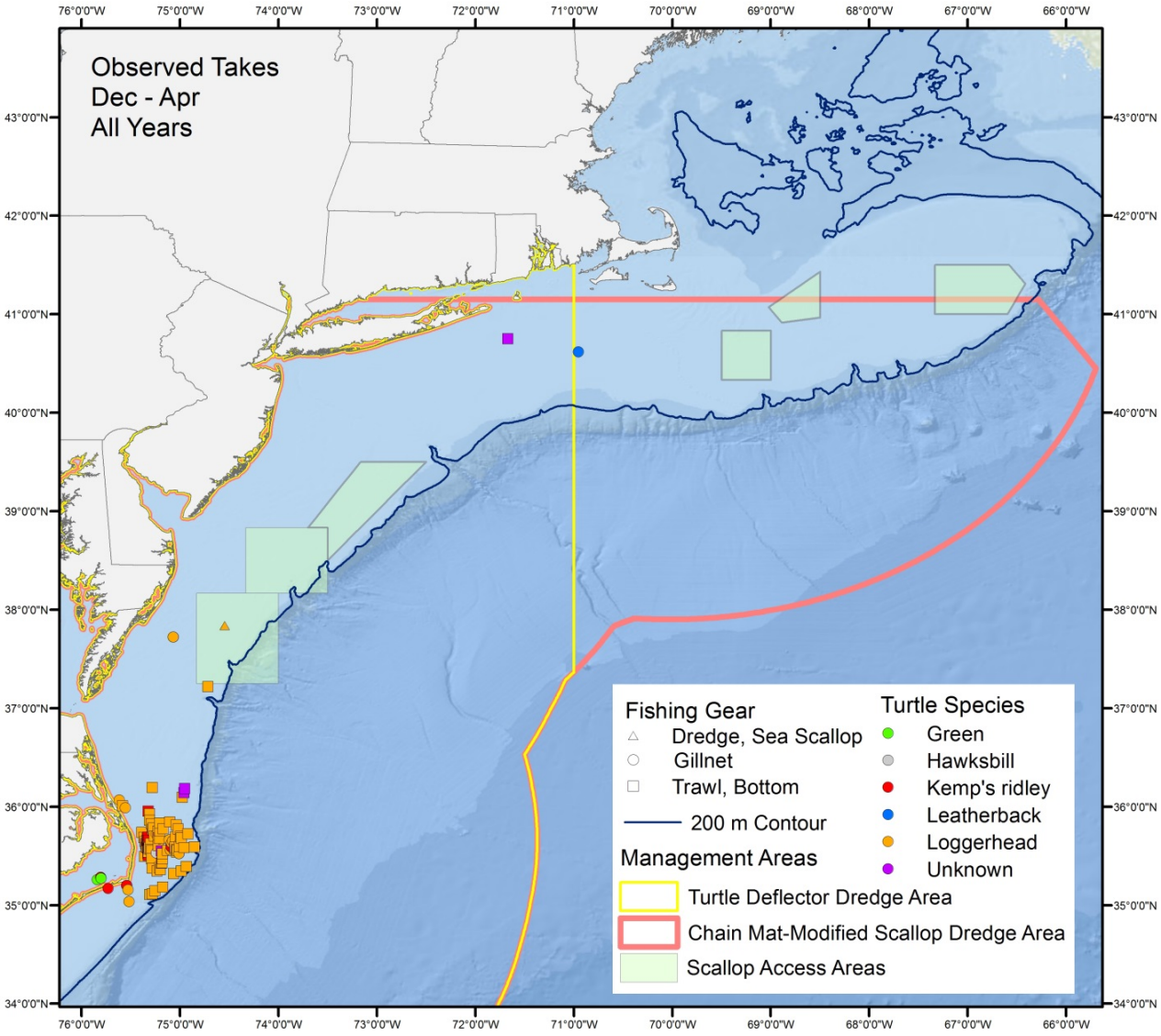


Figure 31 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of May – October (2004-2013 only)

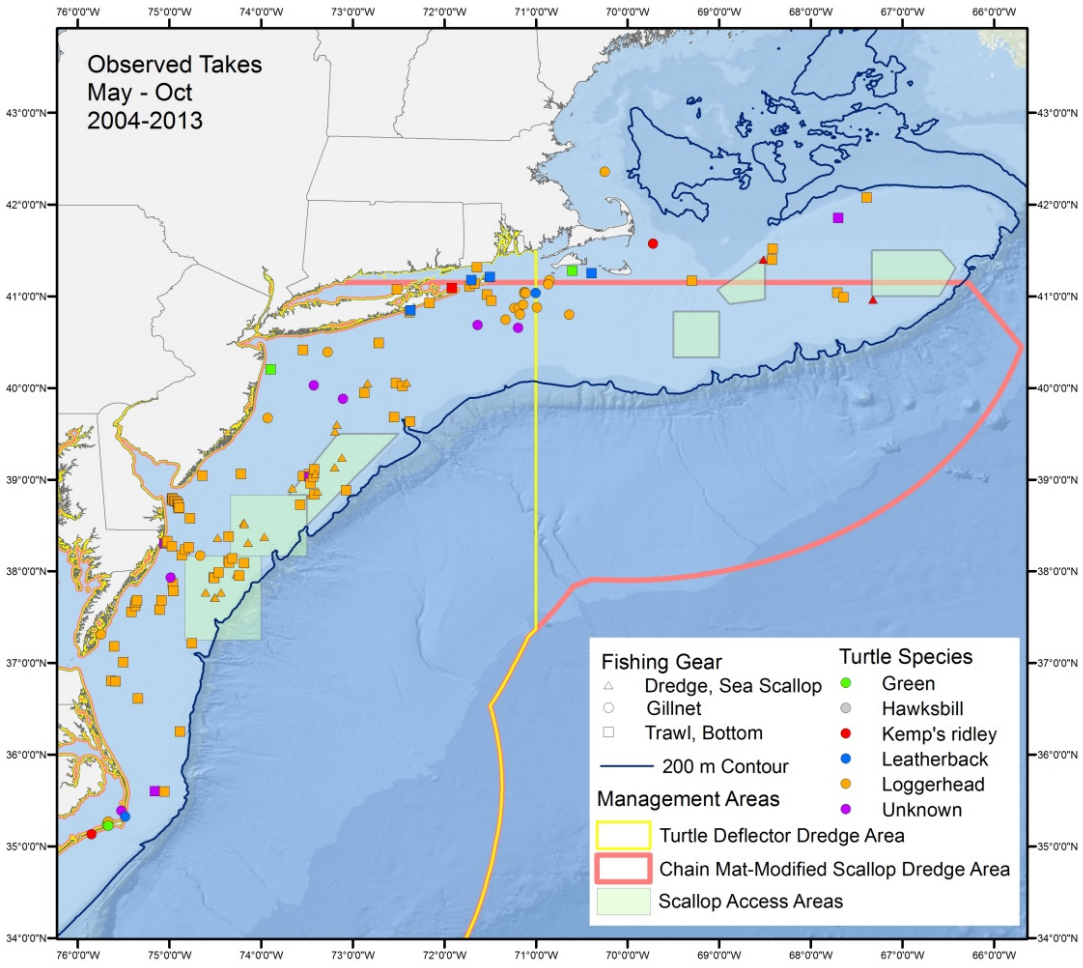


Figure 32 – Observed location of turtle interactions on bottom tending gears in the Northeast in the month of November (2004-2013 only)

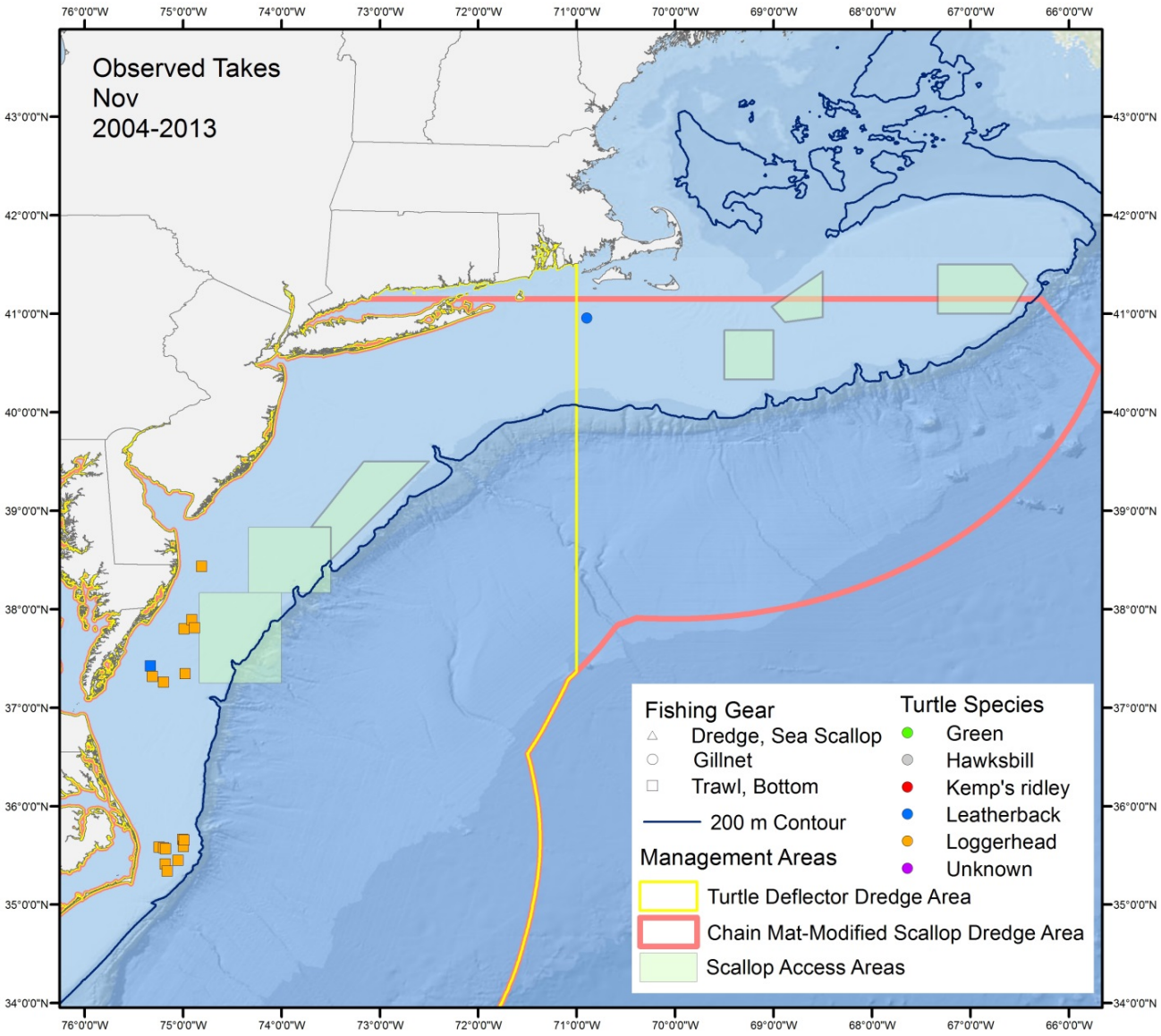
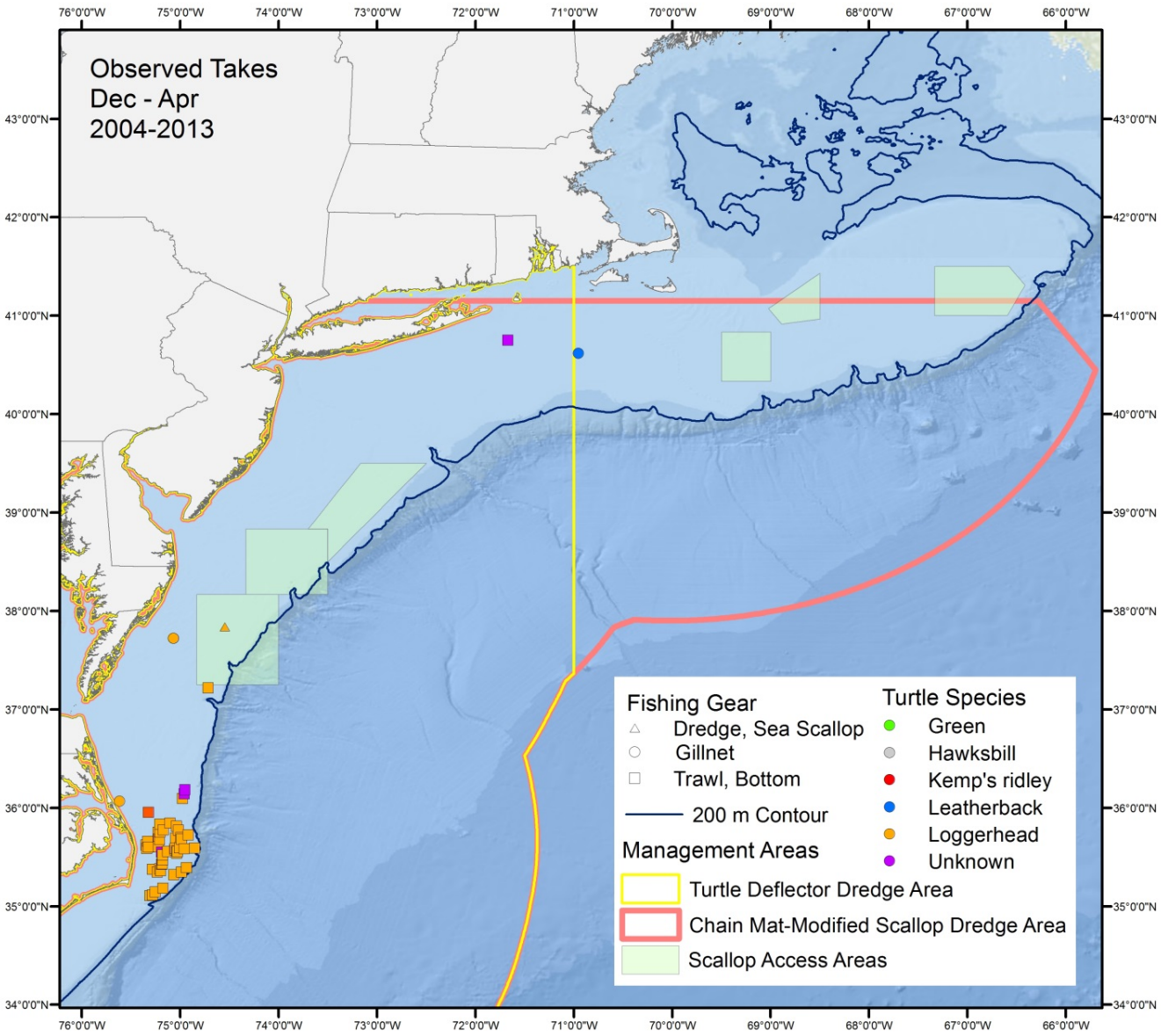


Figure 33 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of December – April (2004-2013 only)



1.3.1.2 Updated satellite information

There is a relatively large turtle satellite study that has been conducted in the Northeastern US for several years. This study was funded in part by the U.S. Department of the Interior, Bureau of Ocean Energy Management, Environmental Studies Program, Washington, DC, through Inter-Agency Agreement; the Atlantic Sea Scallop Research Set Aside Program, Virginia Maryland Section 6 Program, and funds from Coonamessett Farm Foundation, National Marine Fisheries Service, and the Virginia Aquarium & Marine Science Center. The investigators are also grateful to all the vessel crew and captains who made tag deployments possible.

The locations summarized in the maps below represent good quality (LQ3, 2, 1) ARGOS locations and filtered GPS locations (using a filter modified Douglas filter by provided by David Douglas). The ARGOS locations were not filtered beyond location quality, and they likely contain some errant points. The more than 177K locations come from over 100 loggerheads (including males, females, juveniles, and adults) tagged between 2009 and 2013.

Between 2009-2013 about 100 turtles have been tagged and their locations have been plotted by month. Based on updated data there is evidence that some turtles are in waters that overlap the scallop fishery in November. Most are off the coast of North Carolina and farther south, but a fraction of the tagged turtles were found in the southern part of the fishery (Figure 7 through Figure 9).

Figure 34 – Location of over 100 tagged turtles in the months of May – October (tagged between 2009-2013)

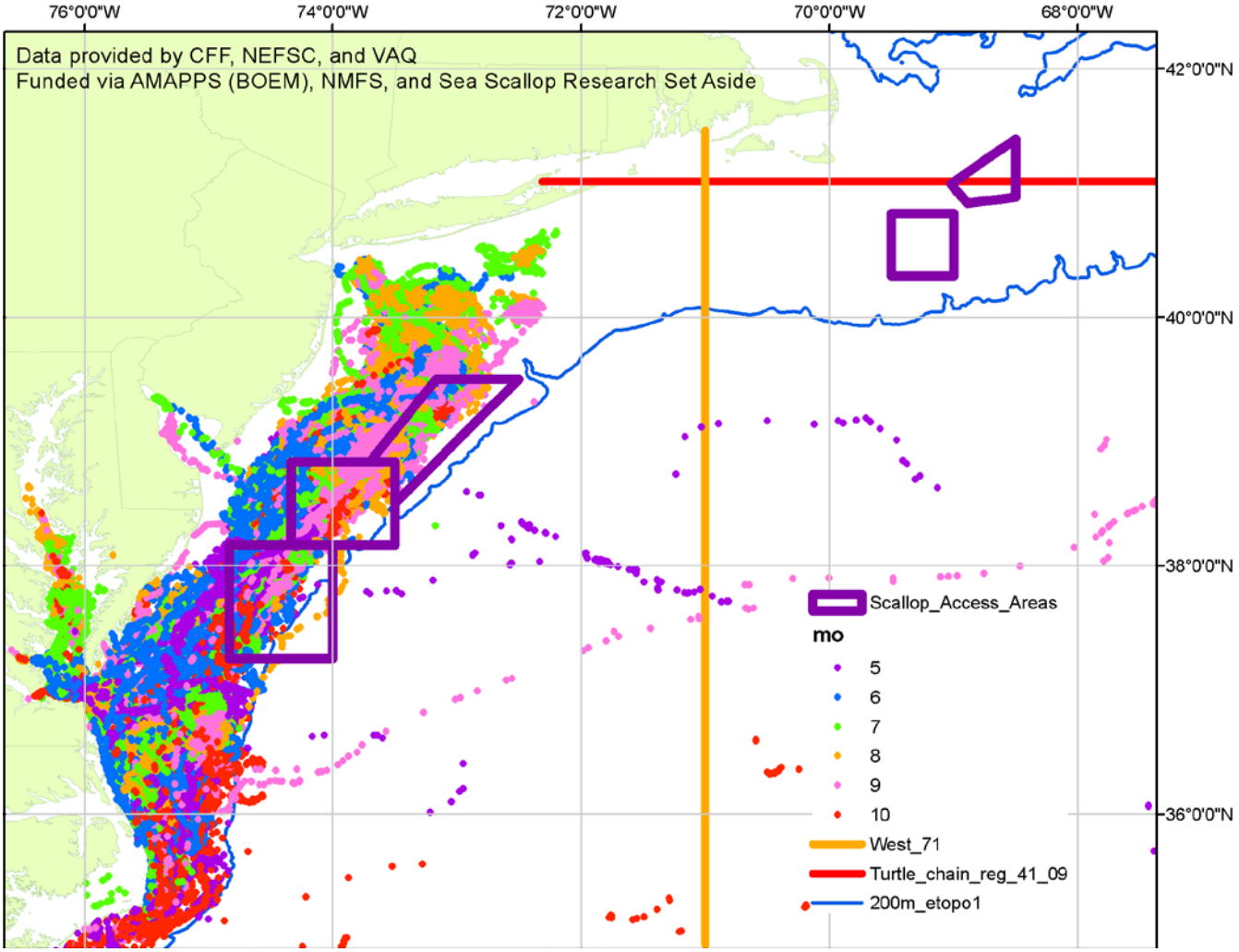


Figure 35 – Location of over 100 tagged turtles in the month of November (tagged between 2009-2013)

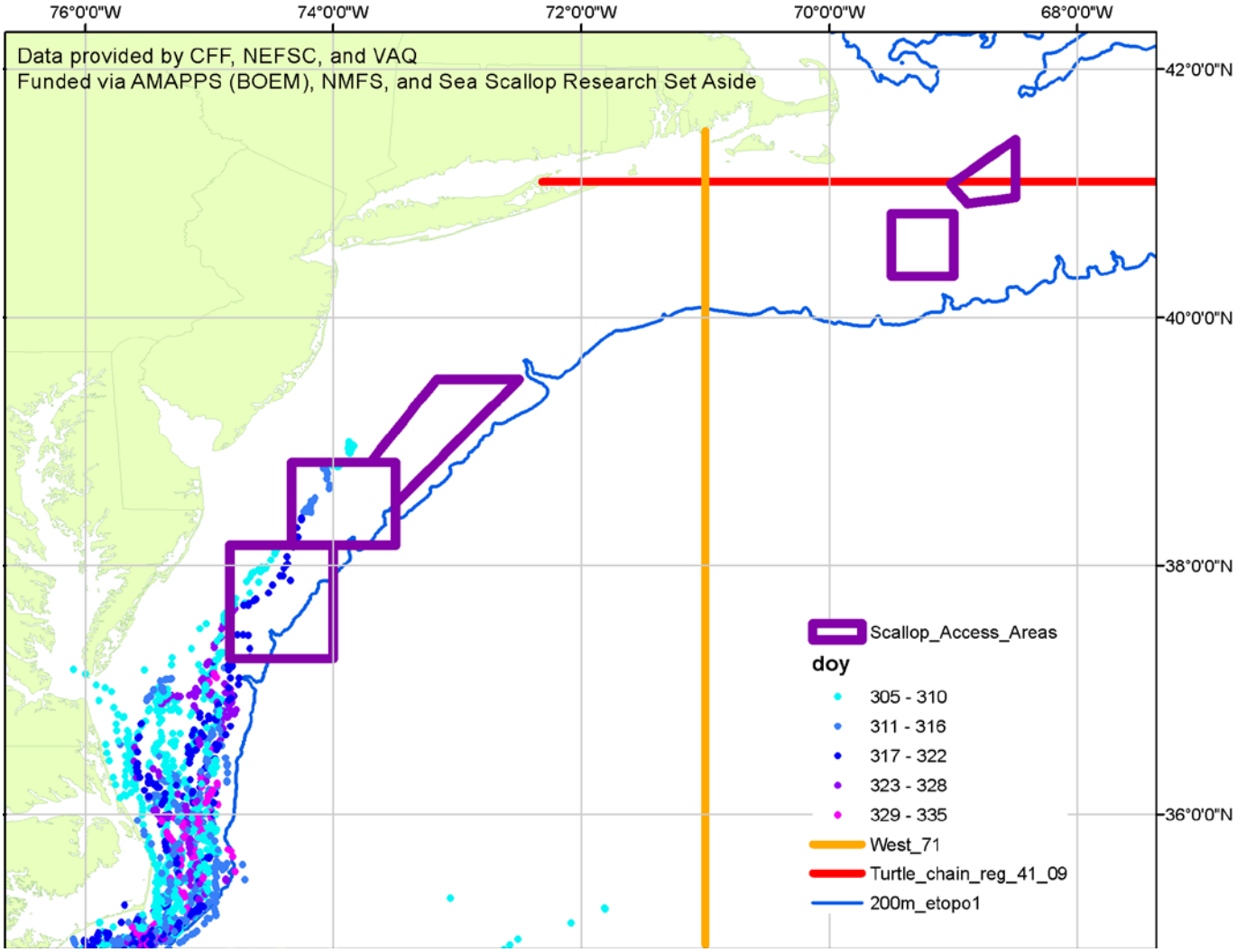
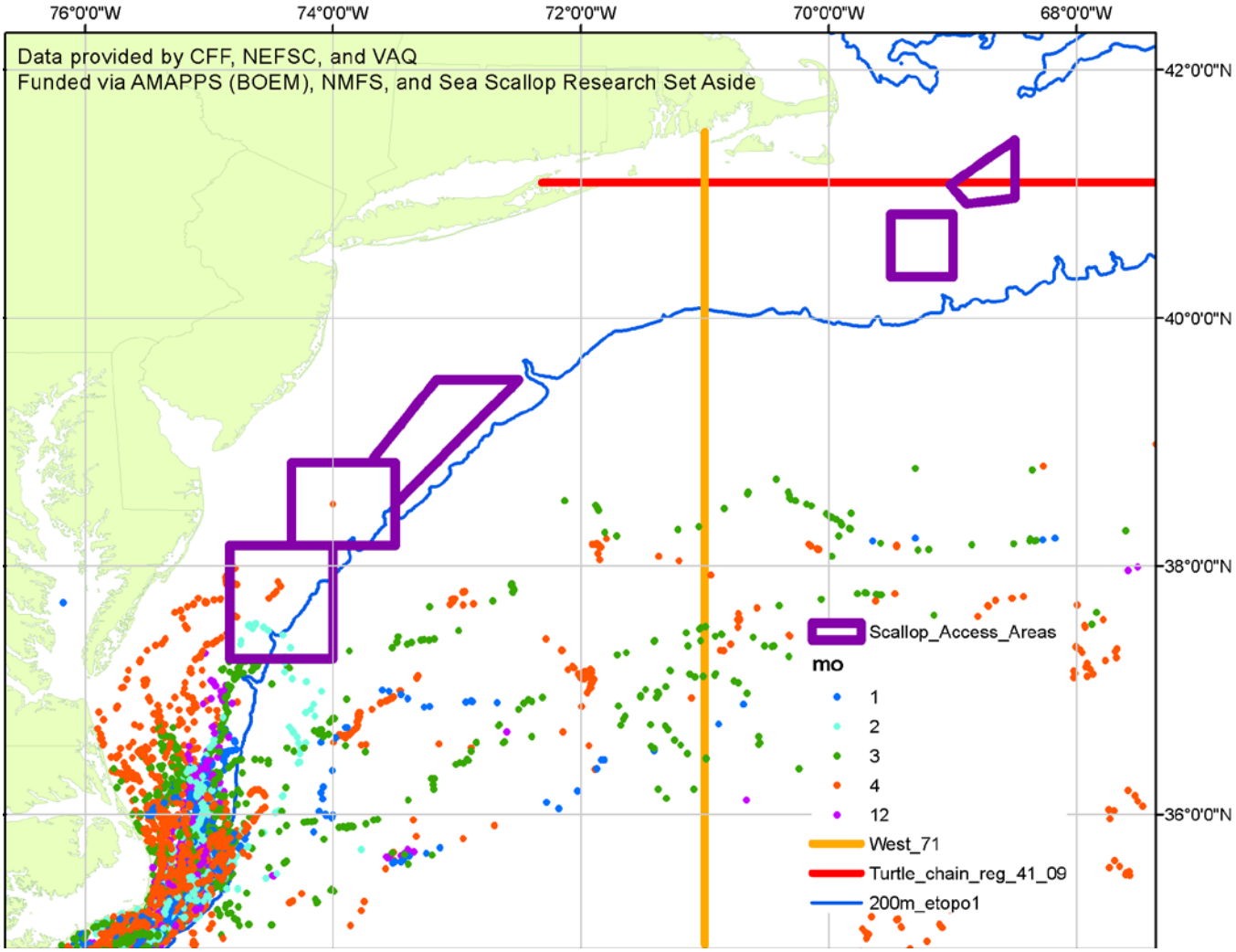


Figure 36 – Location of over 100 tagged turtles in the months of December - April (tagged between 2009-2013)



1.3.1.3 Updated strandings data

In the United States, sea turtle strandings are responded to by the Sea Turtle Stranding and Salvage Network (STSSN) and reported to NMFS. This information represents a minimum of potential turtle mortality, as it is likely that some animals are not reported or die offshore and never end up on coastal beaches. Further, these data do not necessarily indicate how the sea turtle mortality occurred, but instead may be used as an indicator of where sea turtles may be found. In order to provide a snapshot of temporal and seasonal distribution, albeit a cursory measure, Table 10 presents strandings data (all species) by month and state from 1998-2012 combined. Data from 2008-2012 also include incidental captures.

Sea turtle strandings occurred in all months of the year in some states, but the majority of strandings occurred during the warmer months of May through October (if cold stunned turtles

are excluded). In all Greater Atlantic Region states combined from 1998-2012, the total strandings were 9,269. During the warmer months, Virginia consistently reported the most strandings of any Northeast Region state, followed by New Jersey and New York. In November, December, and January, many of the strandings were likely cold stun animals. Cold stunning occurs when turtles are exposed to prolonged cold water temperatures, and is particularly common in Massachusetts and New York. Most of the November and December strandings were found in Massachusetts, but were likely cold stun animals. If strandings from Massachusetts are removed, there were 334 strandings in November and 213 strandings in December from Rhode Island through Virginia during the same time period.

Table 10 - Total strandings from 1998-2012 by month and state. Data collected by the STSSN.

1998-2012													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**TOTAL**
VA	23	9	12	13	506	1694	495	369	385	369	217	70	4162
MD	1	0	0	0	42	144	62	62	81	41	7	4	444
DE	1	1	0	2	5	96	63	76	134	87	16	2	483
NJ	6	1	2	2	3	86	173	198	252	107	16	4	850
NY	15	2	1	1	3	23	163	133	92	50	70	130	683
CT/RI	0	1	0	1	0	8	49	64	40	13	8	2	186
MA/NH	28	4	7	2	3	11	89	157	89	68	958	1005	2421
ME	0	0	0	0	0	4	18	12	5	0	0	1	40
AVG	9.3	2.3	2.8	2.6	70.3	258.3	139	133.9	134.8	91.9	161.5	152.3	
TOTAL	74	18	22	21	562	2066	1112	1071	1078	735	1292	1218	9269

1.4 ECONOMIC AND SOCIAL TRENDS IN THE SEA SCALLOP FISHERY

See separate document

1.5 NON-TARGET SPECIES

Non-target species (sometimes referred to as incidental catch or bycatch) include species caught by scallop gear that are both landed and not landed, including small scallops. The impacts of the scallop fishery on bycatch have been reduced through management measures involving ring size, larger twine top, limits on effort, etc. In general, rotational area management is designed to improve and maintain high scallop yield, while minimizing impacts on groundfish mortality and other finfish catches. Access programs may even reduce fishing mortality for some finfish species, because the total amount of fishing time in access areas is low compared with fishing time in open areas due to differences in LPUE. Incidental catch is sometimes higher in access areas compared to open areas, but in general total scallop landings is also usually higher in access areas.

Potential non-target species caught incidentally in the scallop fishery were identified in Amendment 15 and previous scallop framework actions based primarily on discard information from the 2009 SBRM report (NEFSC 2009) and various assessments such as GARM III and the Skates Data-poor Workshop. Based on a report presented by NEFSC (2009), the Scallop Plan Development Team identified the following species as having more than 5% of total estimated catch from discards in the scallop fishery: monkfish, skate (overall), and windowpane flounder. The status of these species is listed in Table 37.

Assessment data show that the scallop fishery caught more than 5% of the bycatch (compared to overall catch) for some multispecies stocks by region. Georges Bank (GB) and Southern New England (SNE) yellowtail flounder were caught in amounts greater than 5%, but Cape Cod yellowtail only has occasional spikes over 5%. Although there is greater than 5% caught in both the GB/GOM and SNE/MA regions for windowpane flounder, the catch is generally greater in SNE/MA. The Skate Data-poor Working Group identified the greatest bycatch for the scallop fishery as little and winter skates. See Table 37 for the current status of these species, which has been updated based on assessment results summarized in Groundfish FW51, Skate FW2, and Monkfish FW7.

Table 11: Status of non-target species known to be caught in scallop fishing gear, updated with assessment results summarized in GF FW51, Monkfish FW7 and Skate FW2 – need to confirm status of these species

Species	***Stock***	***Overfished?***	***Overfishing?***
Summer flounder (fluke)	Mid-Atlantic Coast	No	No
Monkfish	GOM/Northern GB	No	No
Monkfish	Southern GB/MA	No	No
Northeast Skate Complex	Barndoor skate	No	No
Northeast Skate	Clearnose skate	No	No

Complex			
Northeast Skate Complex	Little skate	No	No
Northeast Skate Complex	Rosette skate	No	No
Northeast Skate Complex	Smooth skate	No	No
Northeast Skate Complex	Thorny skate	Yes	Yes
Northeast Skate Complex	Winter skate	No	Yes
Multispecies	Windowpane - GOM/GB	Yes	Yes
Multispecies	Windowpane - SNE/MA	No	No
Multispecies	Winter flounder - GB	Yes	Yes
Multispecies	Winter flounder - GOM	Unknown	No
Multispecies	Winter flounder - SNE/MA	Yes	No
Multispecies	Yellowtail flounder - CC/GOM	Yes	Yes
Multispecies	Yellowtail flounder - GB	Yes	No
Multispecies	Yellowtail flounder - SNE/MA	No	No
Atlantic Surfclam	Mid-Atlantic Coast	No	No
Ocean Quahog	Atlantic Coast	No	No

Updates available through NMFS's Status of U.S. Fisheries Quarterly Reports
http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm

The only bycatch species with sub-ACLs for the scallop fishery are in the groundfish plan: GB YT, SNE/MA YT, and SNE/MA WP flounder. The tables below describe a summary of multispecies catch from the scallop fishery in fishing year 2013 under the Multispecies plan. A complete summary of all catch in the multispecies fishery for 2013 can be found at: ??? (need to update link, text and table after 2013 catch report available)

Total catch of GB YT was much lower in 2012 compared to 2011 (1,150.9 mt), and higher for SNE/MA YT in 2012 compared to 2011 (503.6 mt) (Table 41). However catch from the scallop fishery was higher in 2012 compared to 2011 (83.9 mt), partially because more access was allocated in the CA2 access area, which typically has higher bycatch rates than other areas on GB. Landings of YT in the scallop fishery was still relatively low even though LA scallop vessels were required to land all legal sized YT in 2012 (under 30 mt for both stocks). Most YT was discarded in the scallop fishery.

Table 42 compares the GF catch in the scallop fishery to the sub-ACL for YT species, as well as the total ACLs. In 2012, the sub-ACL of GB YT was lower for the scallop fishery, 156.9 mt compared to 200.8 mt in 2011. The scallop fishery was estimated to catch more YT than their sub-ACL (164 mt) equal to 30% of the total catch, but AMs were not triggered since the total ACL was not exceeded and the scallop fishery did not exceed their sub-ACL by more than

50%. For SNE/MA YT the scallop fishery was allocated a sub-ACL of 127 mt, but only 42.5% was caught, equal to less than 6% of total SNE/MA YT catch.

Table 41 – Summary of 2012 year end accounting of NE Multispecies catch (mt)

Stock	Total GF Catch	Scallop Catch	Total GF Landings	Scallop Landings	Total GF Discards	Scallop Discards
GB YT	384.9	164.0	227.5	25.1	157.4	138.9
SNE/MA YT	593.5	54.0	435.6	2.4	157.9	51.6

Table 42 – Summary of 2012 ACLs, catch, and percent of ACLs caught by the scallop fishery

Stock	Total ACL	Sub-ACL to Scallop fishery	Catch of GF by scallop fishery	Percent of sub-ACL used	Percent of total ACL used by scallop fishery
GB YT	547.8	156.9	164.0	104.5%	30%
SNE/MA YT	936	127	54.0	42.5%	5.8%