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

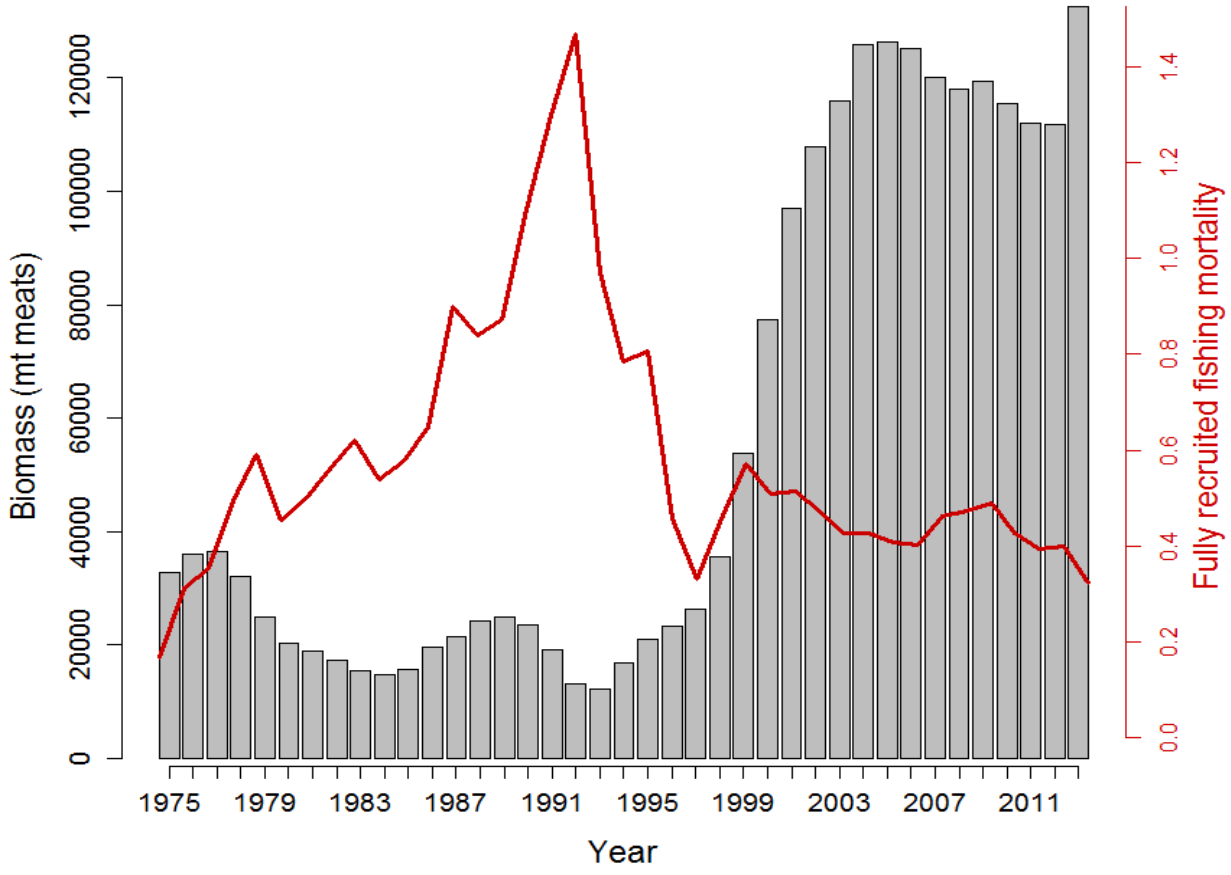


Figure 2 – Fully recruited annual fishing mortality rate for scallops from 1975-2013
Note that trends are different for partially recruited scallops because of changes in commercial size selectivity. SARC59 Fmsy is shown with green dashed line for the most recent period; Fmsy would have been smaller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

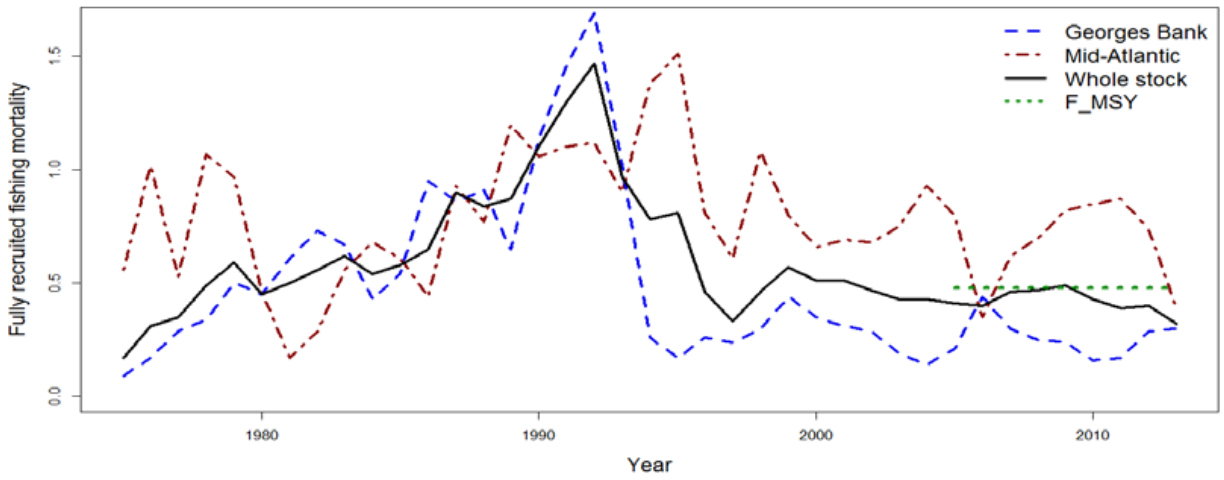


Table 2 – 2013 sea scallop stock status – overfishing is not occurring and the resource is not overfished

	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

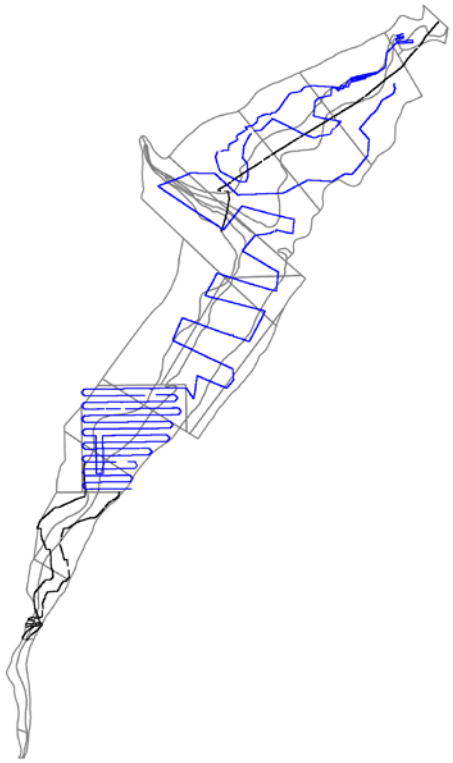
The Scallop FMP is fortunate to have access to several different survey methods. First, the NEFSC has had a dedicated dredge survey since 1977 that has sampled the resource using a stratified random design. More recently, the NEFSC scallop survey has evolved into a combined dredge and optical survey (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).

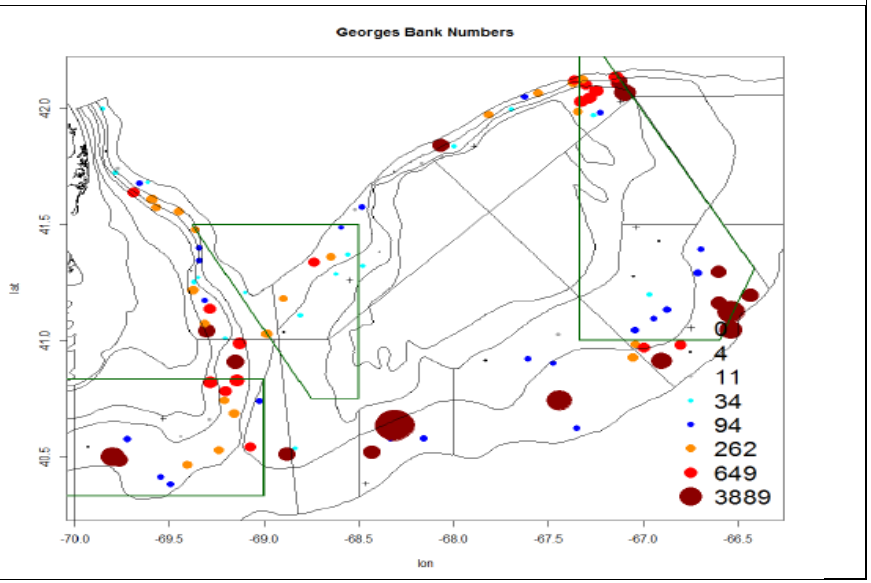
In addition, SMAST has conducted video surveys of various parts of the resource area. In most years since 2003, including 2014, SMAST completed a broadscale video survey of most of the resource area. In addition to a broadscale survey of most of the resource area, SMAST also completed a more intensive 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).

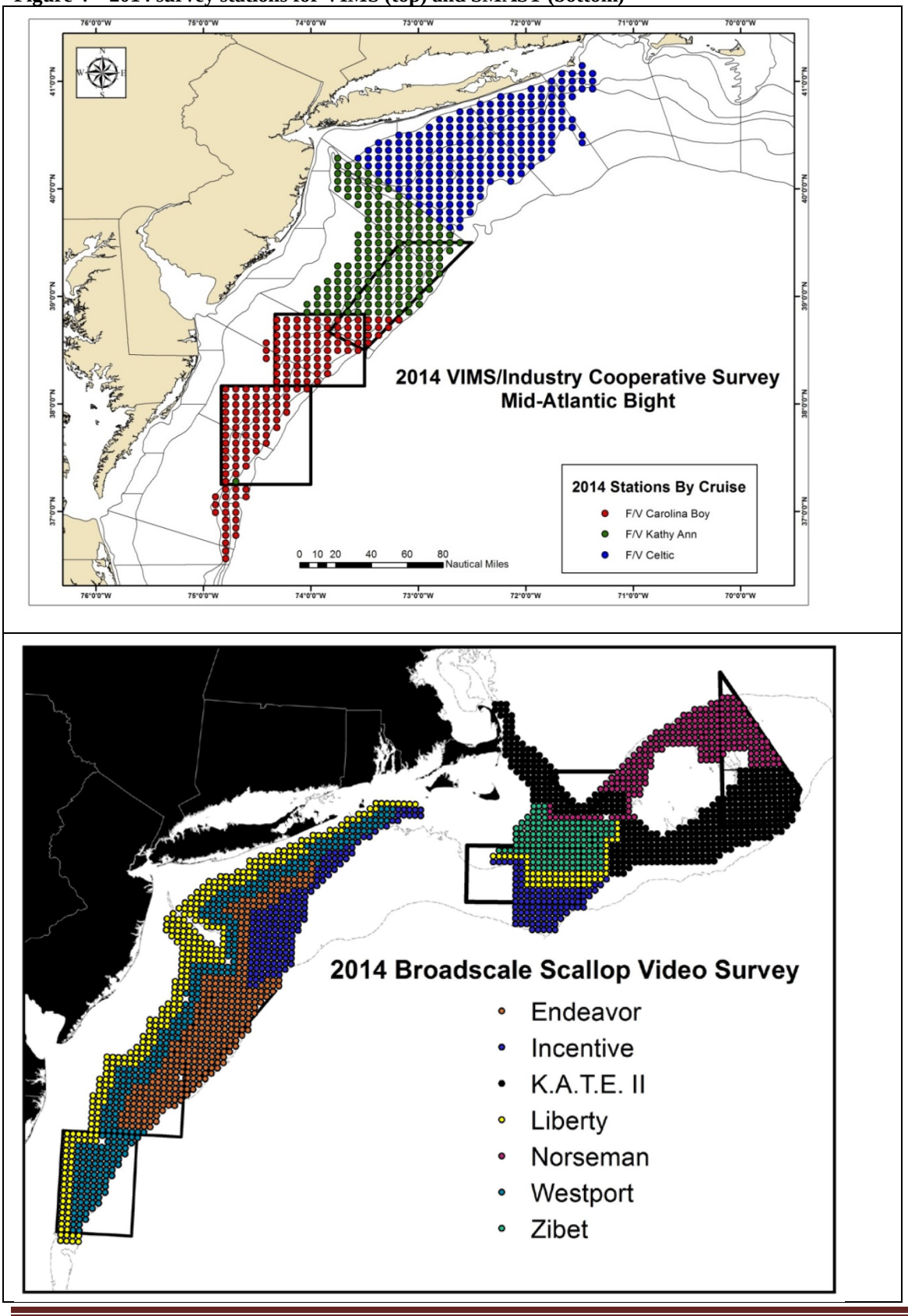
Figure 3 – 2014 NEFSC survey coverage





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)

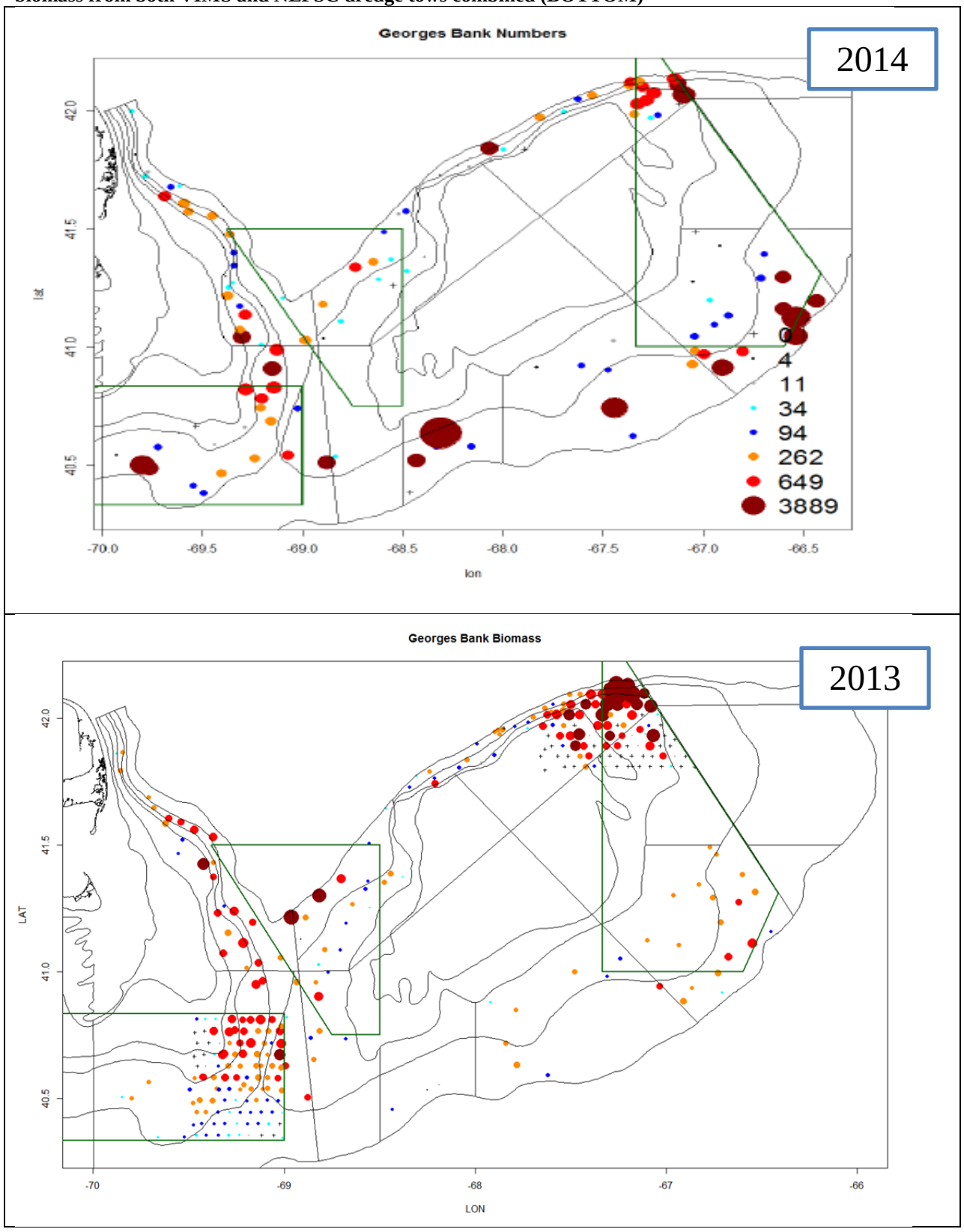


Figure 6 - Total scallop abundance (numbers per station) on GB (2014 SMAST video survey)

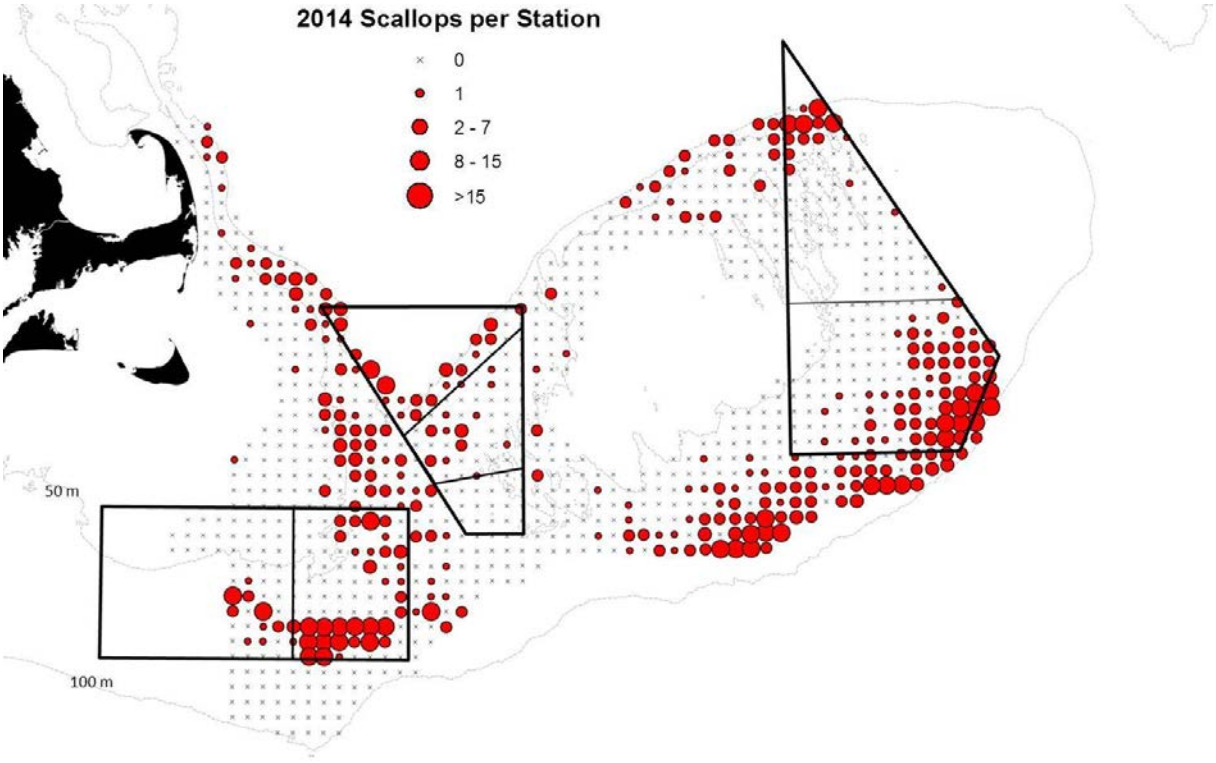


Figure 7 - Total scallop abundance (numbers per station) for recruits (less than 75mm) in the GB region from the 2014 SMAST video survey

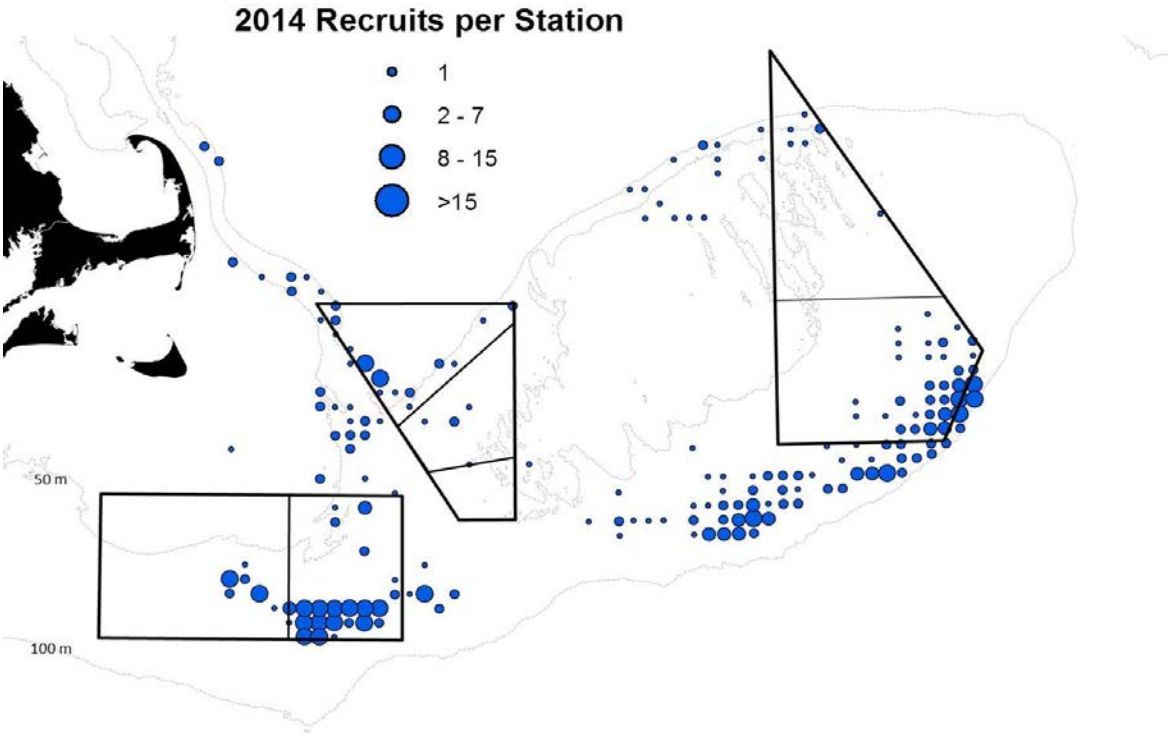


Figure 8 - Total scallop biomass in areas on GB combining optical survey results from 2014 NEFSC Habcam Version 4 and Arnie's Fishery Habcam Version 2

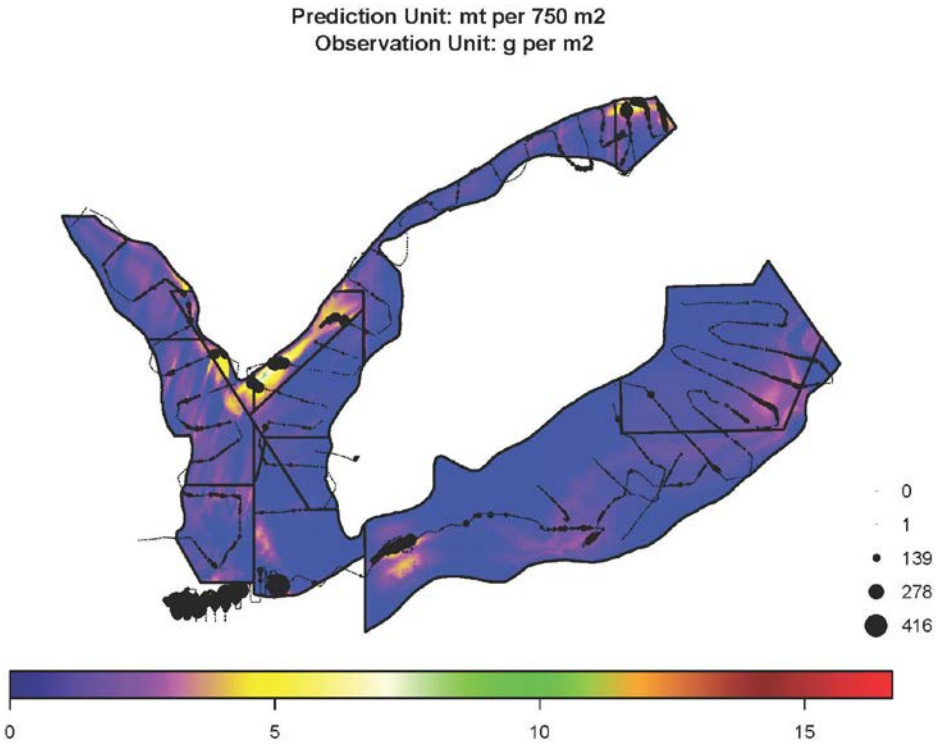


Figure 9 – Distribution of scallops by shell height from 2014 Arnie's Fishery Habcam Version 2

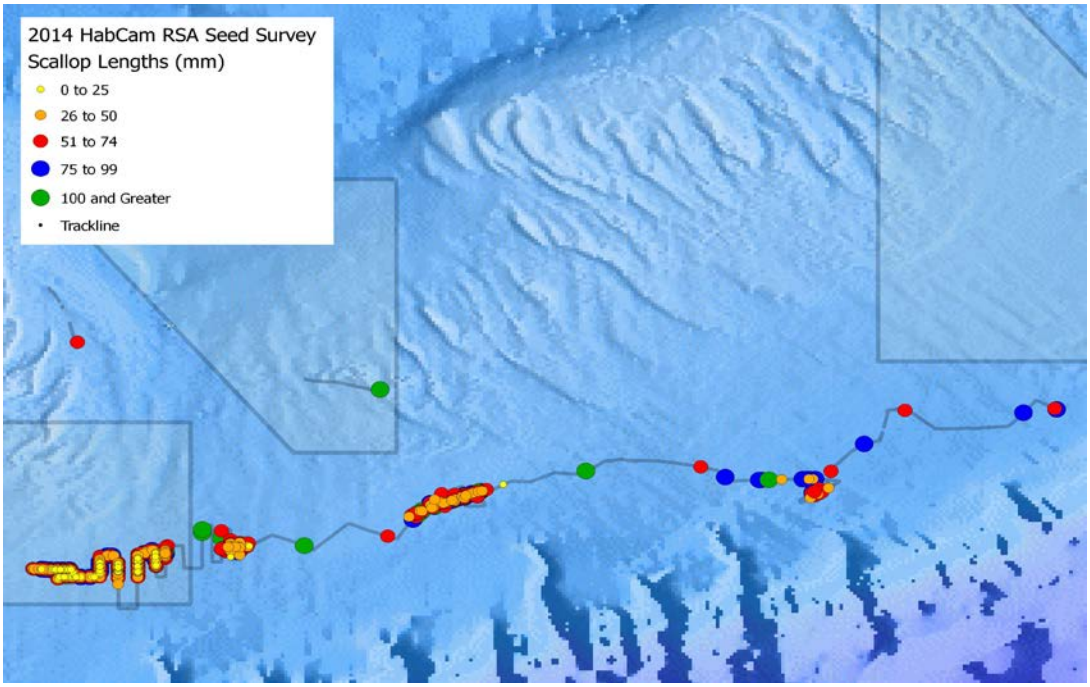
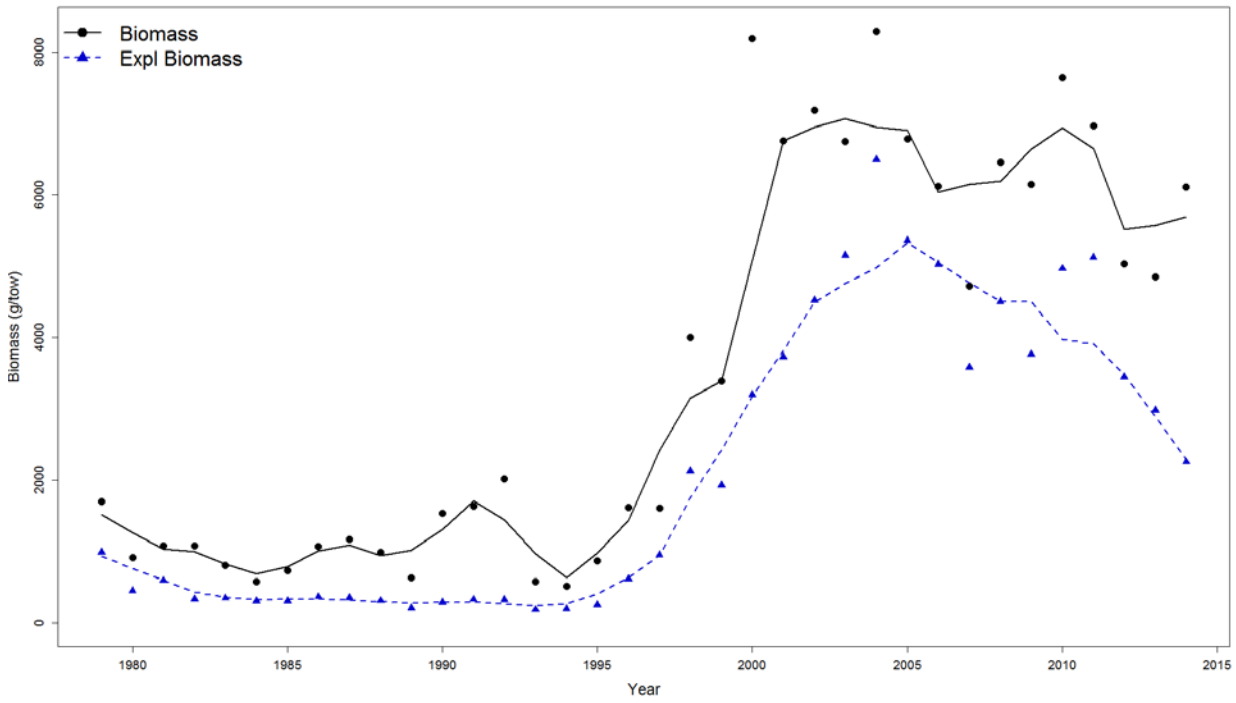


Figure 10 – GB dredge survey biomass and exploitable biomass time series (1979-2014)



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)

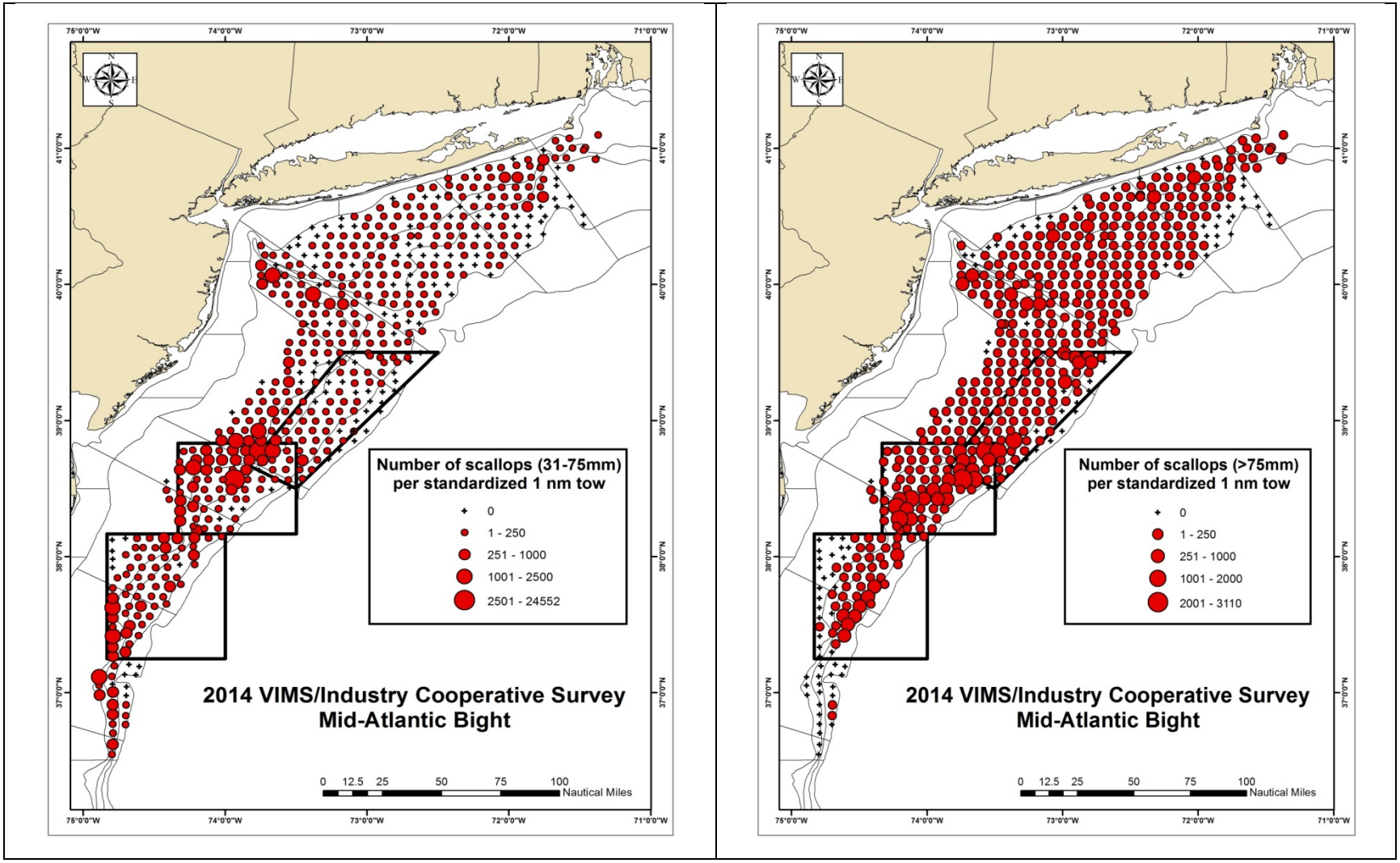


Figure 12 - Total scallop abundance (numbers per station) for MA region from the 2014 SMAST video survey (LEFT) and abundance of small scallops less than 75mm (RIGHT)

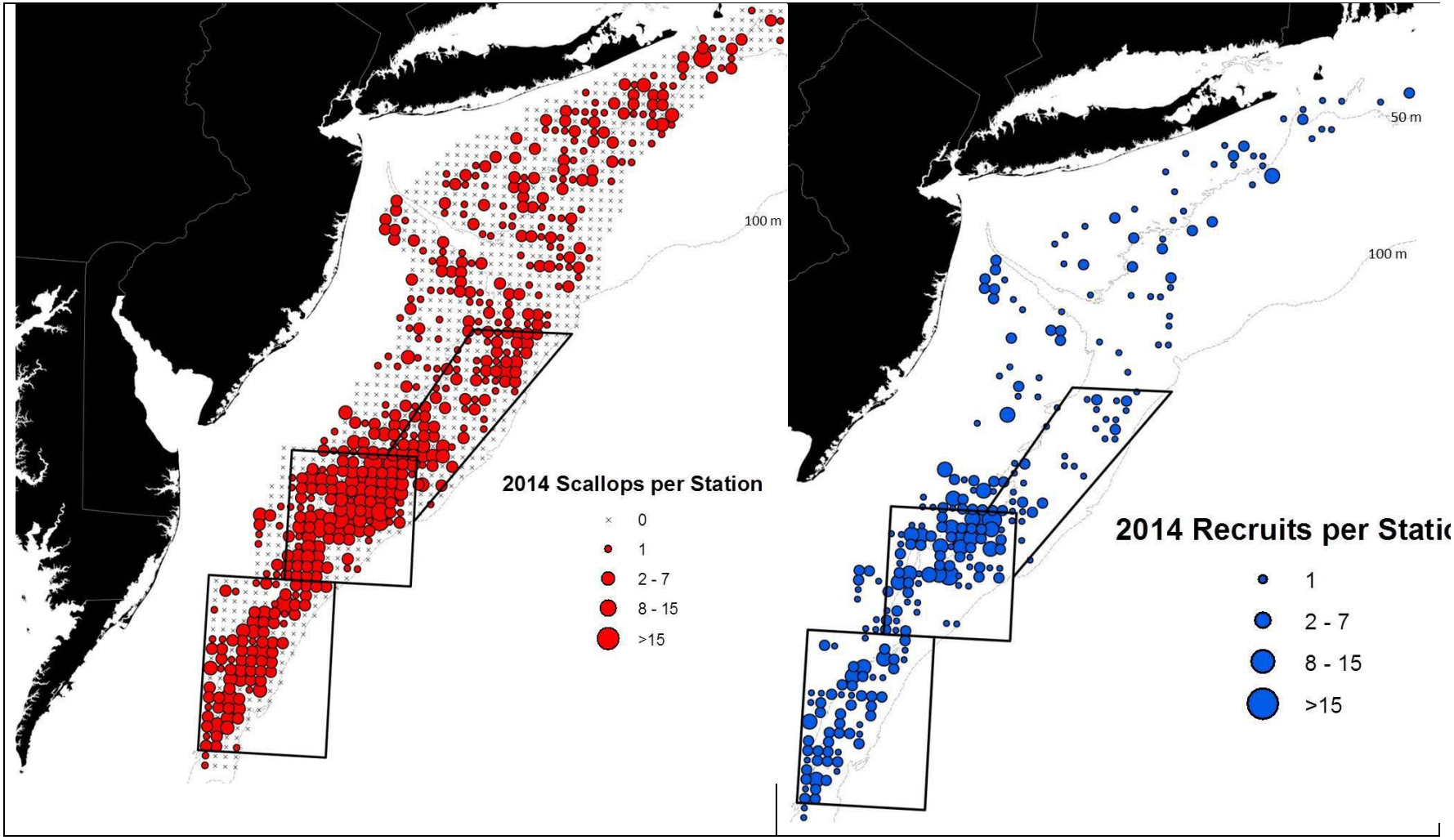


Figure 13 - Total scallop biomass for the Mid-Atlantic from the 2013 NEFSC optical survey (Seahorse)

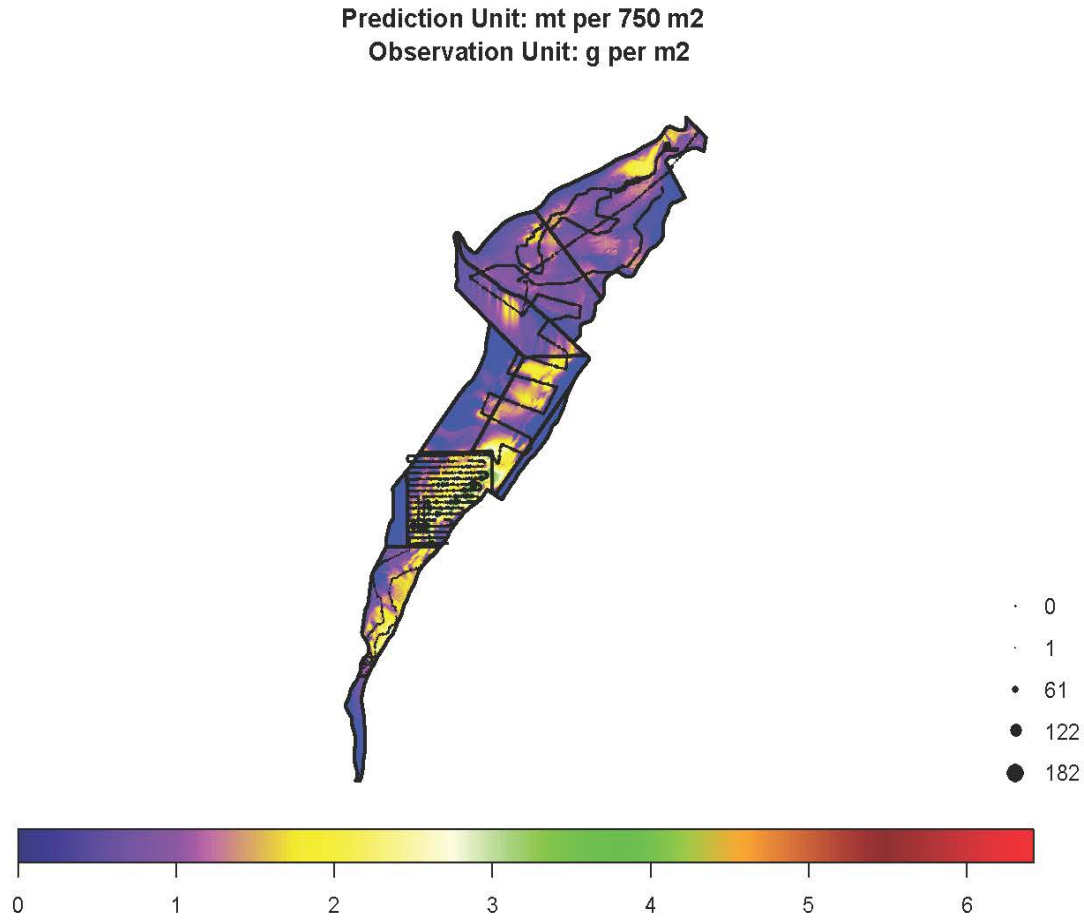


Figure 14 – MA dredge survey biomass and exploitable biomass time series (1979-2014)

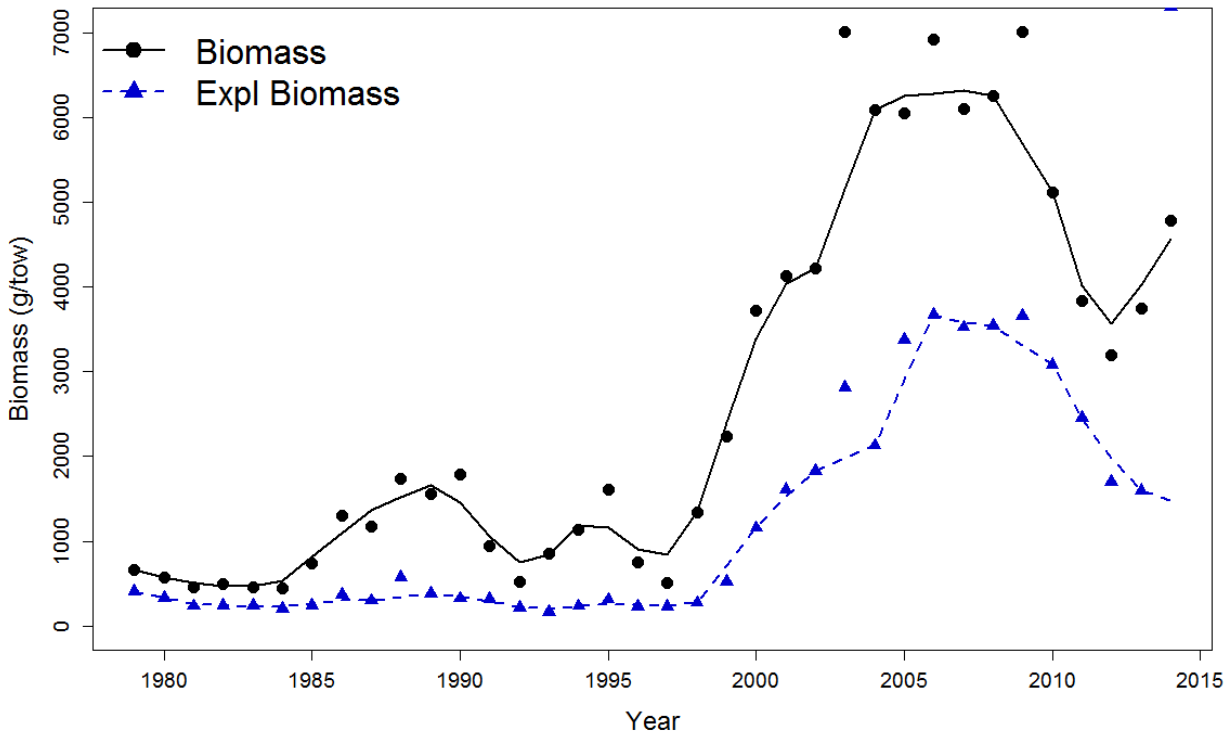


Figure 15 – NEFSC biomass survey indices (through 2014)

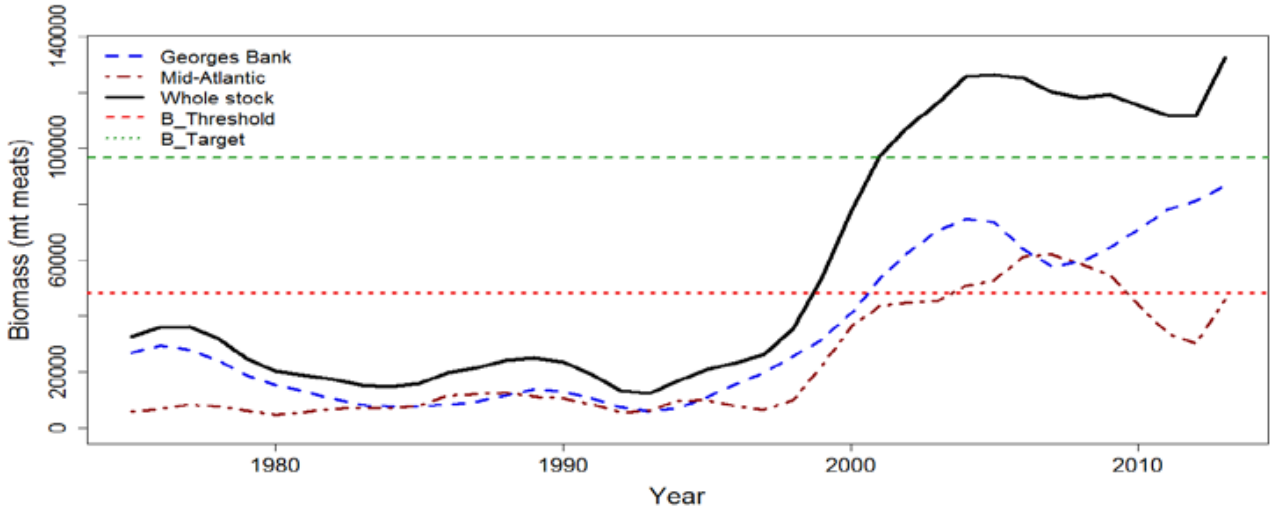


Table 3 – Summary of biomass estimates by SAMS area (2014 surveys)

	DREDGE			SMAST			Habcam			Totals		
Area	Bms	SE	Ebms	Bms	SE	Ebms	Bms	SE	Ebms	Bms	SE	Ebms
Delmarva	4,707	778	2,080	9,626	1,093	3,935	10,598	2,526	2,815	8,310	1,651	2,943
Elephant Trunk	16,392	3,426	8,067	24,799	2,909	12,938	36,154	14,729	12,648	25,782	8,891	11,218
HCS	5,805	1,206	3,044	7,381	1,021	3,143	18,041	6,752	9,401	10,409	4,004	5,196
Virginia	279	79	3	NS	NS	NS				279	79	3
NYB	6,822	1,656	4,140	3,609	495	2,119	12,756	6,082	6,261	10,618	3,651	4,173
Long Island	11,966	816	8,438	10,269	950	6,402	14,305	11,131	6,520	12,950	6,467	7,120
NYB Ext	1,766	332	757	6,900	867	4,013	*			*		1,590
Block Island	939	206	535	1,372	671	521	*			*		352
Mid-Atlantic Total	48,676	4,167	27,064	63,956	3,612	33,071	91,854	20,577	37,645	68,348	12,368	32,595
CL-I NA	2,163	649	1,854	5,115	3,004	3,091	21,378	4,510	14,020	9,984	3,151	6,322
CL-1 Acc	333	59	246	962	375	190	*			*	219	218
CL-2 NA	8,989	3,190	7,061	5,550	2,054	4,191	7,087	1,486	4,077	7,209	2,353	5,110
CL-2 Acc	7,848	2,462	3,642	8,197	2,570	929	9,835	3,681	2,155	8,627	2,956	2,242
NLS-NA	2,240	1,142	675	5,211	4,650	677				3,726	2,765	676
NLS-Acc	1,637	327	854	30,052	6,534	3,091	3,231	626	1,109	11,640	3,794	1,685
GSch	17,689	1,875	9,485	11,134	7,849	4,949	15,994	3,825	4,917	14,939	5,156	6,450
SEP	15,434	9,833	2,862	7,026	1,359	2,476	16,038	4,019	1,459	12,833	6,183	2,266
NEP	7,752	9,302	3,837	5,863	1,483	2,259	4,330	861	2,031	5,982	5,461	2,709
Georges Bank Total	64,085	14,311	30,516	79,110	12,246	21,853	77,893	19,008	29,768	74,938	11,446	27,677
TOTALS	**112,761**	**14,906**	**57,580**	**143,066**	**12,767**	**54,924**	**159,149**	**28,013**	**67,413**	**143,286**	**16,851**	**60,272**

* Included in other areas

still confirming

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	1,854,836	1,681,241
SW & LA	0	0	0	0
SW & IFQ (A)	94,533	252638	107,907	154171
SW & NGOM (B)	0	0	4207	18284
SW & Incidental (C)	2,916	0	133	0
Total Catch	1,462,522	2,274,101	1,967,083	1,853,696
Dual Permit Total	97,449	252,638	112,247	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**	**1,967,083**	**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

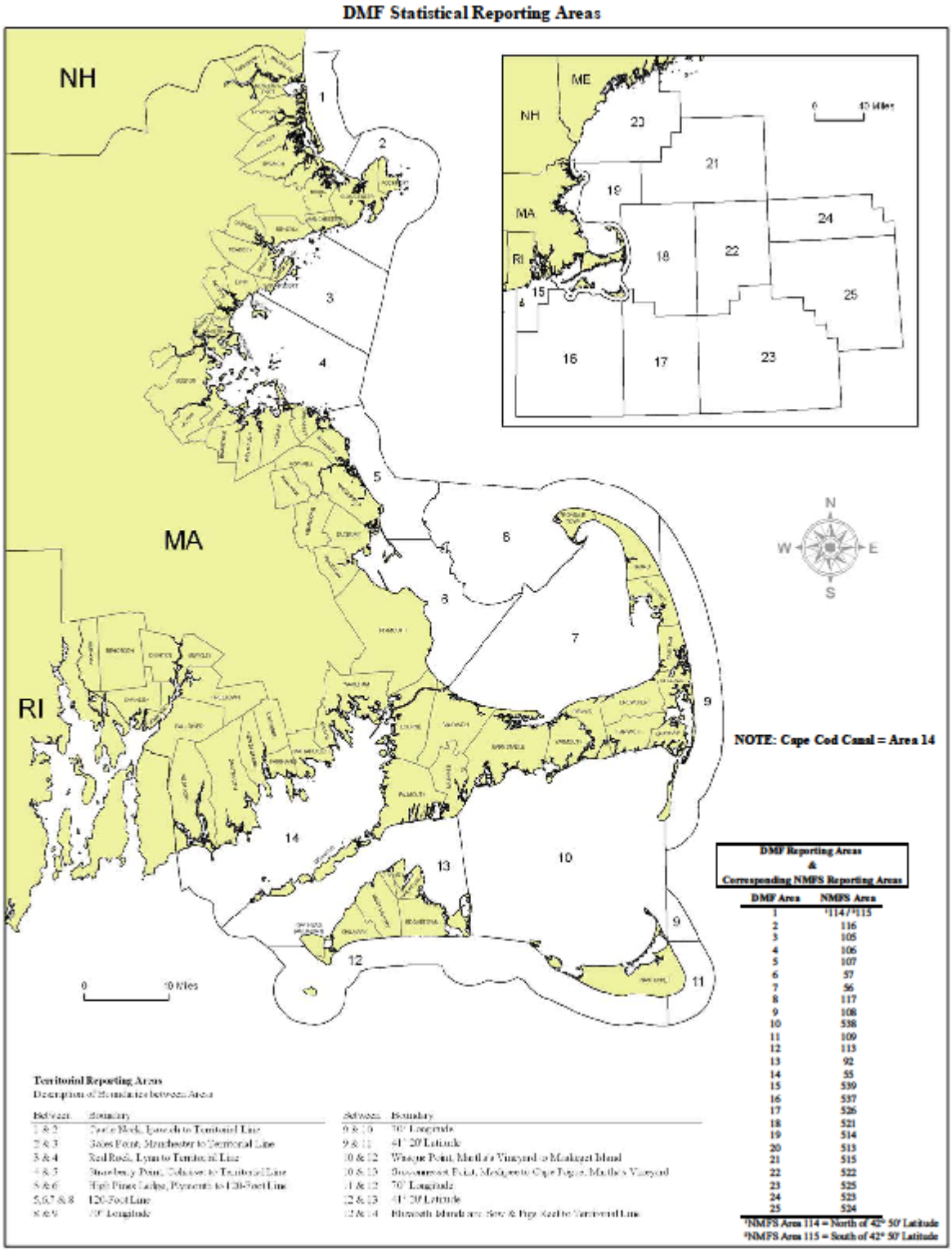
Total State Waters Sea Scallop Harvest by Month - Calendar Year, Live Lbs

Month	2010	2011	2012	2013
1	86,820	159,615	103,943	163,380
2	38,984	158,565	111,024	93,915
3	115,772	263,454	229,249	246,990
4	199,499	369,440	243,735	228,674
5	210,909	334,350	280,352	274,372
6	158,114	259,409	218,606	282,115
7	113,997	250,218	208,094	235,503
8	150,554	142,240	148,882	91,771
9	78,941	68,688	117,593	73,388
10	72,411	110,011	88,883	52,582
11	93,405	56,949	72,326	36,111
12	143,115	101,162	144,397	74,896
Grand Total	1,462,521	2,274,101	1,967,083	1,853,697

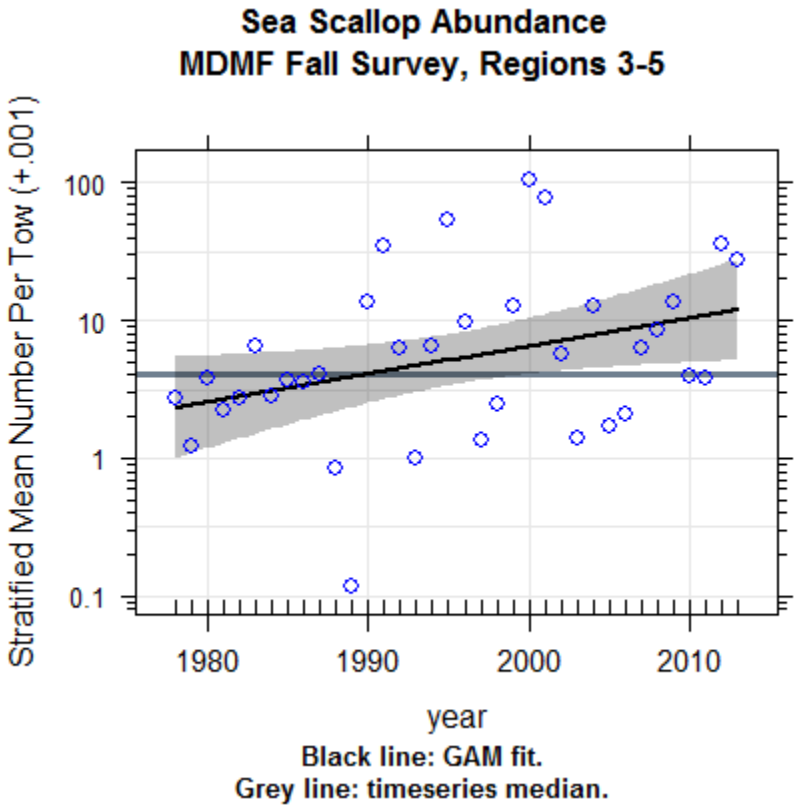
Source: MA Trip Level Reports & NMFS VTR's

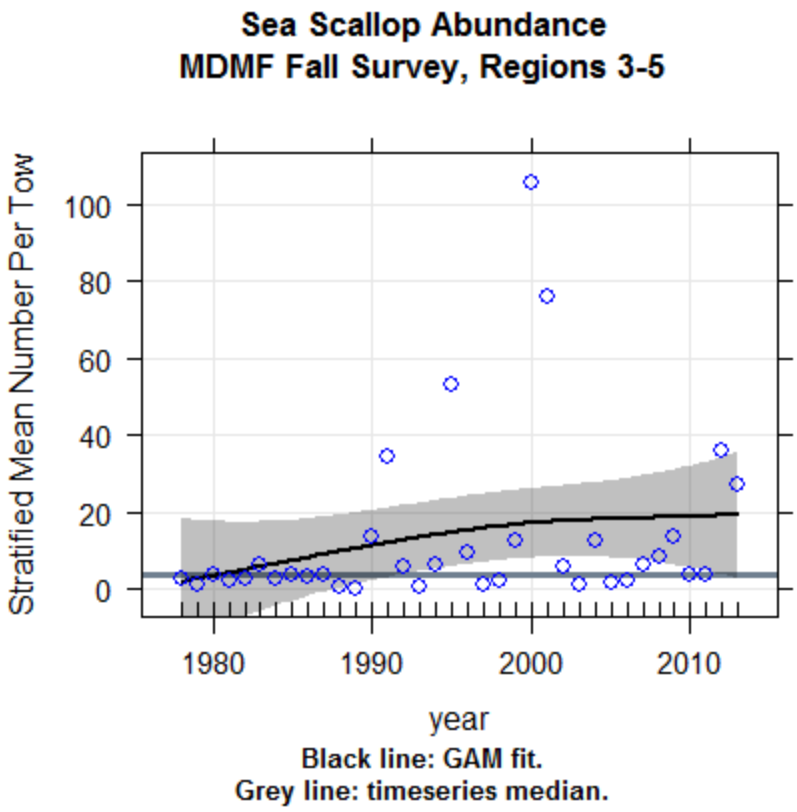
*** = Confidential

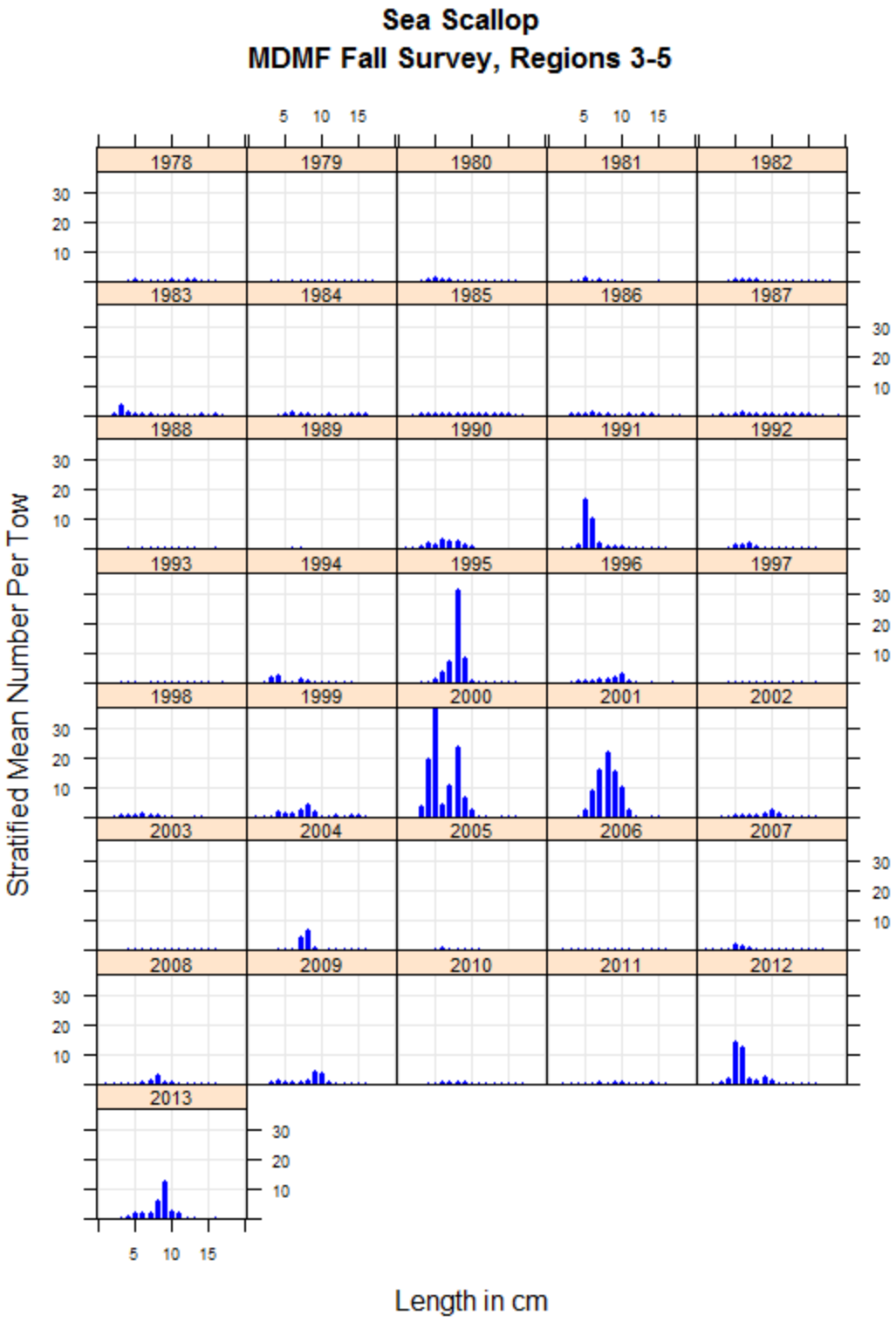
Figure 16 – Massachusetts Department of Marine Fisheries Statistical Reporting Areas



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
1978
1979
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1991
1992
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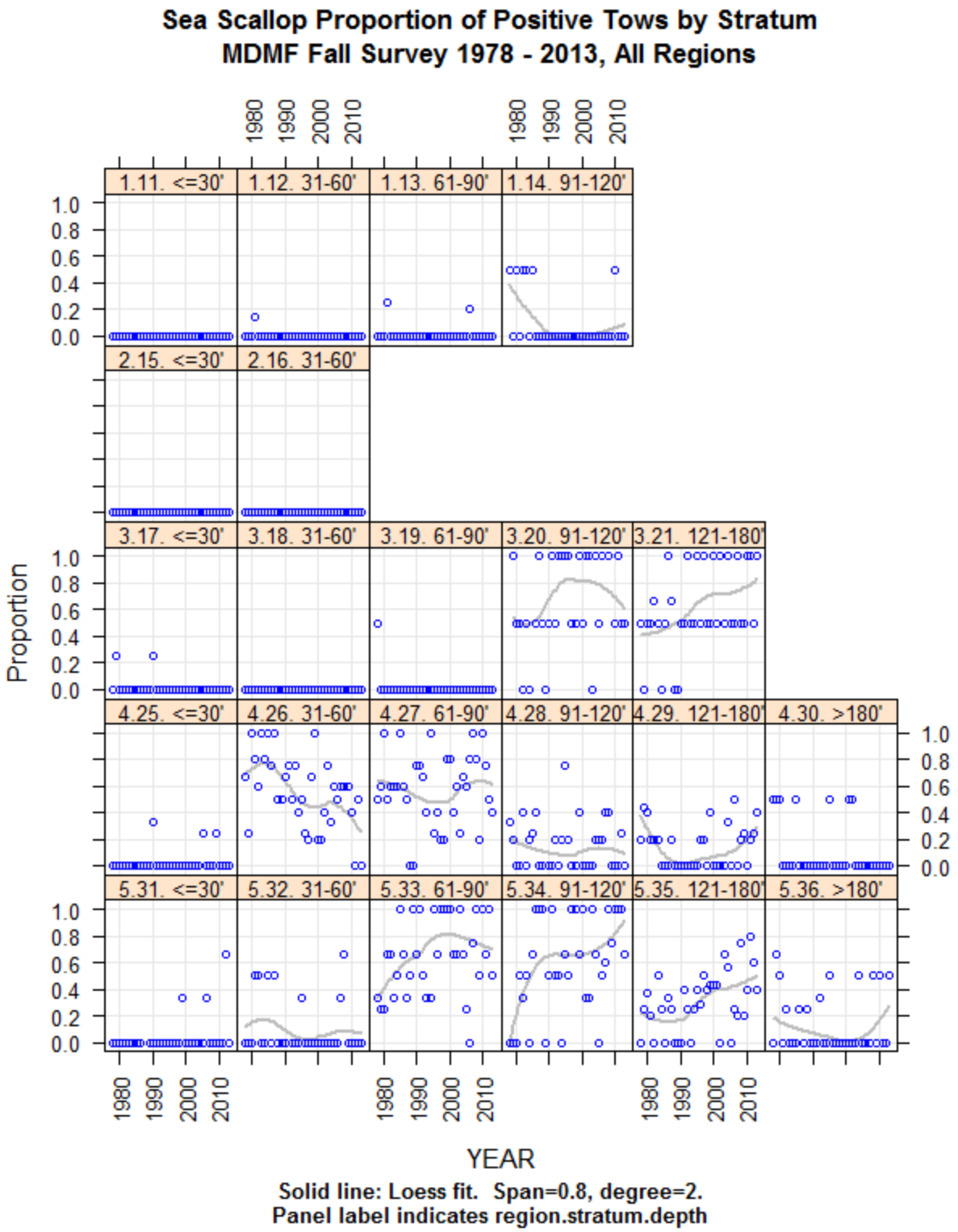
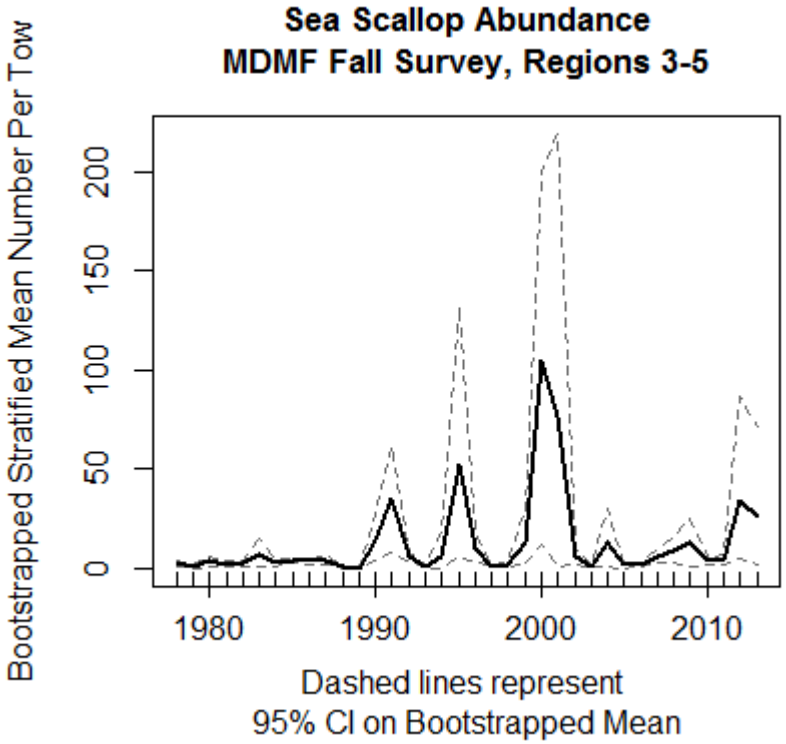
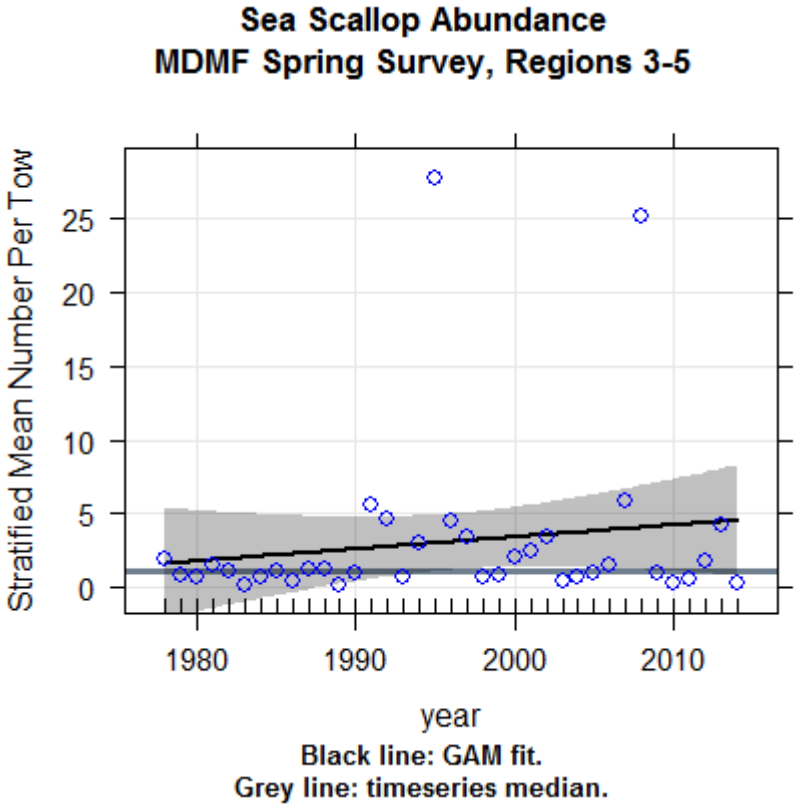
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Stratified Mean Number Per Tow
Length in cm

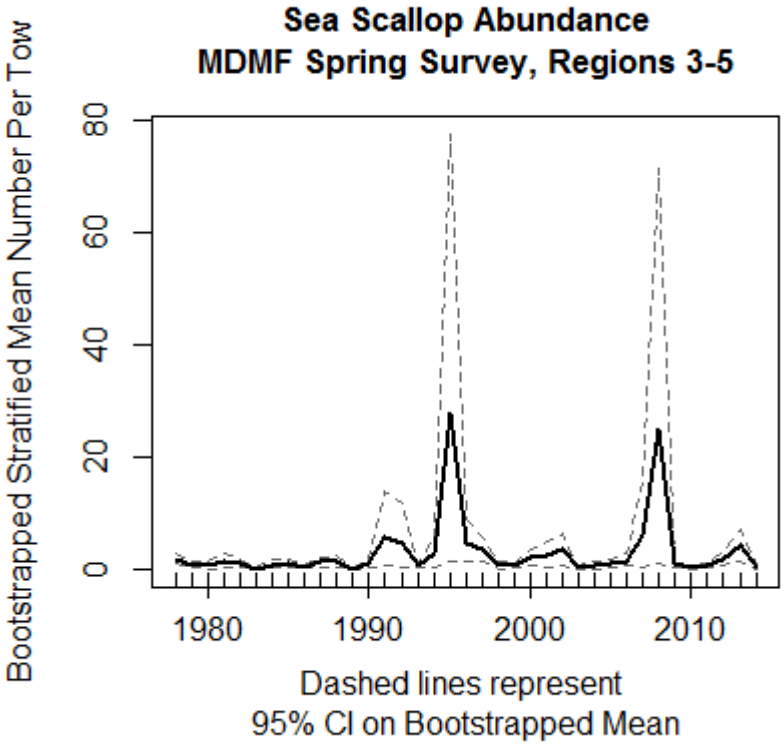

Sea Scallop Proportion of Positive Tows by Stratum
MDMF Fall Survey 1978 - 2013, All Regions
1.11. <=30'
1.12. 31-60'
1.13. 61-90'
1.14. 91-120'
2.15. <=30'
2.16. 31-60'
3.17. <=30'
3.18. 31-60'
3.19. 61-90'
3.20. 91-120'
3.21. 121-180'
4.25. <=30'
4.26. 31-60'
4.27. 61-90'
4.28. 91-120'
4.29. 121-180'
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

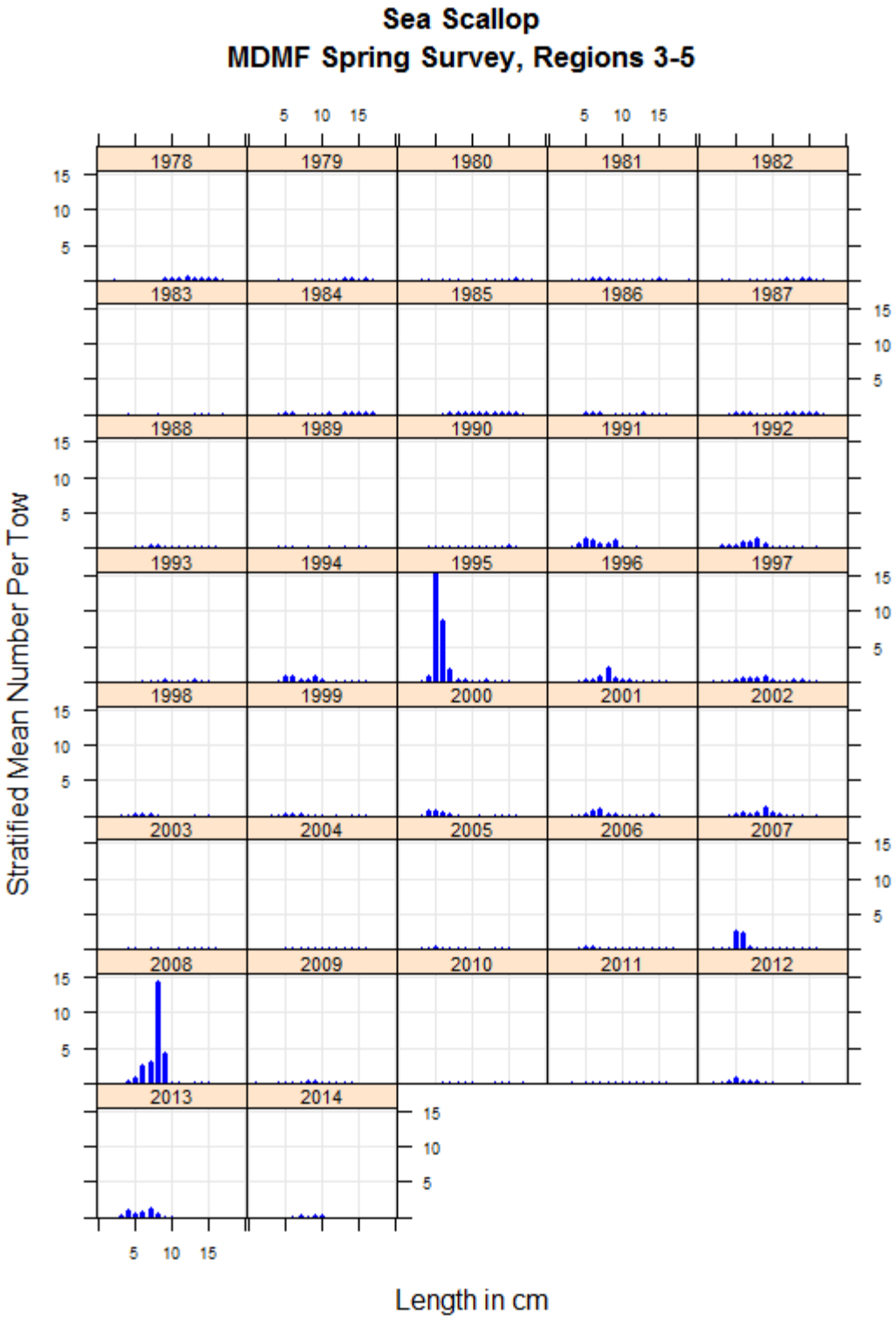
MDMF Fall Survey, Regions 3-5

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
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1991
1992
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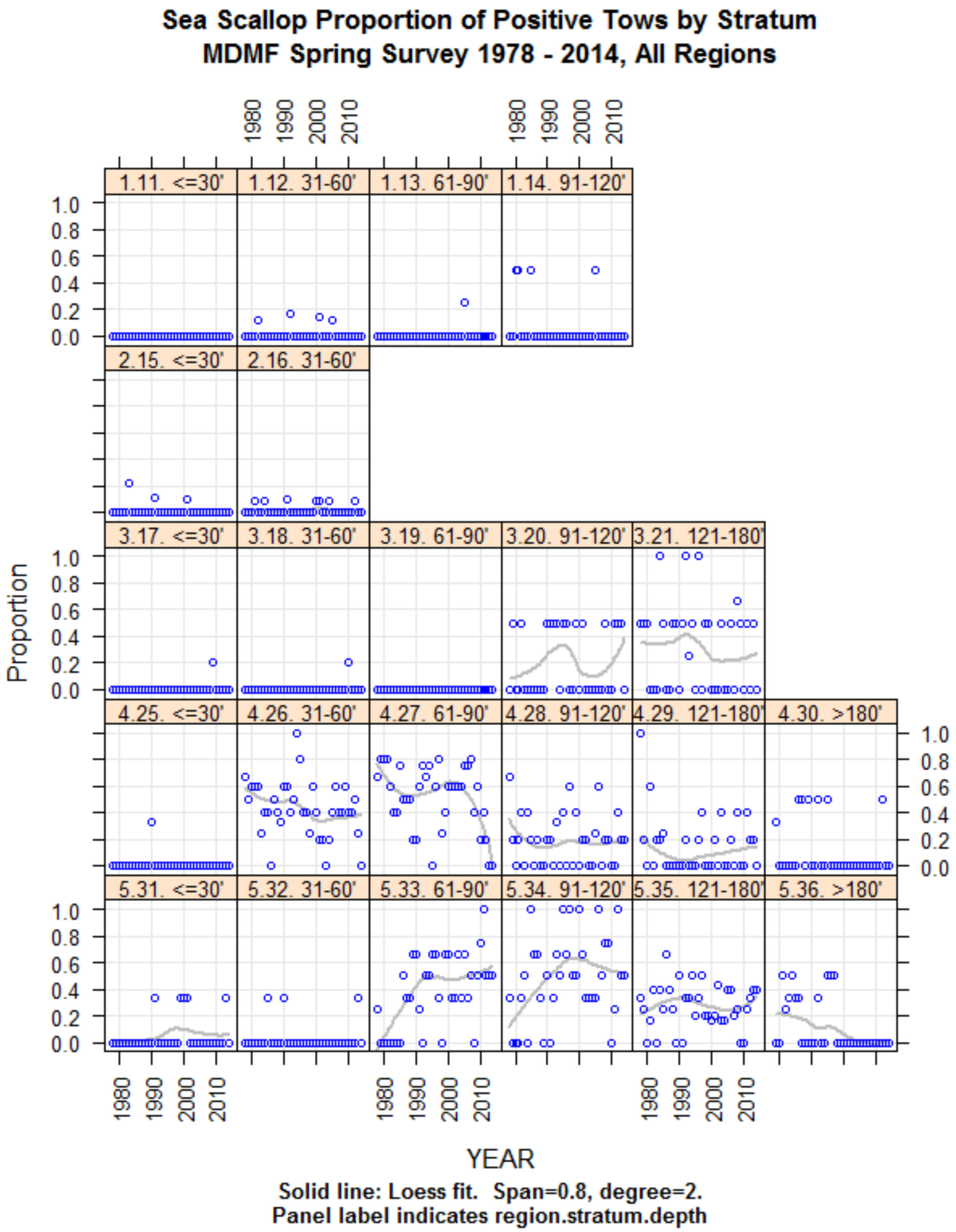
2007
2008
2009
2010
2011
2012
2013
2014
Stratified Mean Number Per Tow
Length in cm


Sea Scallop Proportion of Positive Tows by Stratum
MDMF Spring Survey 1978 - 2014, All Regions
1.11. <=30'
1.12. 31-60'
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 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.

For the upcoming 2014-15 season, the entire fishery will now be governed by a trigger mechanism whereby when in-season data indicate that 30-40% of the harvestable biomass has been removed from any area, it will be closed via emergency rulemaking. Also, the 10 year rotational management plan will be fully phasing in for Zone 2 with only 1/3 of the bottom open for harvest while the remaining 2/3rds rotates closed for rebuilding. Lastly, targeted closures have been implemented prior to the opening of the season to protect high concentrations of sublegal scallops, spat-producing scallops as well as six municipal moorings fields from dragging activity.

For more information about the 2014-15 Maine state waters fishery see:
http://www.maine.gov/dmr/rm/scallops/management/2013-14/2014-15/MaineDMRScallopManagement2014-15.htm

Figure 17 – Three scallop management zones in Maine state waters

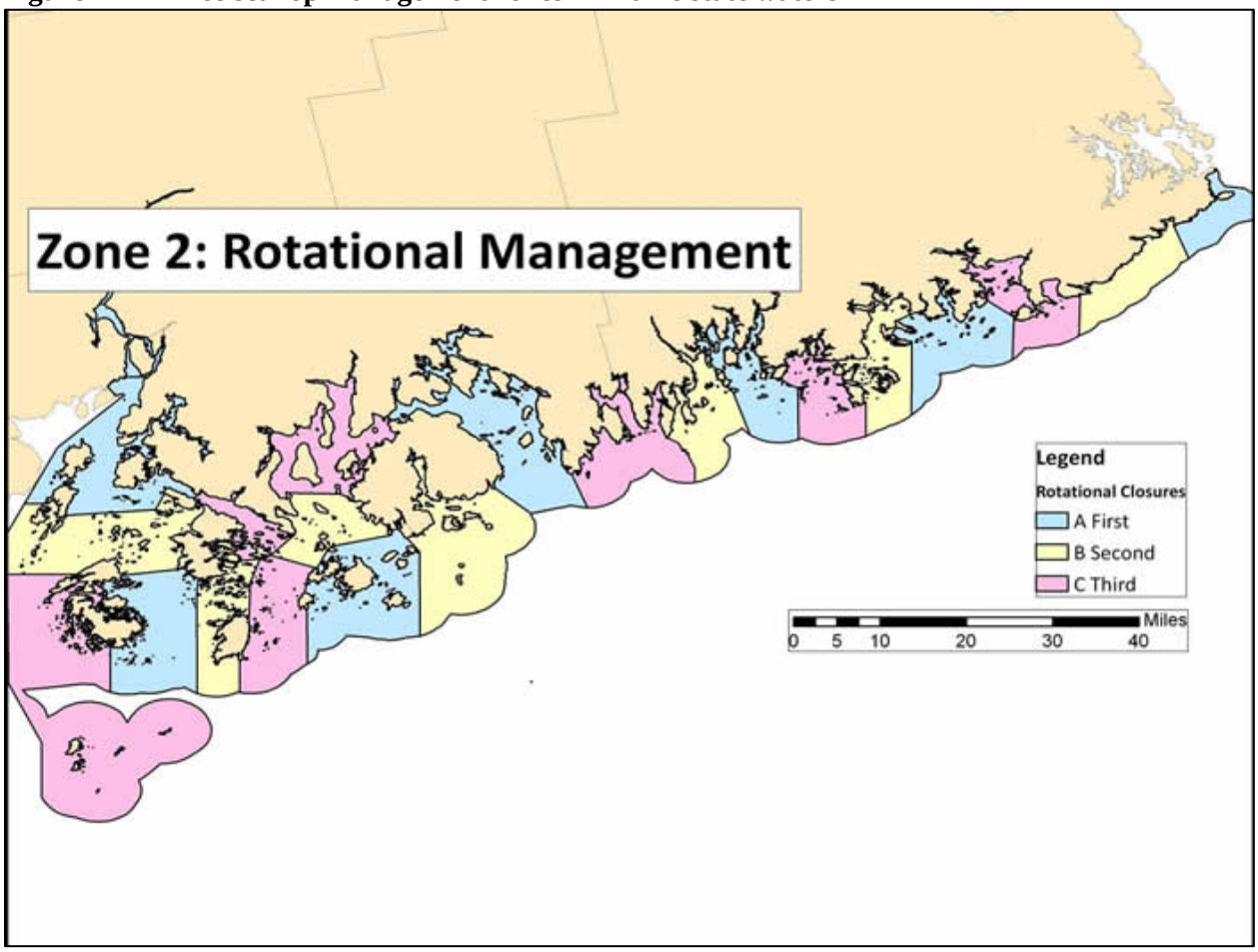
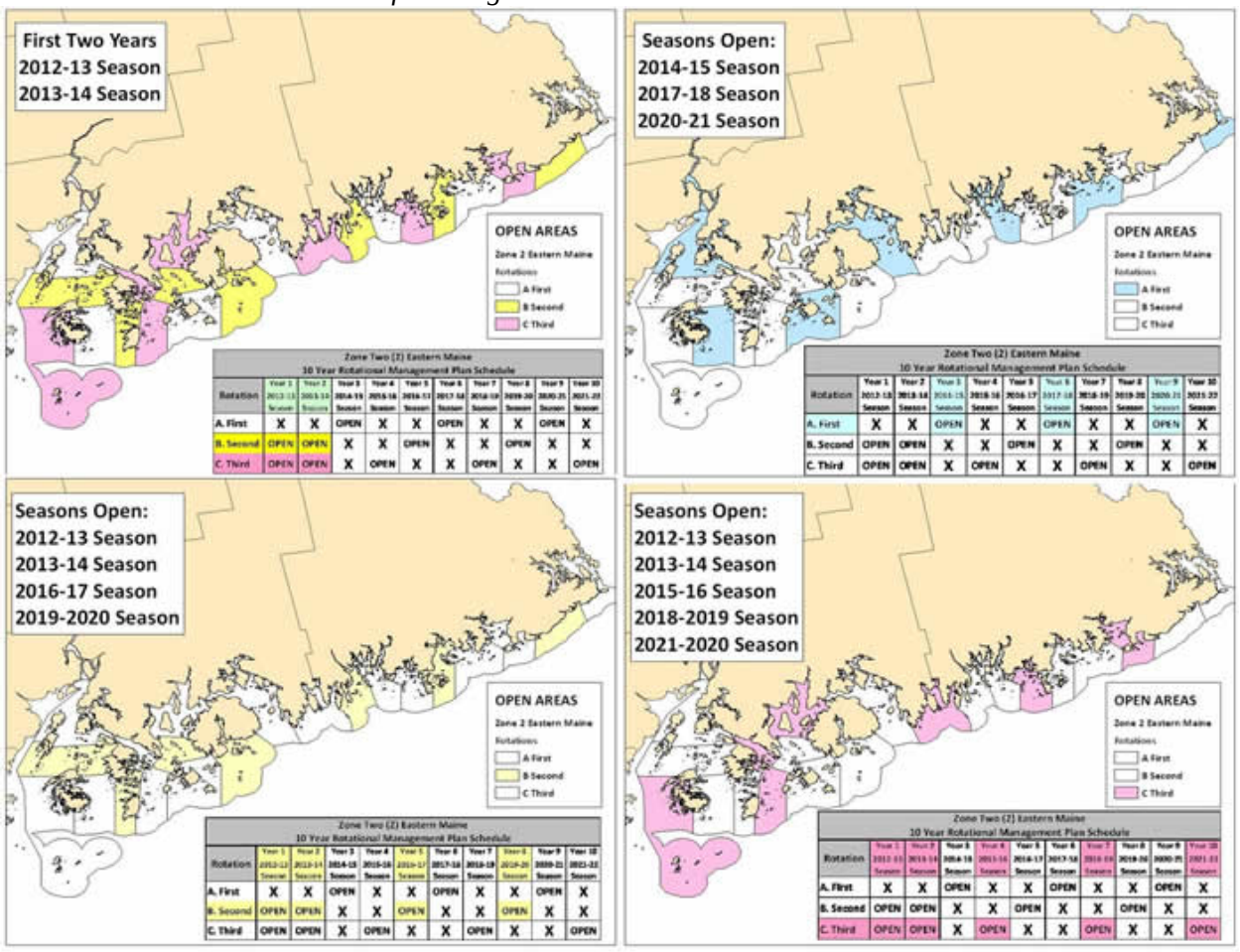


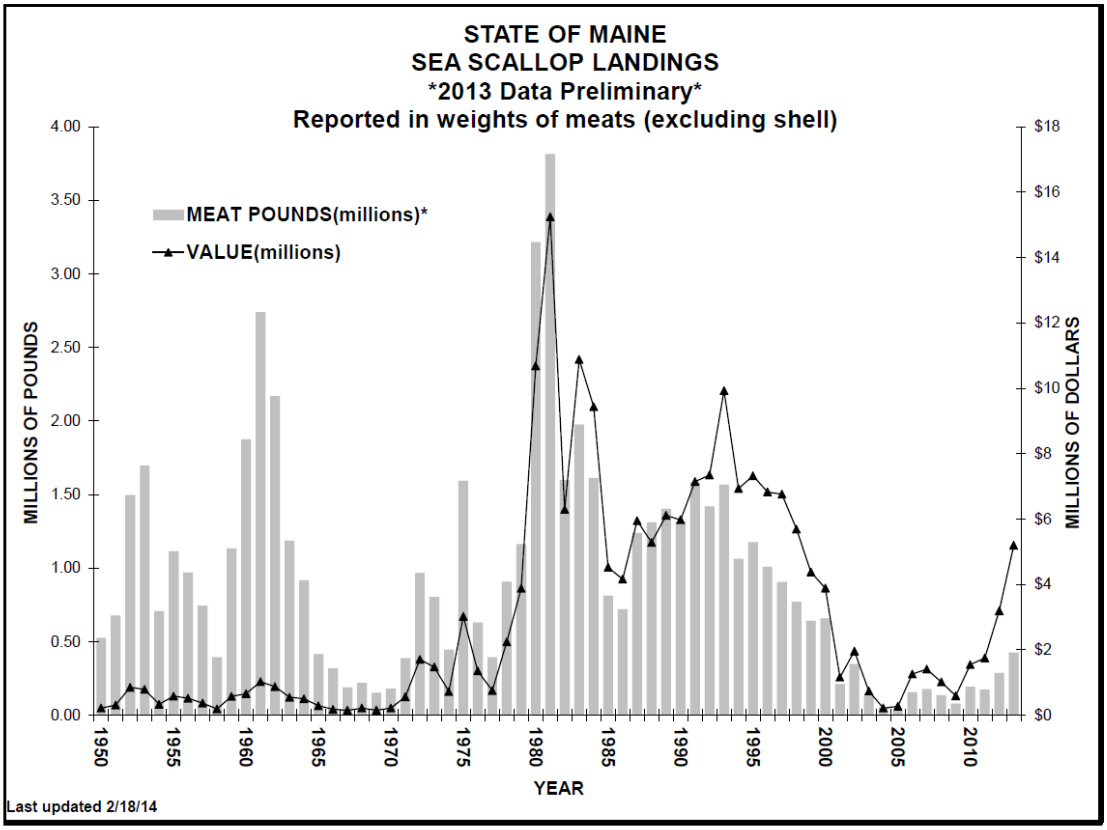
Figure 18 – Rotational Management Schedule for Maine State Waters
Areas divided into three different rotations (A=First, B=Second, C=Third). For the first two years, the areas shaded in PINK and YELLOW were open. This season, one third of the coast will be open for harvest and will rotate with each following season



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).

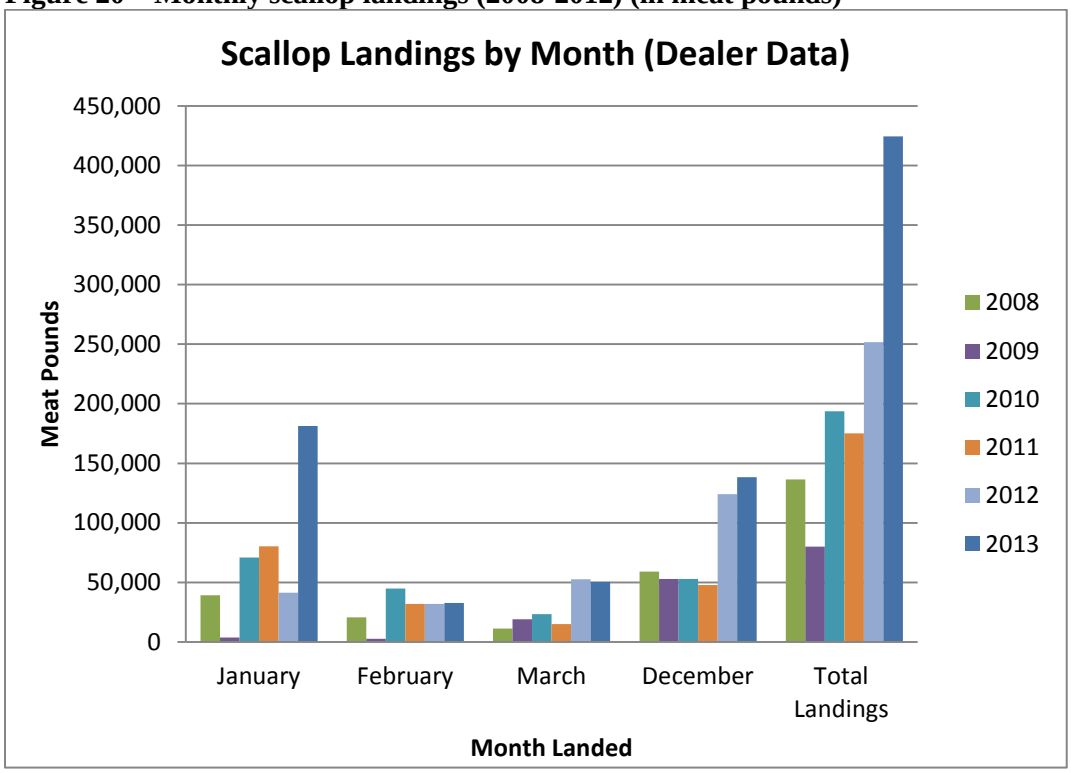
Figure 19 - Maine scallop landings from 1950 to 2013. Landings are reported in meat pounds.
http://www.maine.gov/dmr/commercialfishing/documents/scallop.graph.pdf



Landings by Month (5 Year Trend)

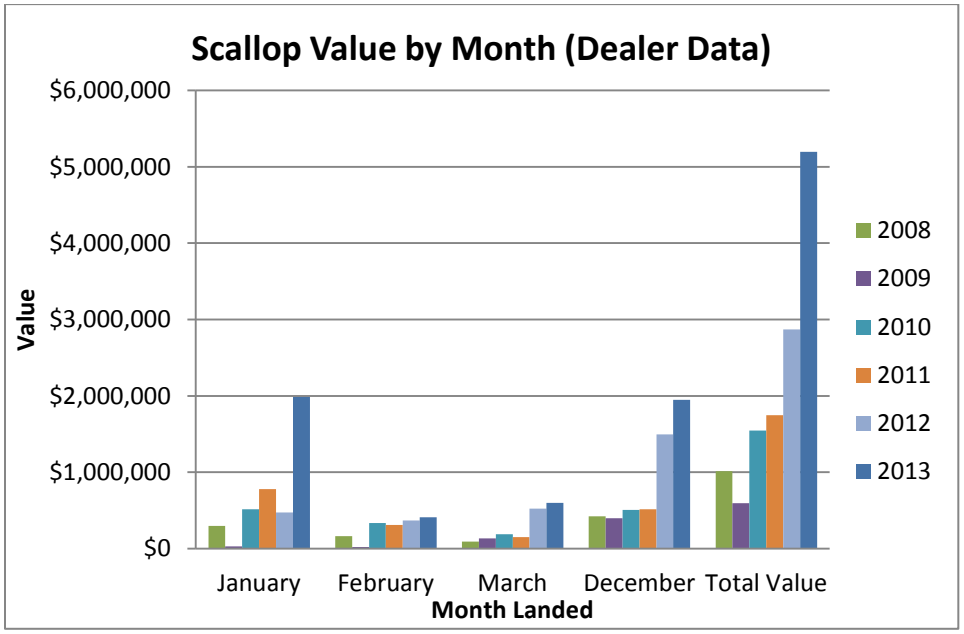
Scallop Meat Pounds by Month (Dealer Data)						
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
January	39,252	3,835	70,884	80,410	41,400	181,329
February	20,765	2,609	44,980	31,883	32,039	32,733
March	11,275	19,114	23,476	15,004	52,759	50,619
December	58,962	52,861	53,018	47,759	124,043	138,450
Total Landings	**136,556**	**79,923**	**193,753**	**175,123**	**251,631**	**424,547**

Figure 20 – Monthly scallop landings (2008-2012) (in meat pounds)



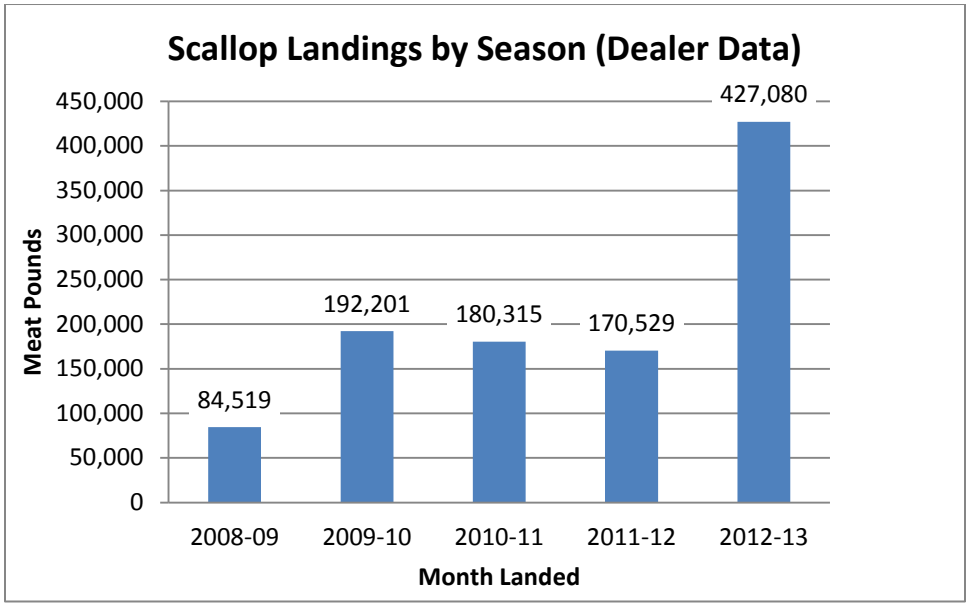
Value by Month (5 Year Trend)

Scallop Value by Month (Dealer Data)						
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
January	$295,448	$29,431	$512,797	$776,234	$471,395	$1,986,304
February	$160,996	$19,252	$332,430	$310,290	$367,588	$410,682
March	$92,359	$134,061	$188,075	$148,491	$521,135	$599,525
December	$420,688	$398,650	$504,463	$512,252	$1,495,170	$1,948,819
Total Value	**$1,014,667**	**$592,386**	**$1,547,293**	**$1,747,931**	**$2,867,776**	**$5,194,553**



Landings by Season (5 Year Trend)

Scallop Meat Pounds by Season (Dealer Data)					
Year	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**
Total Landings	**84,519**	**192,201**	**180,315**	**170,529**	**427,080**



Value by Season (5 Year Trend)

Scallop Value by Season (Dealer Data)					
Year	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**
Total Value	**$603,433**	**$1,431,952**	**$1,739,479**	**$1,822,183**	**$4,865,447**

Figure 21 – Number of active ME state water license holders in each season for the past five years

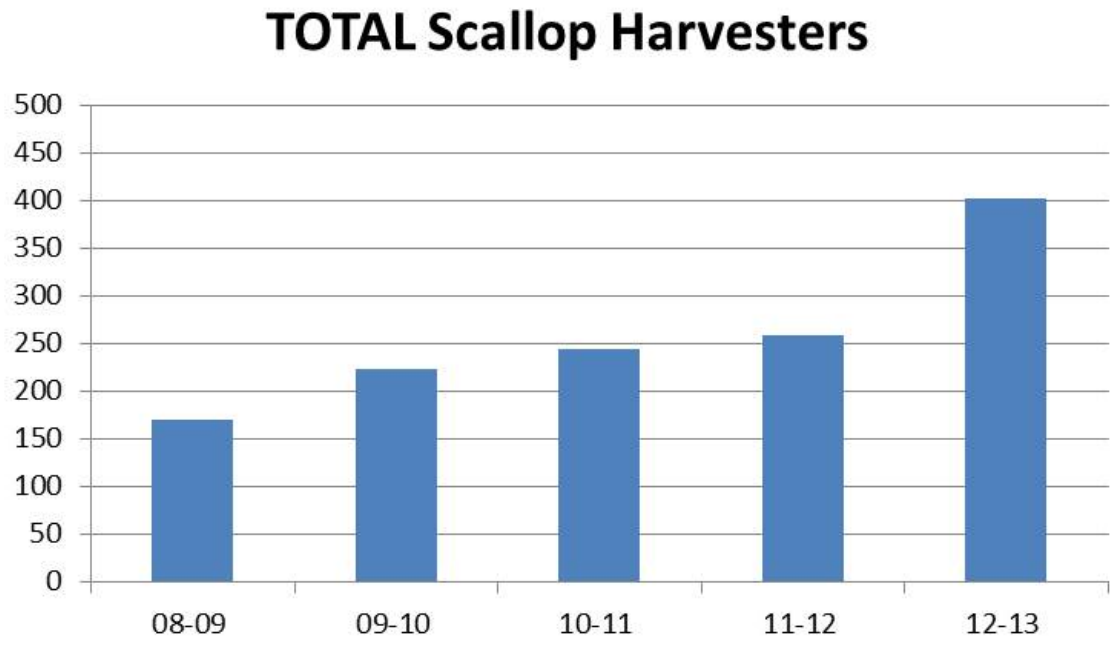


Table 6 – Summary of scallop landings from state waters for harvesters in Maine by permit held

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

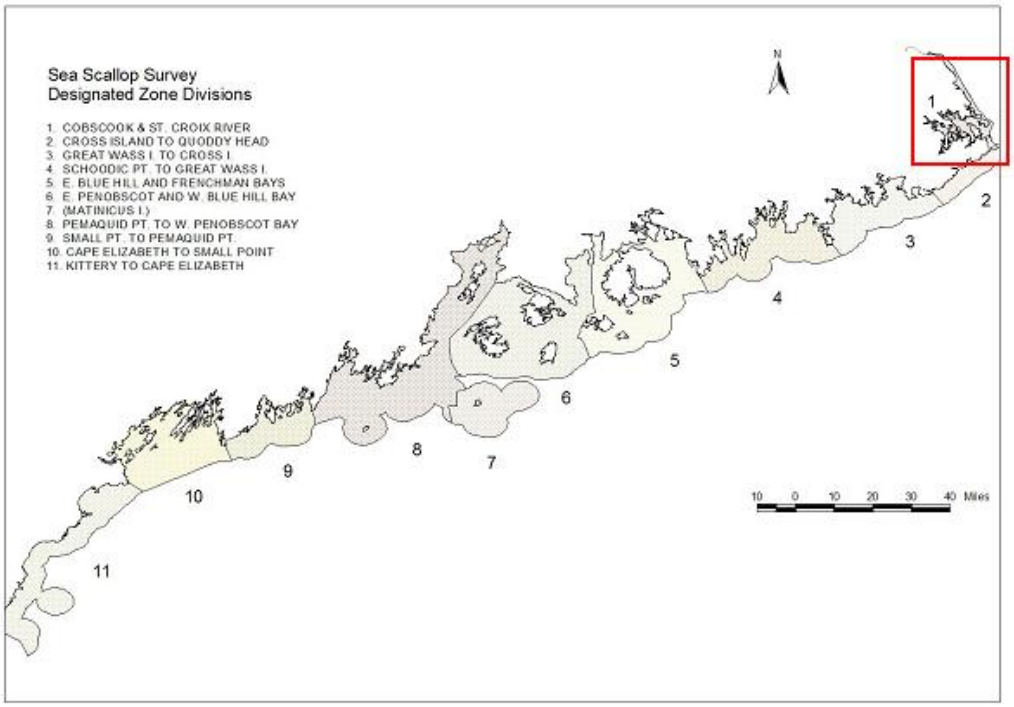
An annual dredge-based fishery-independent survey by the Maine Department of Marine Resources (DMR) of the scallop resource within Maine state waters has been conducted since 2002 (with the exception of 2004). This survey provides information on size distribution, the shell height-meat weight relationship, 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 22 - 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 23 - Biomass (meat weight, with standard error) of harvestable (legal-size) scallops in Cobscook Bay, 2003-13

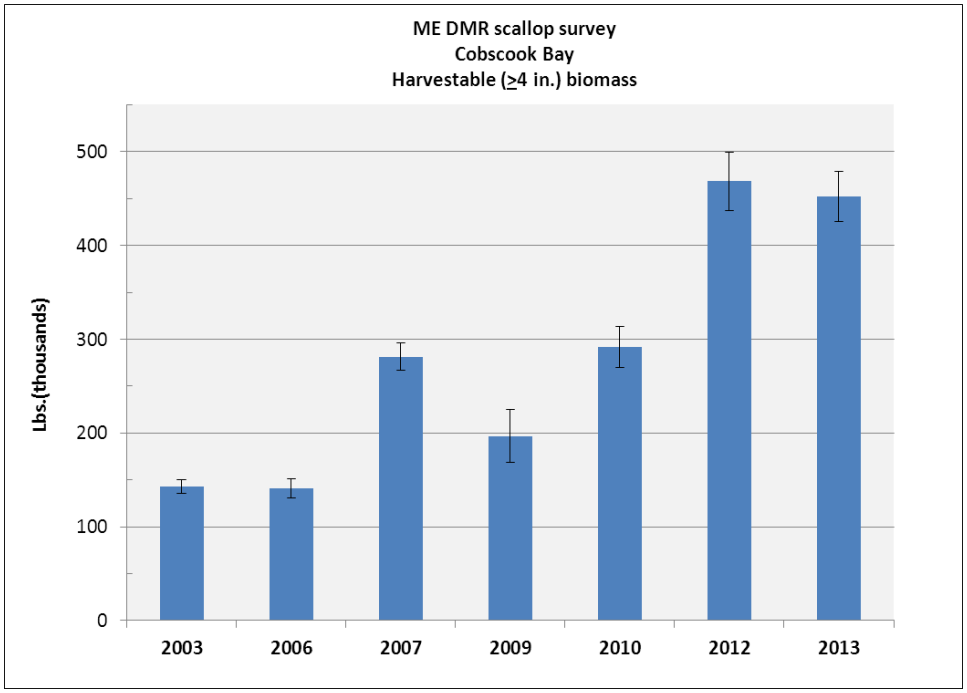
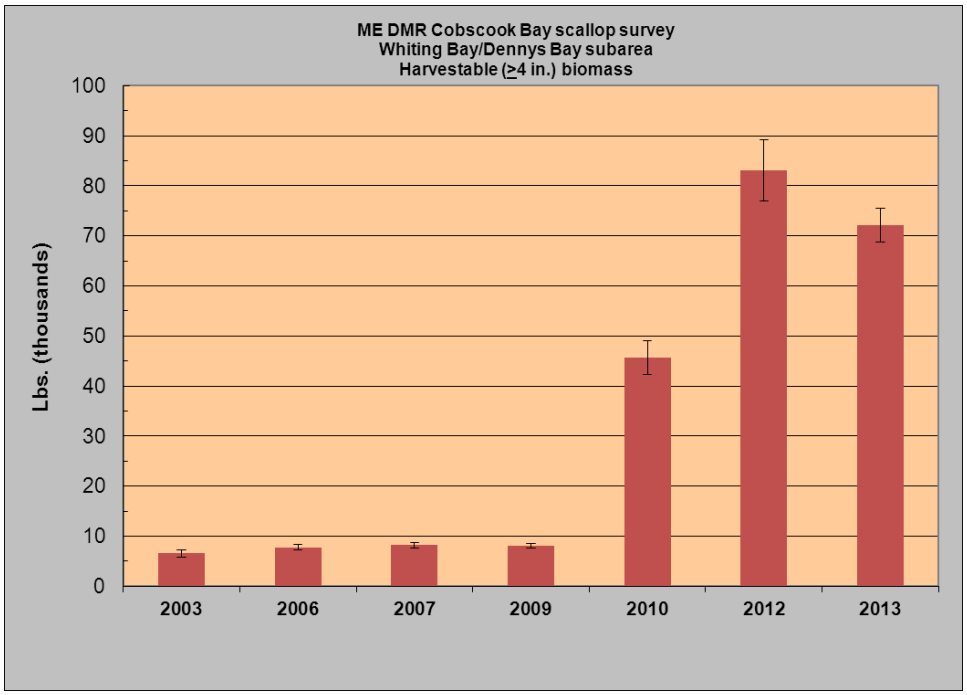


Figure 24 - Biomass (meat weight, with standard error) of harvestable (legal-size) scallops in Whiting Bay/Dennys Bay, 2003-13



- **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 25 - Maine scallop limited access areas (LAAs) surveyed in spring 2013

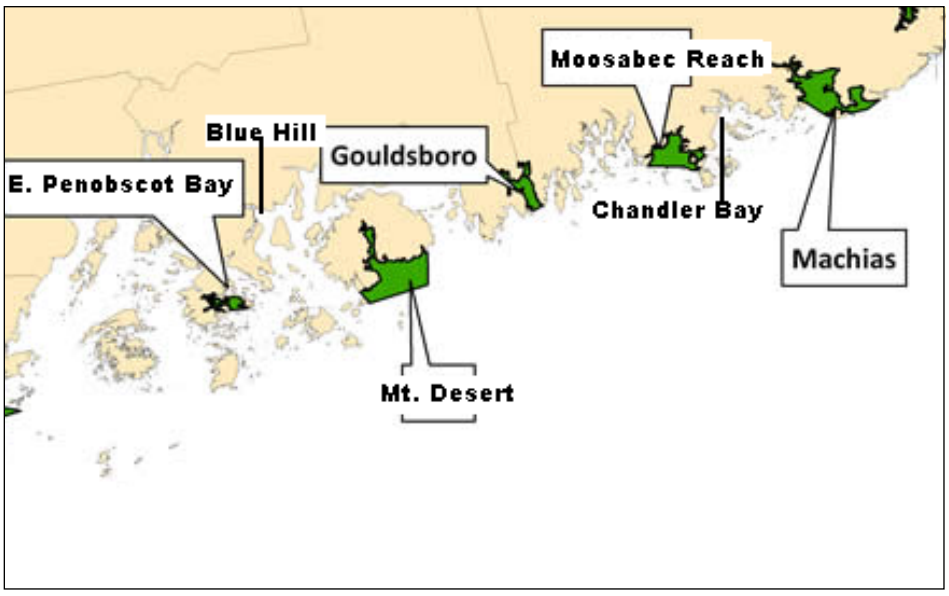


Figure 26 - Estimated mean harvestable scallop biomass (meat lbs.), Machias Bay LAA, 2011-13

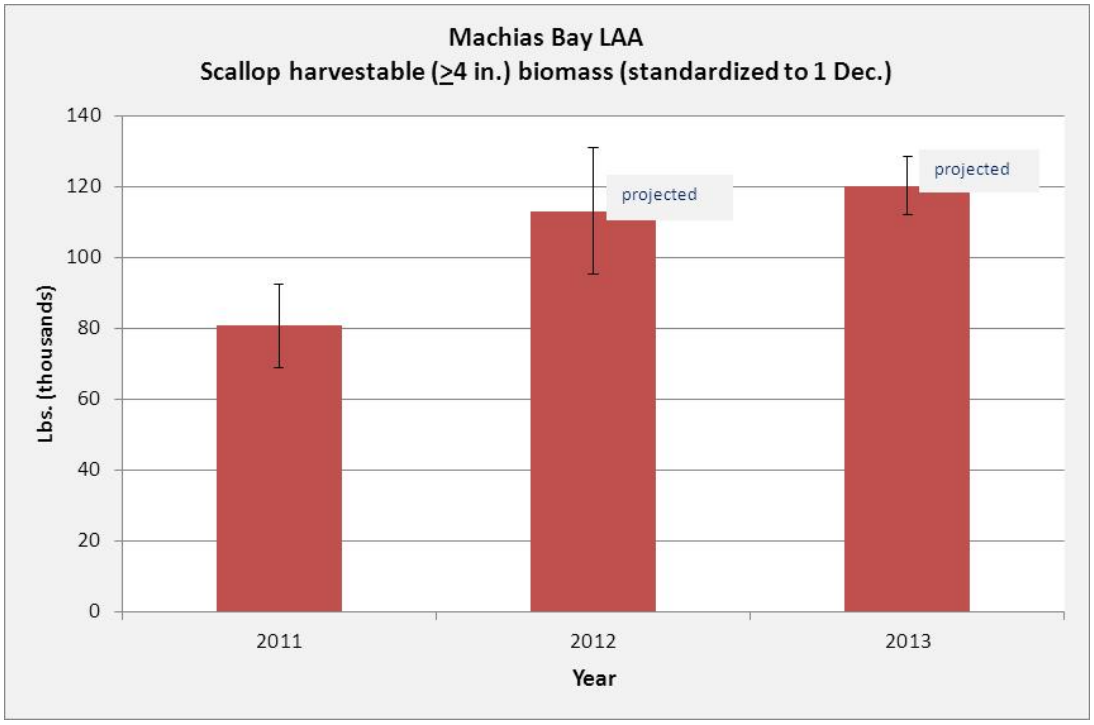
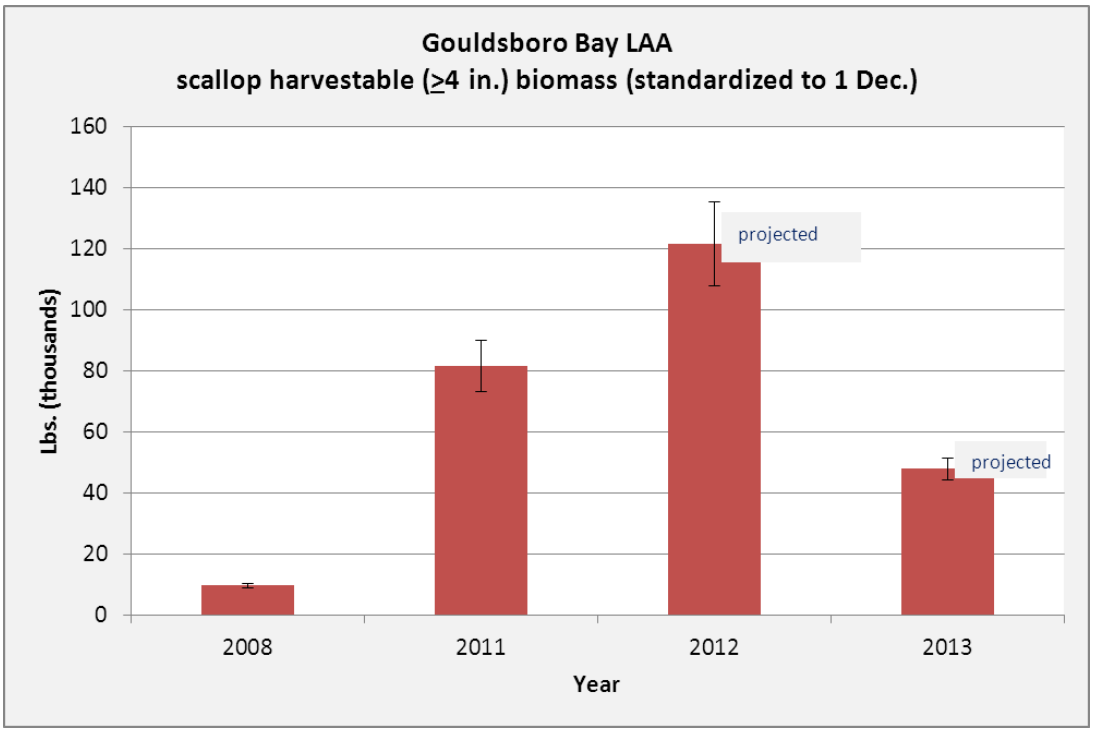


Figure 27 - Estimated mean harvestable scallop biomass (meat lbs.), Gouldsboro Bay LAA, 2008-13



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. Need to update with 2013 values.

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 not 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.

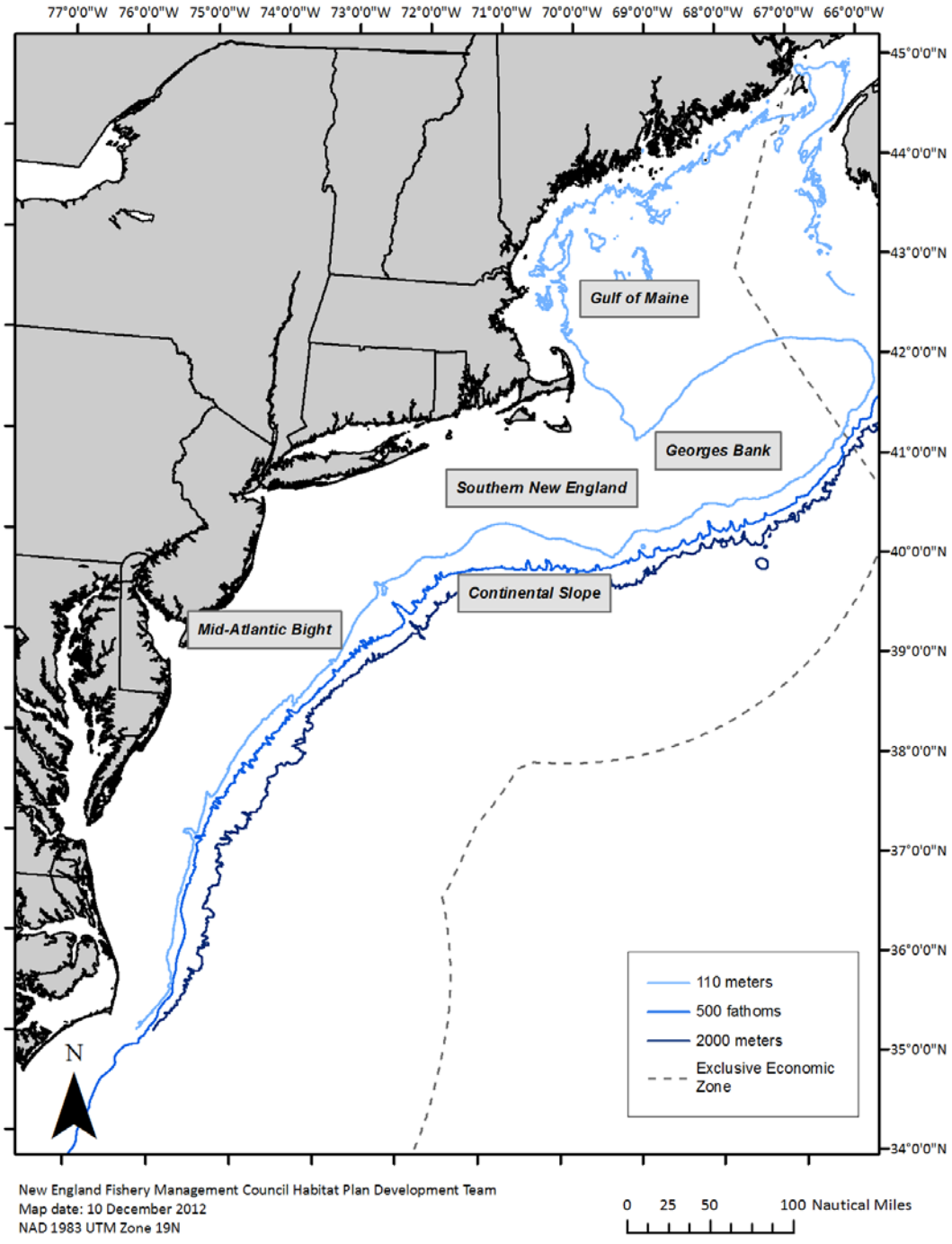
The Atlantic sea scallop fishery is prosecuted in concentrated areas in and around Georges Bank and off the Mid-Atlantic coast, in waters extending from the near-coast out to the edge of the continental shelf. Atlantic sea scallops occur primarily in depths less than 110 meters on sand, gravel, shells, 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 28 – 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 29 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of May – October (all years)

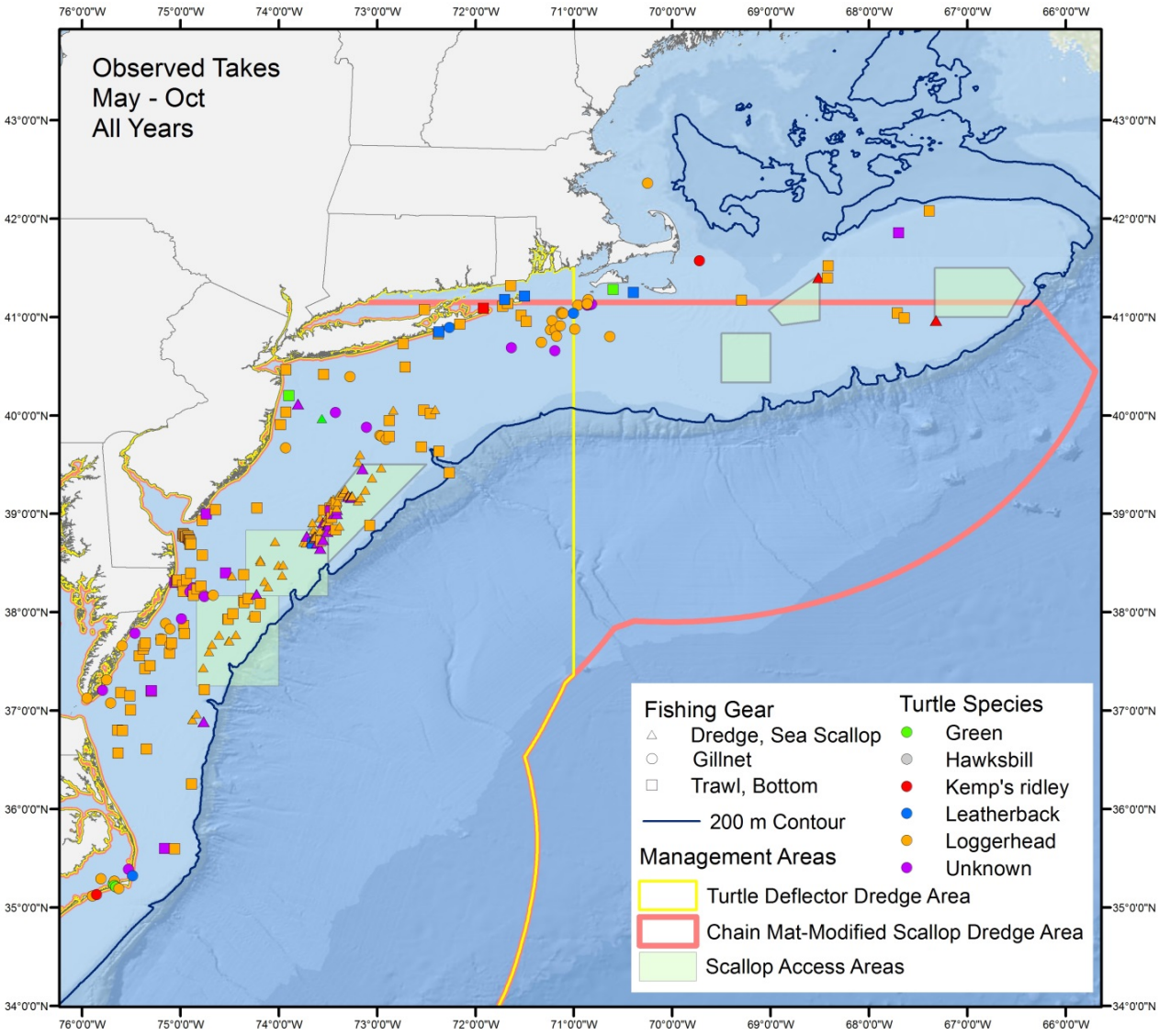


Figure 30 – Observed location of turtle interactions on bottom tending gears in the Northeast in the month of November (all years)

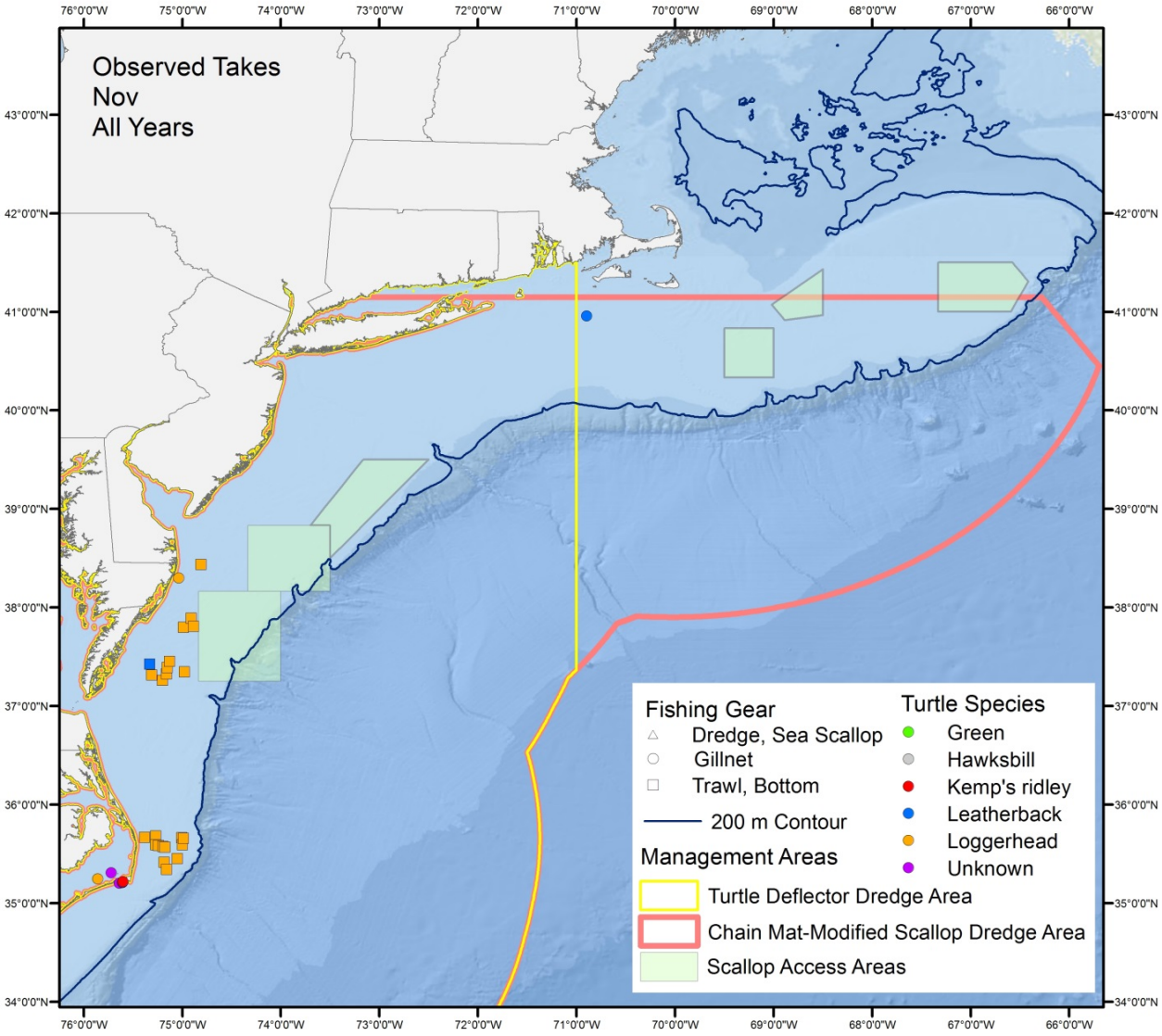


Figure 31 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of December – April (all years)

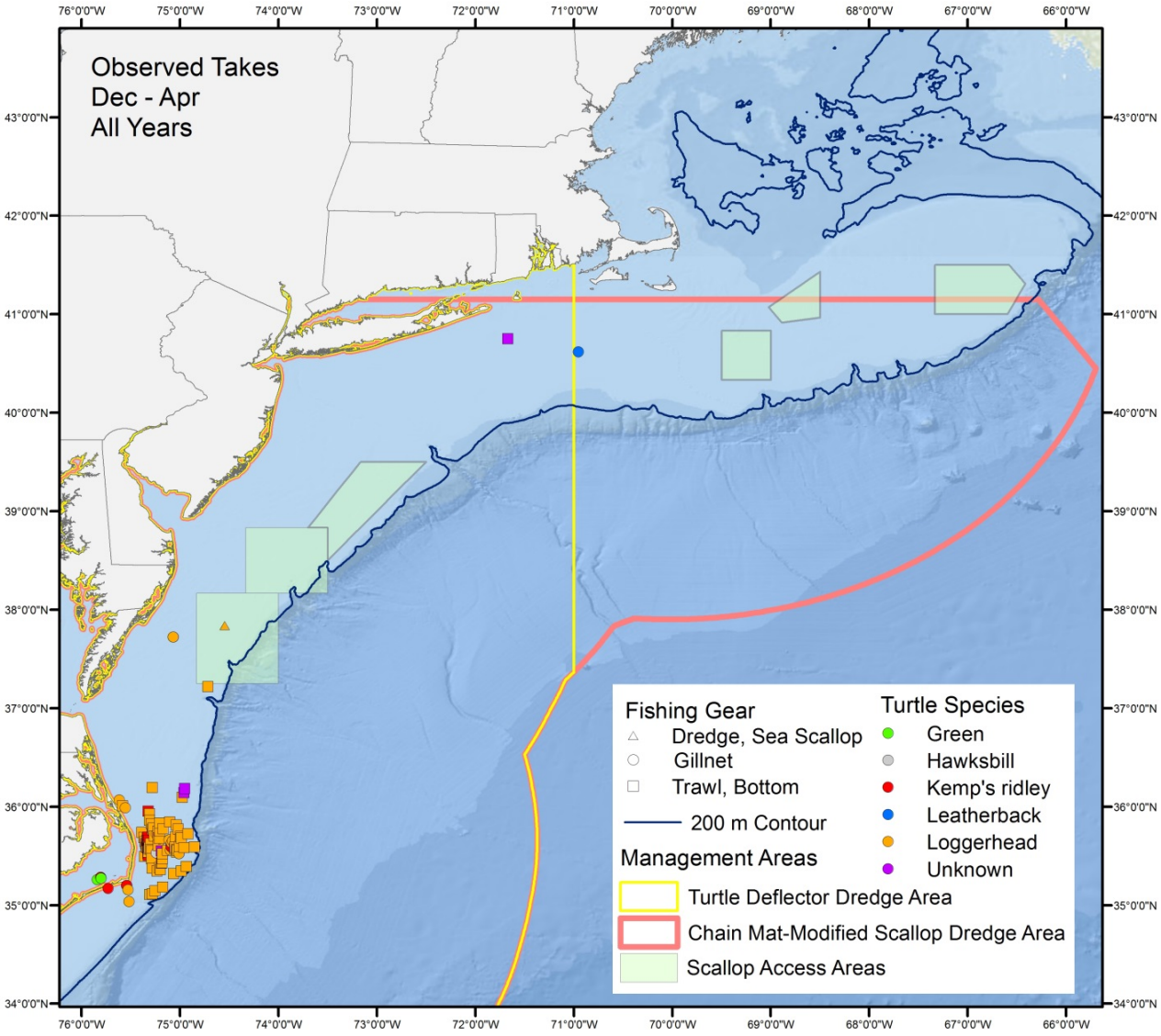


Figure 32 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of May – October (2004-2013 only)

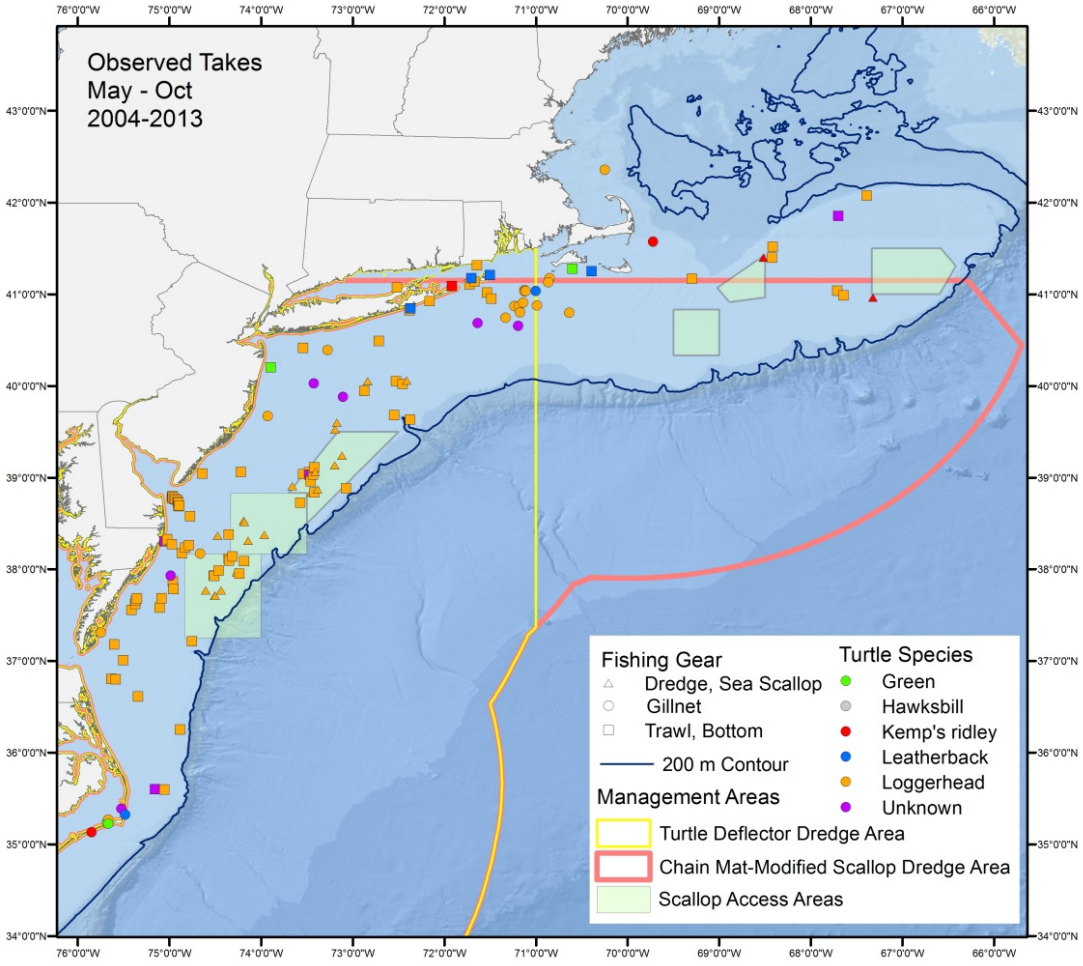


Figure 33 – Observed location of turtle interactions on bottom tending gears in the Northeast in the month of November (2004-2013 only)

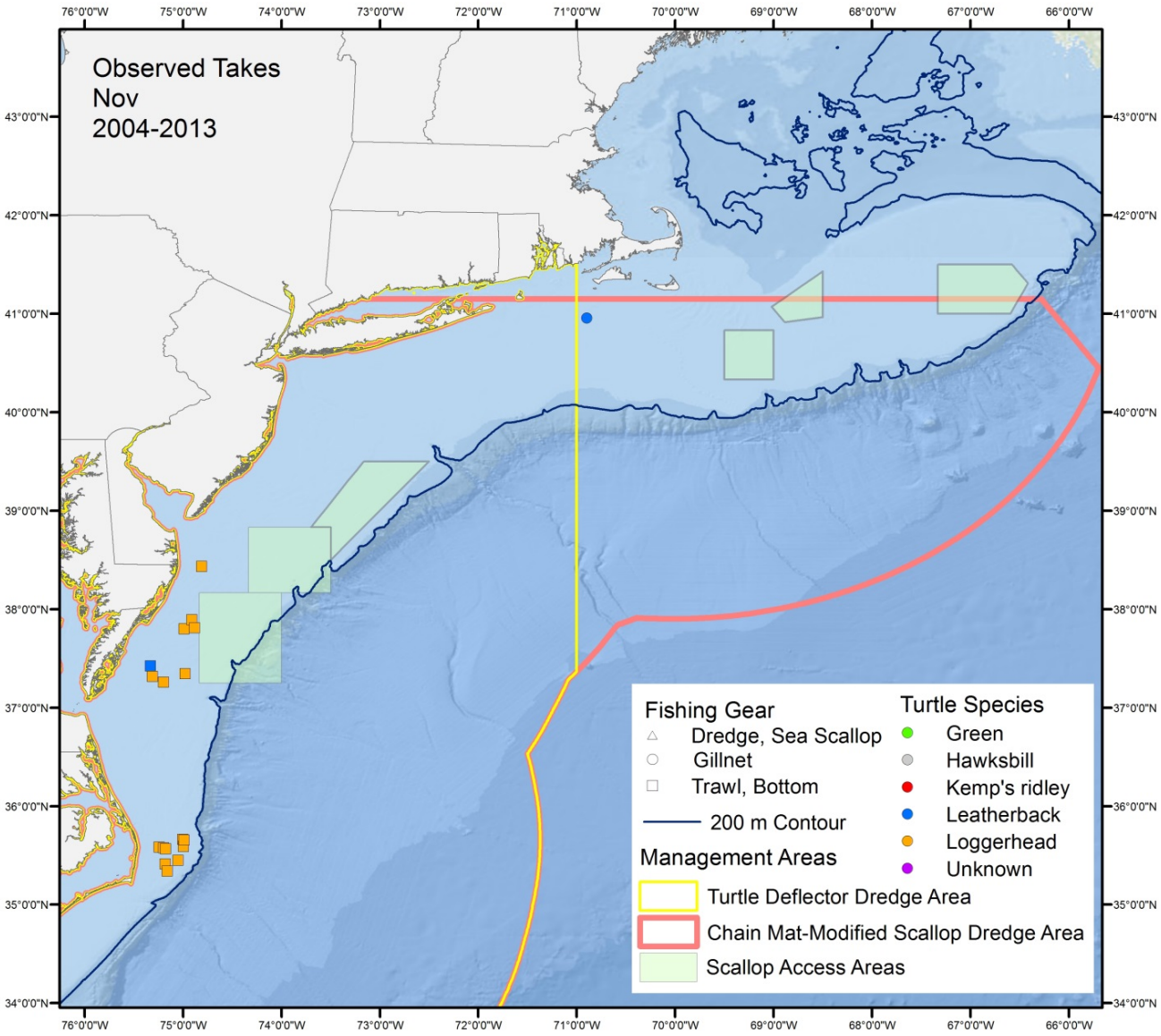
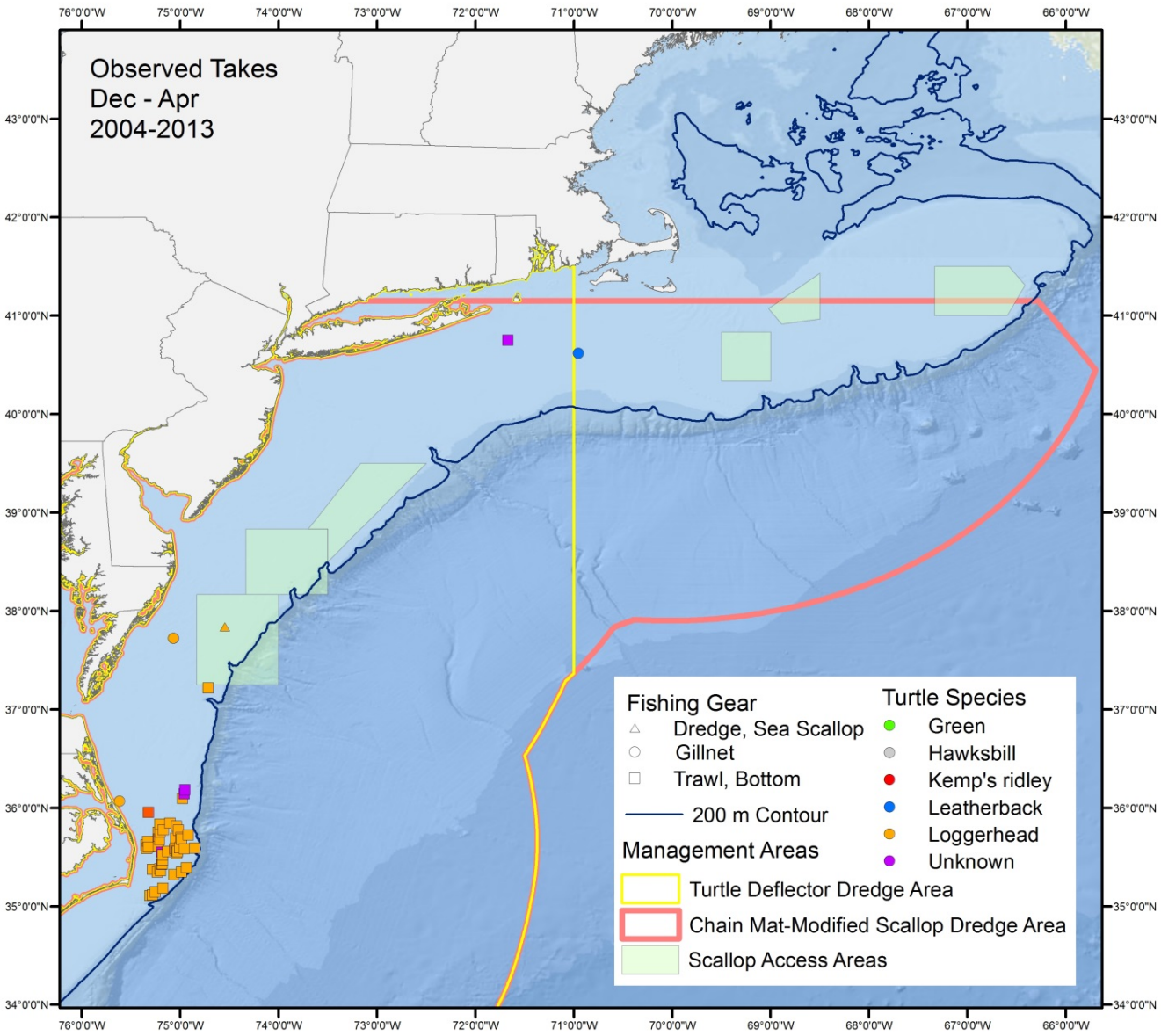


Figure 34 – Observed location of turtle interactions on bottom tending gears in the Northeast in the months of December – April (2004-2013 only)



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

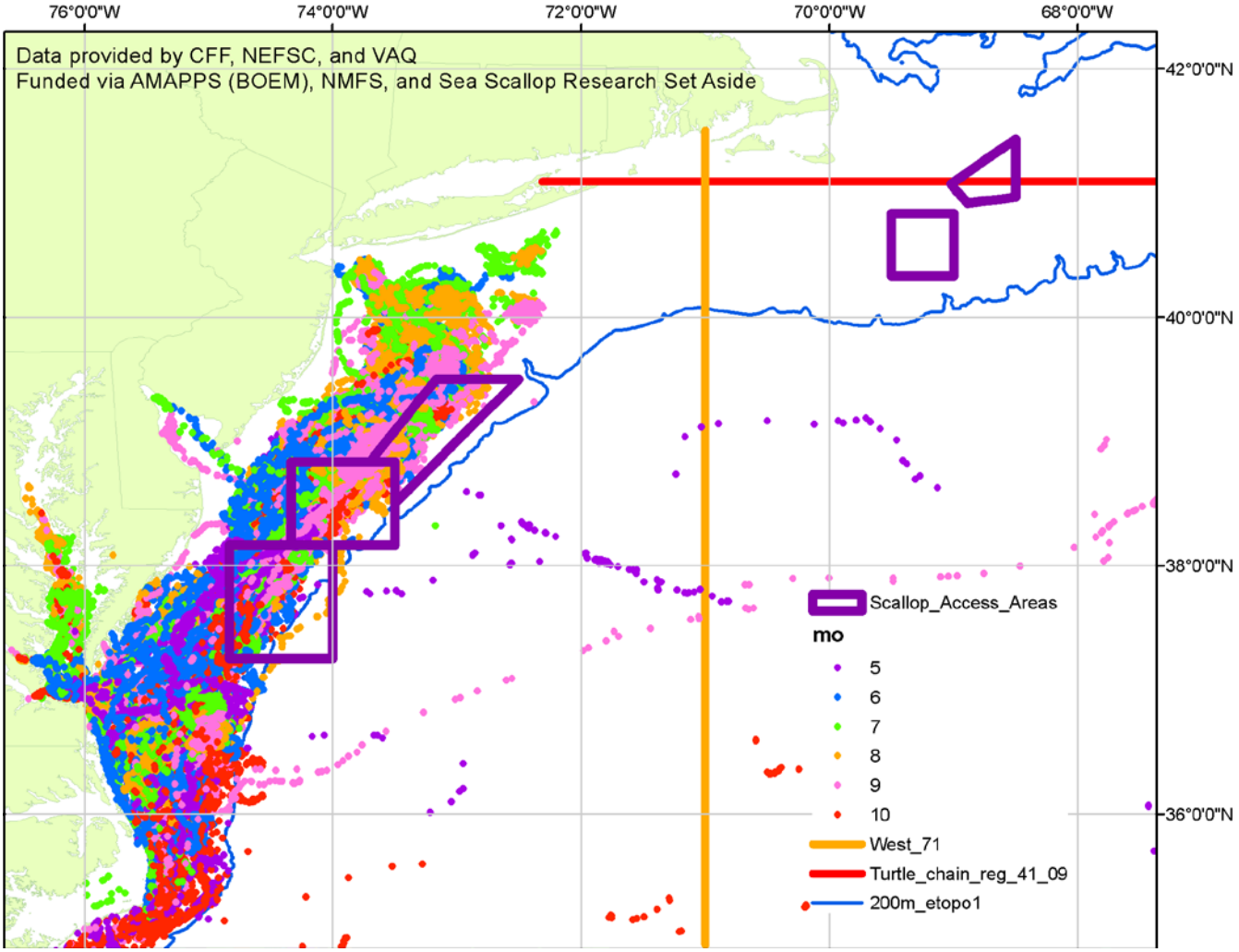


Figure 36 – Location of over 100 tagged turtles in the month of November (tagged between 2009-2013)

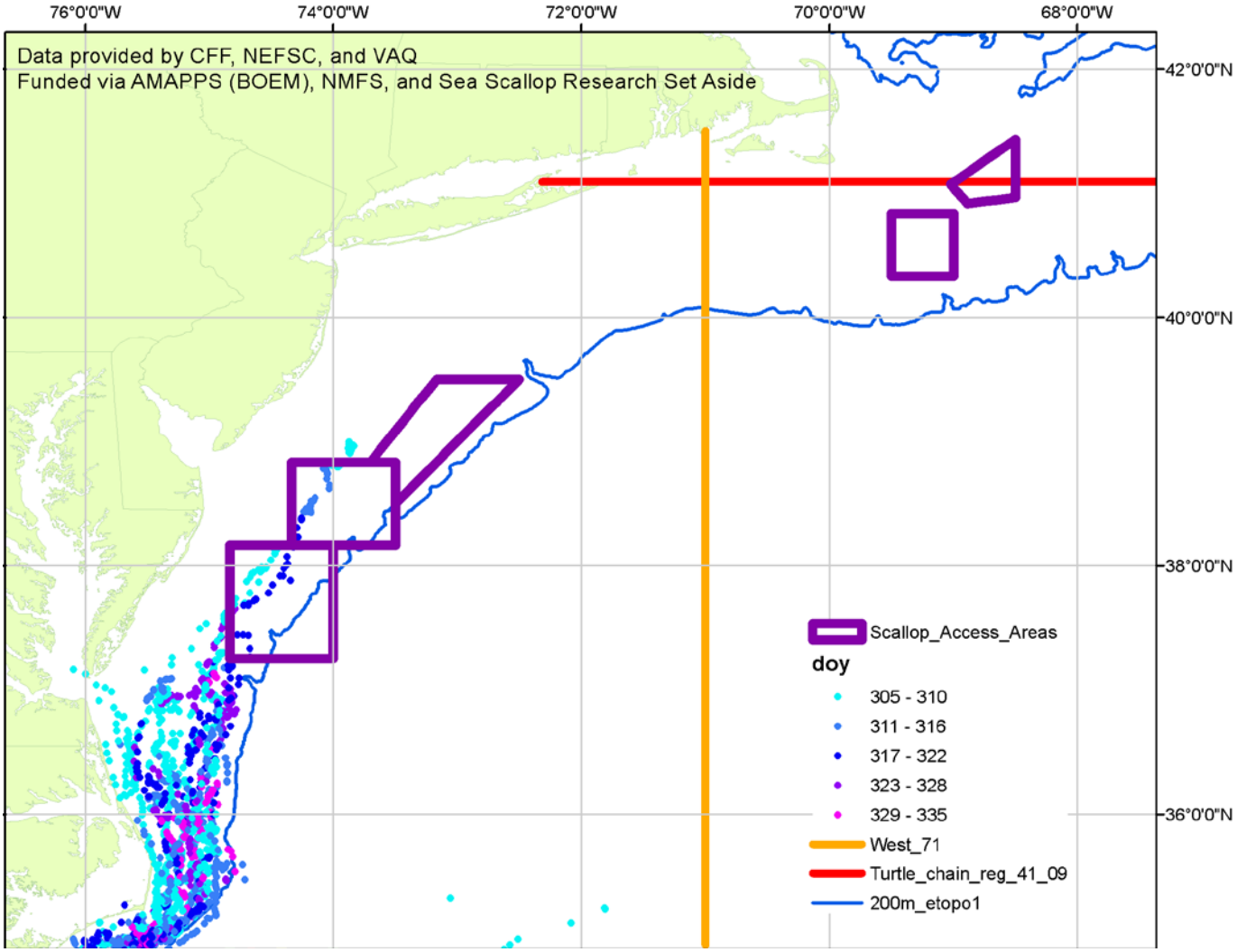
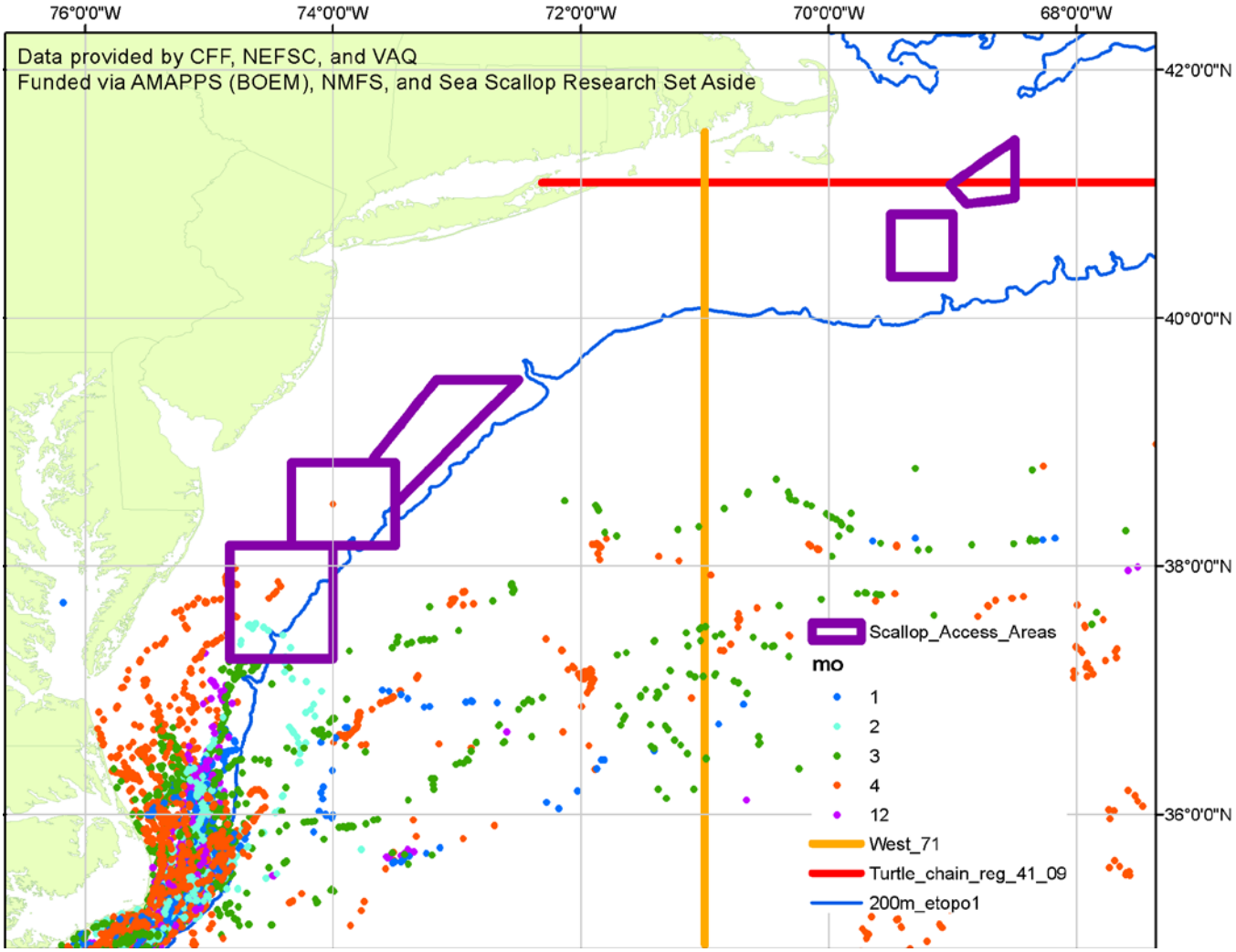


Figure 37 – Location of over 100 tagged turtles in the months of December - April (tagged between 2009-2013)



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

1.4.1 Introduction

This section of the document describes the economic and social trends of the scallop fishery, including trends in landings, revenues, prices and foreign trade for the sea scallop fishery since 1994. In addition, it provides background information about the scallop fishery in various ports and coastal communities in the Northeast.

1.4.2 Trends in Landings, prices and revenues

For the first time since 2001, the landings from the northeast sea scallop fishery fell to 40 million pounds in 2013 fishing year (Figure 1). In the previous 9 years, the scallop landings exceeded 50 million pounds each year peaking over 60 million lb. in 2004 fishing year. The recovery of the scallop resource and consequent increase in landings and revenues was striking given that average scallop landings per year were below 16 million pounds during the 1994-1998 fishing years, less than one-third of the present level of landings.

The increase in the abundance of scallops coupled with higher scallop prices increased the profitability of fishing for scallops by the general category vessels. As a result, general category landings increased from less than 0.4 million pounds during the 1994-1998 fishing years to more than 4 million pounds during the fishing years 2005-2009, peaking at 7 million pounds in 2005 or 13.5% of the total scallop landings (Table 15). The landings by the general category vessels declined after 2009 as a result of the Amendment 11 implementation that restricts TAC for the limited access general category fishery to 5.5% of the total ACL. The landings by limited access general category fishery including by IFQ, NGOM and incidental permits, declined to about 2.7 million lb. in 2013 from about 3.3 million lb. in the 2012 fishing year (Figure 1).

Figure 38. Scallop landings by permit category and fishing year (in lb., dealer data)

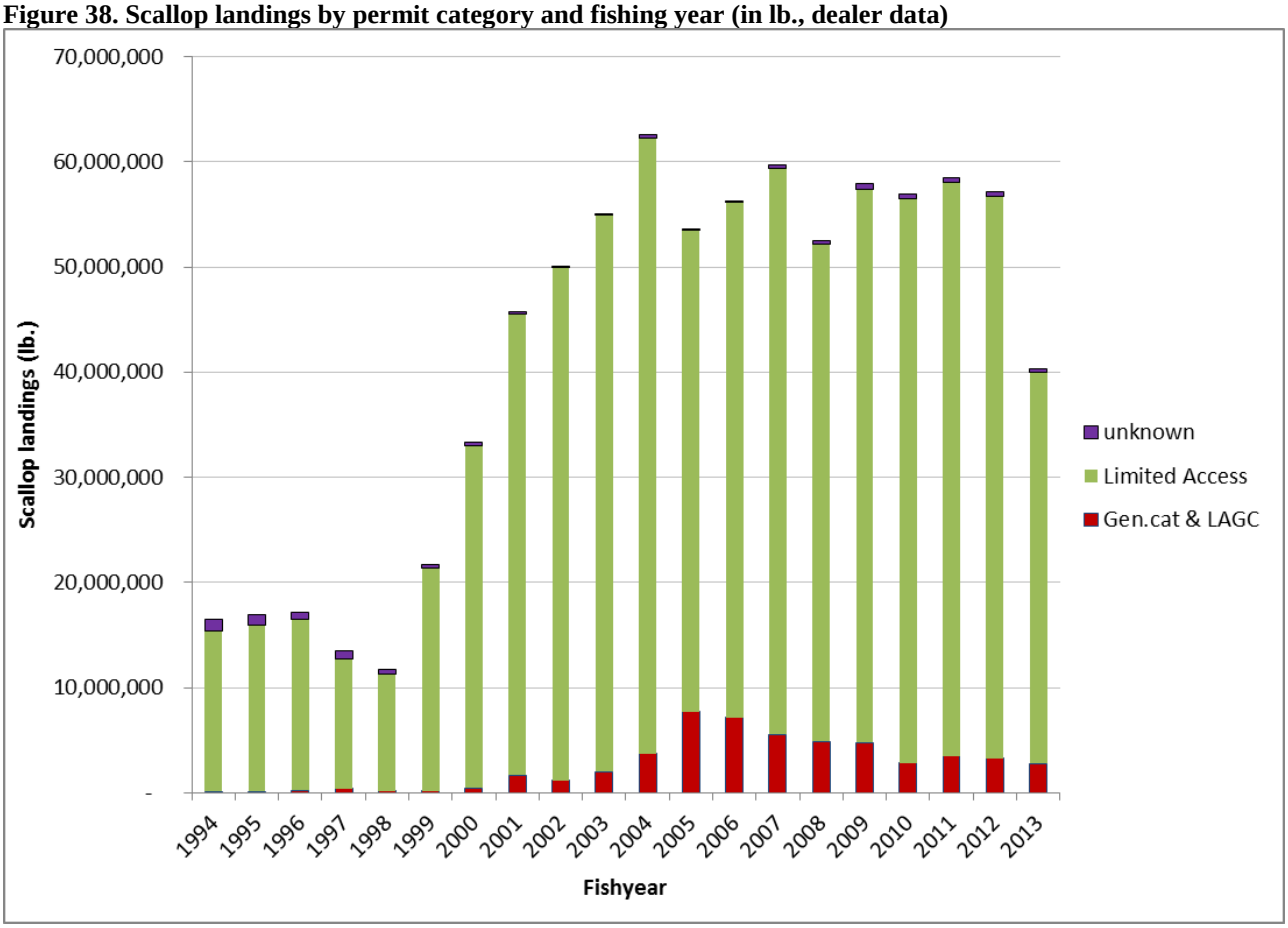
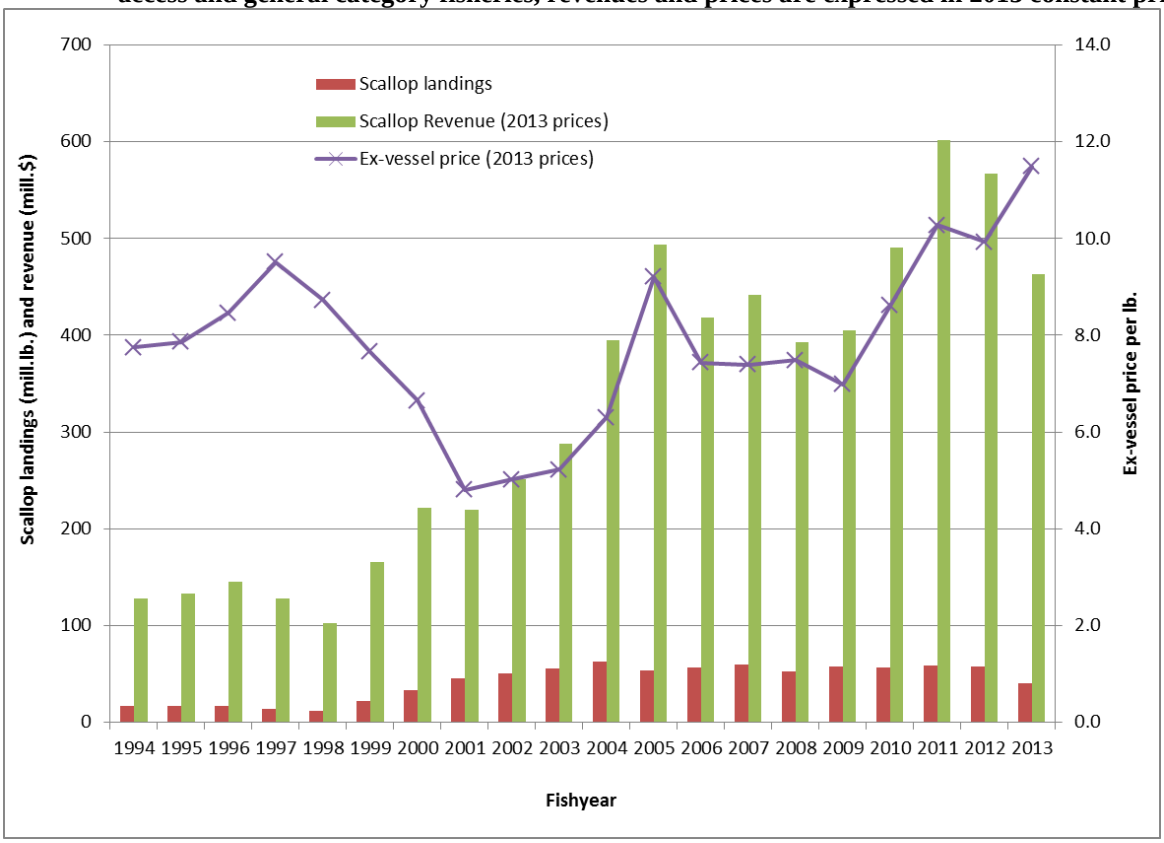


Figure 2 shows that total fleet revenue more than quadrupled in 2011 ($601 million, in inflation adjusted 2011 dollars) fishing year from its level in 1994 ($127 million, in inflation adjusted 2011 dollars). Scallop ex-vessel prices increased after 2001 as the composition of landings changed to larger scallops that in general command a higher price than smaller scallops. However, the rise in prices was not the only factor that led to the increase in revenue in the recent years compared to 1994-1998. In fact, inflation adjusted ex-vessel prices in 2008-2009 were lower than prices in 1994 (Figure 2). The increase in total fleet revenue was mainly due to the increase in scallop landings and the increase in the number of active limited access vessels during the same period.

The ex-vessel prices increased significantly to over $10 per pound of scallops in 2011 fishing year as the decline in the value of the dollar led to an increase in exports of large scallops to the European countries resulting in record revenues from scallops reaching to $601 million for the first time in scallop fishing industry history (Figure 2). The scallop ex-vessel prices peaked to $11.5 per lb. in 2013 due to the decline in landings by almost 30% in the same year. As a result, scallop revenue declined by a smaller percentage (18%) relative to the decline in decline in landings, from about $568 million in 2012 to $464 million in 2013, a level which still could be considered high by historical standards (Figure 2).

Figure 39. Trends in total scallop landings, revenue and ex-vessel price by fishing year (including limited access and general category fisheries, revenues and prices are expressed in 2013 constant prices)



The trends in landings and revenue per full-time vessel were similar to the trends for the fleet as a whole. Figure 3 shows that average scallop revenue per full-time dredge vessel tripled from about $536,000 in 1994 to over $1,612,000 in 2012 as a result of higher landings combined with an increase in ex-vessel prices. For full-time small dredge vessels, average revenue per vessel increased from $123,910 in 1994 to over $1,200,000 in 2012 (Figure 3). However, average scallop revenue per full-time vessel declined in 2013 to $1,300,000 for full-time and to $788,000 per the full-time small dredge vessel due to the decline in landings in this fishing year.

Figure 40. Trends in average scallop landings per full time vessel by category (Dealer data)

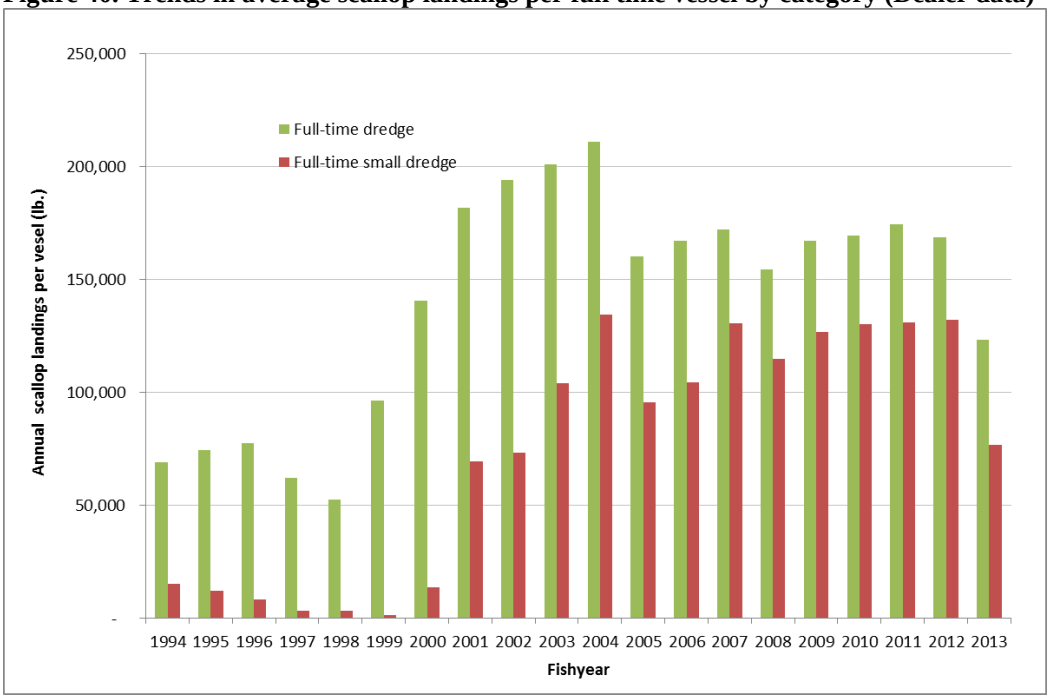
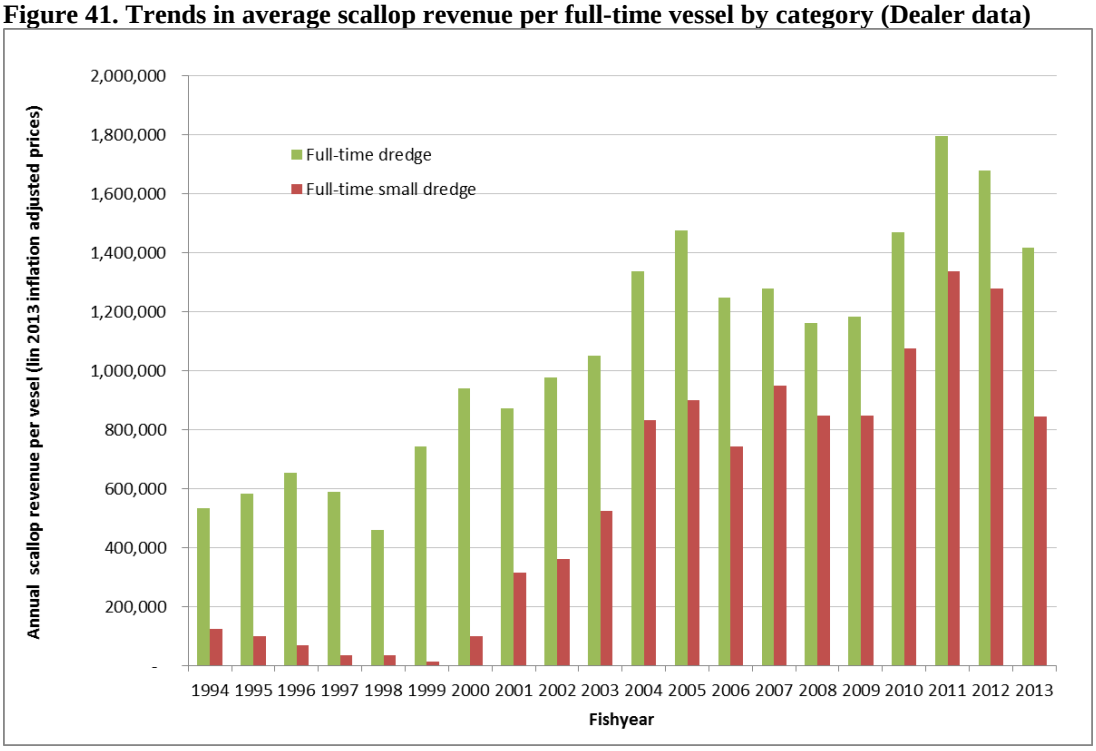


Figure 41. Trends in average scallop revenue per full-time vessel by category (Dealer data)



Although general category landings declined after 2009, scallop landings and revenue per active limited access general category vessel exceeded the levels in 2009 as the quota is consolidated on or fished by using fewer vessels (Figure 5 and Figure 6). It should be noted that these are estimated numbers from dealer data based on some assumptions in separating the LAGC landings from LA landings. It was assumed that if an LA vessel also had an LAGC permit, those trip landings which are less than 600 lb. in 2011 and less than 400 lb. in 2010 and 2009 were LAGC landings and any among above these were LA landings.

Figure 42. Trends in average scallop landings per vessel for the LAGC fishery by permit category

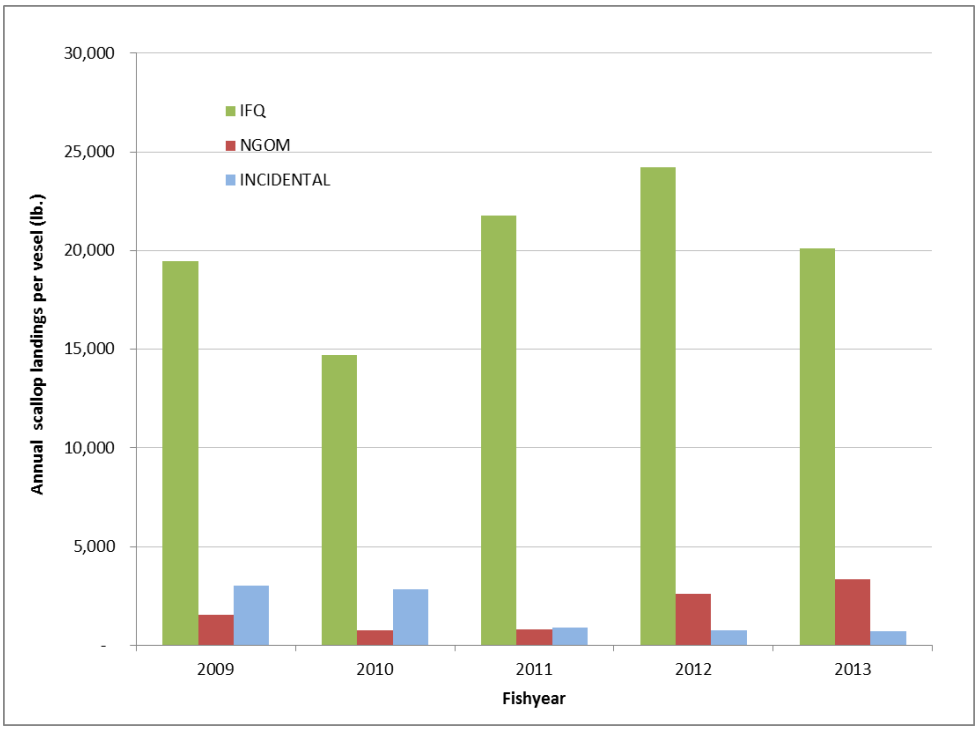
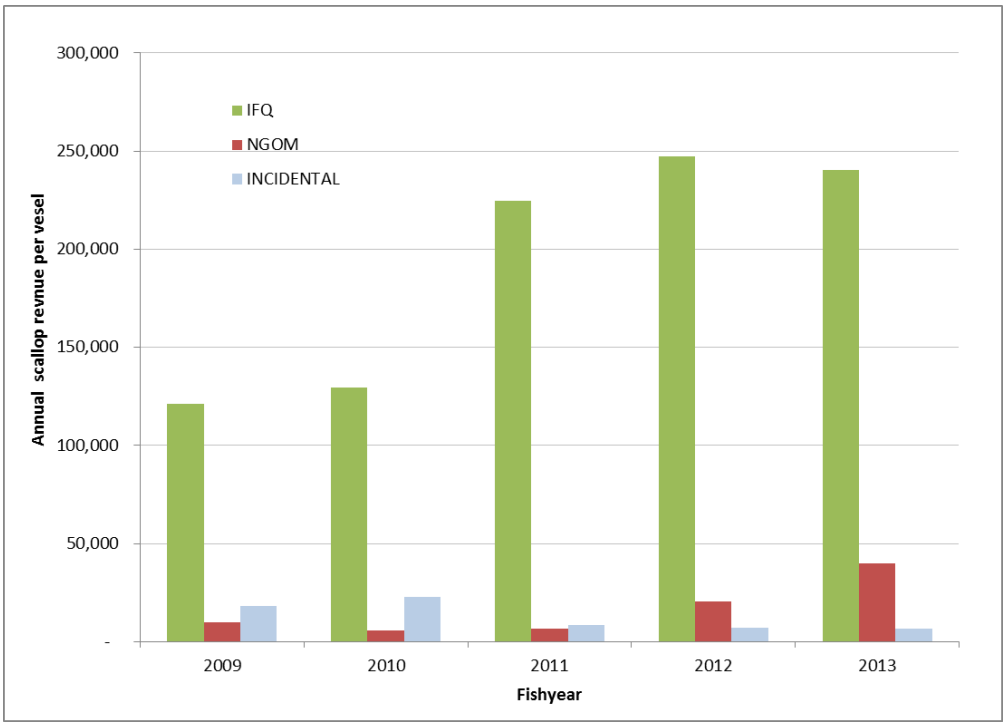


Figure 43. Trends in average scallop revenue per vessel for the LAGC fishery (dealer data, in 2013 inflation adjusted prices)



1.4.3 Trends in effort and LPUE

There has been a steady decline in the total DAS used by the limited access scallop vessels from 1994 to 2011 fishing years as a result of the effort-reduction measures of Amendment 4 (1994). DAS allocations during this period were reduced almost by half from 204 DAS in 1994 to 120 DAS in 2003 fishing year for the full-time vessels and in the same proportions for the part-time and occasional vessels from their base levels in 1994 (Table 1). As a result, estimated DAS-used (VTR data) reached the lowest levels of about 24,000 days in the 1999 from over 30,000 days in 1995-1996 (Figure 7).

Table 11. DAS and trip allocations per full-time vessel

Year	Allocations based on the Management Action	Total DAS Allocation (1)	Open area DAS allocations (2)	Access area trip allocations (3)	Estimated DAS-used per full-time vessel (VTR Data: Date landed-Date sailed)
1994	Amendment 4	204	None	None	123
1995	Amendment 4	182	None	None	144
1996	Amendment 4	182	None	None	153
1997	Amendment 4	164	None	None	148
1998	Amendment 4	142	None	None	134
1999	Amendment 7 Framework 11	120	90 to 120	3	109
2000	Framework 13	120	60 to 120	6	109
2001	Framework 14	120	90 to 120	3	115
2002	Framework 14	120	90 to 120	3	115
2003	Framework 15	120	90 to 120	3	114
2004	Framework 16		42 (MAX.62)	7	103
2005	Framework 16		40 (MAX.117)	5	87
2006	Framework 18		52	5	89
2007	Framework 18		51	5	101
2008	Framework 19		35	5	75
2009	Framework 19		37	5	83
2010	Framework 21		38	4	84
2011	Framework 22		32	4	72
2012	Framework 22		34	4	73
2013	Framework 24		33	2	56

Note that before 2004, access area trips counted toward annual DAS. For example, 10DAS would be charged per vessel if they participated in an access area program. Vessels did not have to take access area trips, but if they did 10 or 12 DAS would be charged against their annual allocation depending on the area and year. Since 2004 vessels are allocated area specific trips, if they do not take them they do not get additional DAS. The possession limit for the access area trips was reduced to 13,000 lb. in 2013 fishing year.

After fishing year 1999, fishing effort started to increase as more limited access vessels participated in the sea scallop fishery. The increase in total effort was mostly due to the increase in the number of vessels because total DAS allocations (mostly less than 120 days) were lower than the DAS allocations in the mid-1990s (over 142 days, Table 1). The recovery of the scallop resource and the dramatic increase in fishable abundance after 1999 increased the profits in the scallop fishery, thus leading to an increase in participation by limited access vessels that had been inactive during the previous years. Georges Bank closed areas were opened to scallop fishing starting in 1999 by Framework 11 (CAII) and later by Framework 13 (CAII, CAI, NLS), encouraging many vessel owners to take the opportunity to fish in those lucrative areas. Frameworks 14 and 15 provided controlled access to Hudson Canyon and VA/NC areas. As a result, the number of active limited access permits in the sea scallop fishery increased from 258 in 2000 to 303 in 2003. The total fishing effort by the fleet increased to about 33,000 days in 2003 from about 26,700 days in 2000 (Figure 7). Total fishing effort (DAS used) declined after 2003 even though the number of active vessels increased to 340 vessels in 2006 from 303 vessels in 2003 (Table 10).

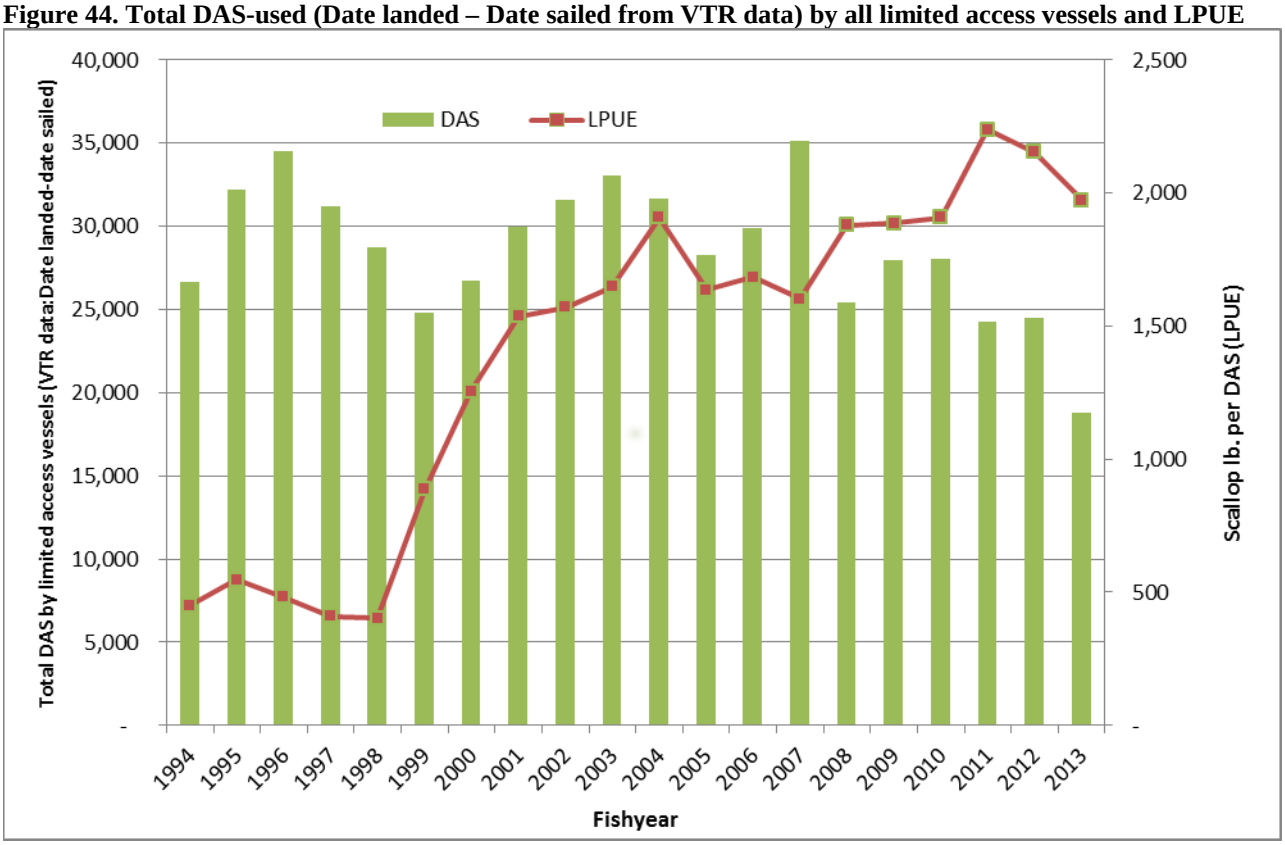
The column 1 in of Table 3 shows total DAS allocations (not DAS-used or days fished). Until the implementation of Amendment 10, each access area trip were assigned a 10 DAS trade-off

such that any vessel that choose not to fish in access areas could instead fish for scallops in the open areas for 10 DAS. Thus, total DAS allocation for the access areas is calculated as the number of trips multiplied by 10 DAS (even though it might have taken less than 10 DAS to land the possession limit in those areas). Following this method, Column 1 shows that total DAS allocations for open and access areas per full-time vessel declined from 204 DAS in 1994 to 120 DAS in 2003.

With the implementation of Amendment 10 (2004) the limited access vessels were allocated DAS for open areas and area specific access area trips with no open area trade-offs. Although the vessels could no longer use their access area allocations in the open areas, Amendment 10 and Frameworks 16 to 18 continued to include an automatic DAS charge of 12 DAS for each access area trip until it was eliminated by NMFS.

Total DAS-used declined further in 2008 to about 25,400 days as the open area DAS allocations are reduced by 30% from 51 days to 35 days per full-time vessel, but increased to 26,300 in 2009 as the limited access vessels received access area trips (5 trips per vessel). Total DAS-used by the limited access vessels were higher in 2010 despite lower number of access area trips (4 trips per vessel). Open area DAS allocations were slightly higher in 2010 (38 DAS versus 37 DAS in 2009) and vessels spend more time fishing in the access areas. Total DAS-used further declined in 2011, however, despite the increase in the open area DAS allocations. This because DAS-used in the access areas declined due higher LPUEs in these areas compared to 2010 fishing year. As a result of reduction in the number of access area trips to two trips per full-time vessel in 2013 fishing year, the total DAS-used reached its lowest level in this year with a total of 18,809 days as defined by the difference in the date landed and date sailed form the VTR records.

Figure 44. Total DAS-used (Date landed – Date sailed from VTR data) by all limited access vessels and LPUE



The impact of the decline in effort below 30,000 days since 2005 (with the exception of 2007) on scallop revenue per vessel was small, however, due to the increase in LPUE from about 1600 pounds per day-at-sea in 2007 to over 2237 pounds per day-at-sea in 2011 and to about 1900 lb. per day-at-sea in all areas (As estimated from date landed – date sailed from VTR data, Figure 7). Figure 8 shows that LPUE for the full-time dredge vessels was higher (about 2200 lb. in 2013 fishing year) than the LPUE of small dredge vessels (about 1416 lb. in 2013 fishing year).

It must be cautioned that these LPUE numbers are lower than the estimates used in the PDT analyses used to estimate open area DAS allocations. The numbers in Figure 7 through Figure 8 are obtained from the VTR database and include the steam time as calculated the days spent at sea starting with the sail date and ending with the landing date. In addition, those numbers include both open and access areas. In contrast, total "DAS used" in the fishery is the value incorporated in the LPUE models by the PDT to calculate future DAS allocations in the open areas for the full-time vessels. In these models, the value for DAS used comes from the field "DAS charged" from the DAS database. DAS charged is based on the time a vessel crossed the VMS demarcation line going out on a trip, and the time it crossed again coming back from a trip, so it wouldn't include the time from (to) the port to (from) the demarcation line at the start (end) of the trip. Therefore, the DAS-used (LPUE) calculated from the VTR data would be greater (lower) than the DAS-used (LPUE) calculated from the demarcation line in the DAS database.

Because VTR data is available for a longer period, however, it is useful in analyzing the historical trends in LPUE (from port to port) since 1994.

As a result of this increasing trend in LPUE from about 450 pounds per DAS in 1994 to over 2000 pounds per DAS since 2011, scallop revenue per vessel tripled in the last 10 years since 2004 compared to the levels in 1998.

Figure 45. LPUE for full-time vessels by permit category (VTR data, includes steam time and vessels with IFQ permits)

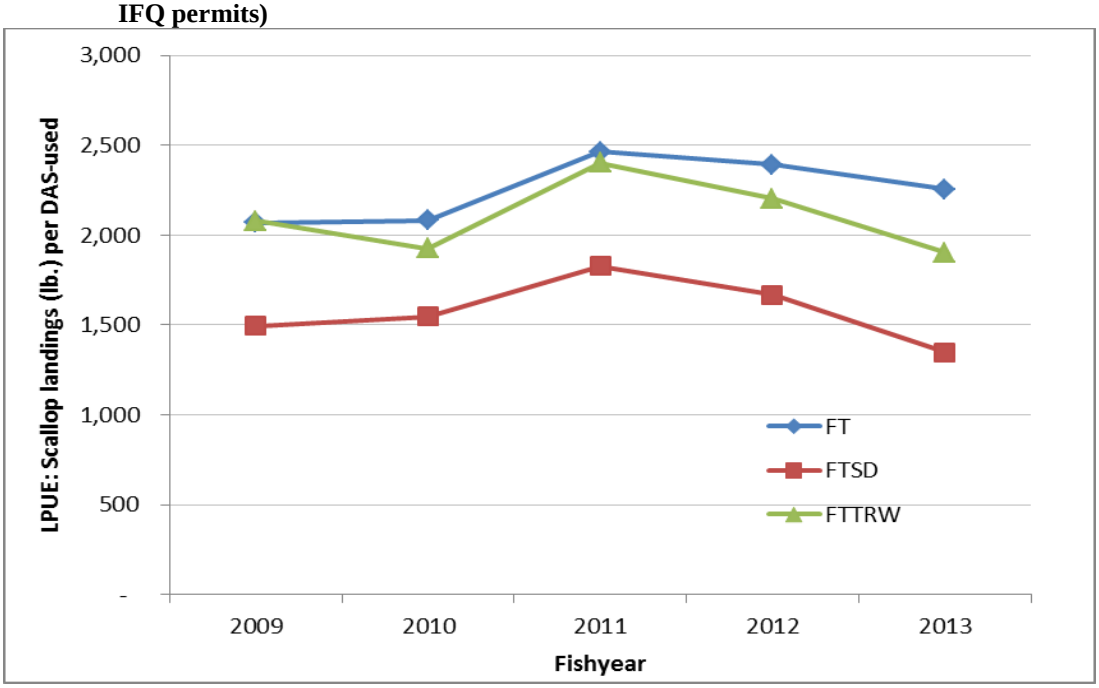
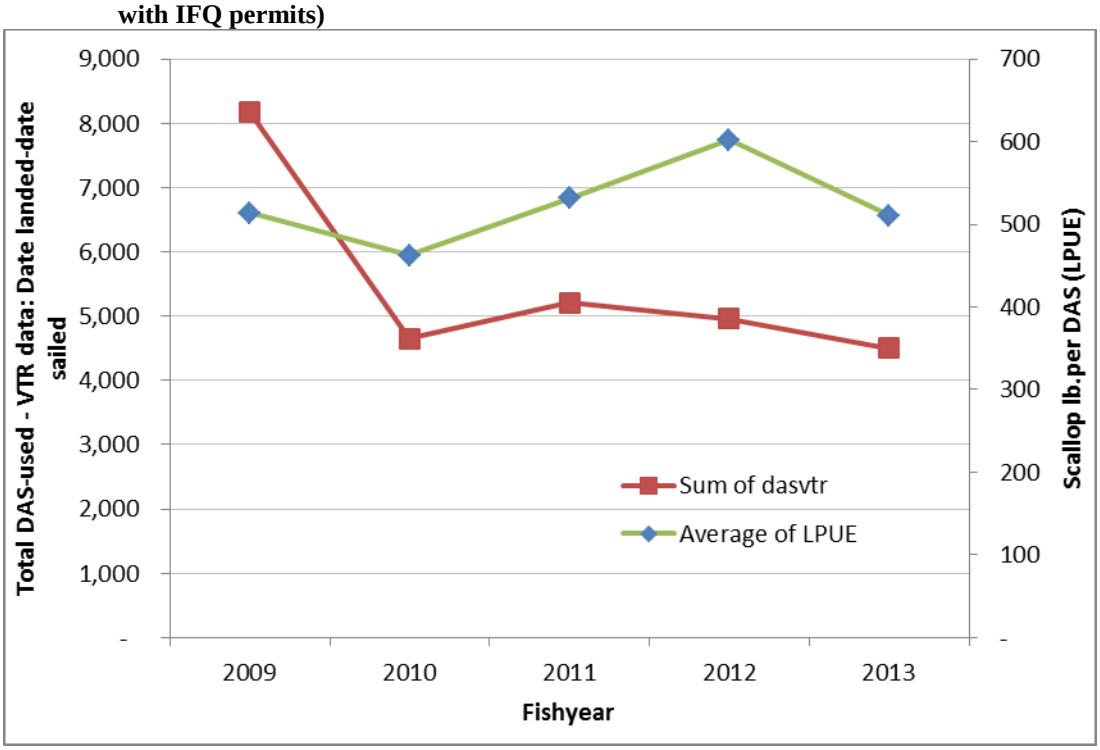


Figure 46. LPUE and DAS-used for LAGC-IFQ vessels (VTR data includes steam time, excluding LA vessels with IFQ permits)



1.4.3.1 LPUE estimated by area

The PDT has begun to analyze estimated LPUE by area using data from 2009-2013. Catch per day is calculated using the time a vessel crosses demark on the way out and on the way in – equivalent to DAS charged, and the same method used in the SAMS model that estimated LPUE for projecting future catches. Estimated were prepared for LA and LAGC vessels separately. Note that the catch rates for LAGC are based on LPUE per 24 hours, not per trip; therefore total catch may be higher than the 600 possession limit if trips are less than 24 hours.

Trips and Pounds Summary

Scallop Fishing Year 2014

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	146	1	2	1.8278	80
Closed Area 2	1,768,679	166	1,255	7.5605	1,409
Nantucket Lightship	957,948	100	629	6.2869	1,524
Hudson Canyon	83,058	19	82	4.3264	1,010
Elephant Trunk	0	0	0	0	0
DelMarVa	2,674,188	273	1,315	4.8178	2,033
Open Area	19,439,861	1,101	8,668	7.8732	2,243

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	1,906	3	4	1.2907	492
Hudson Canyon	0	0	0	0	0
Elephant Trunk	0	0	0	0	0
DelMarVa	235,894	387	318	0.8225	741
Open Area	1,405,581	3,006	2,548	0.8476	552

Scallop Fishing Year 2013

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	489,637	85	657	7.7245	746
Closed Area 2	2,407,521	203	1,535	7.5621	1,568
Nantucket Lightship	1,862,924	184	1,004	5.4543	1,856
Hudson Canyon	2,795,486	383	2,840	7.4154	984
Elephant Trunk	0	0	0	0	0
DelMarVa	0	0	0	0	0
Open Area	26,793,224	1,410	10,181	7.2203	2,632

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	12,998	1	9	9.1743	1,417
Nantucket Lightship	38,252	64	56	0.8757	683
Hudson Canyon	634	6	10	1.6606	64
Elephant Trunk	0	0	0	0	0
DelMarVa	0	0	0	0	0
Open Area	2,410,585	4,919	3,852	0.7831	626

Scallop Fishing Year 2012

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	4,918,575	406	3,040	7.4865	1,618
Closed Area 2	5,472,672	333	2,802	8.415	1,953
Nantucket Lightship	3,070,473	223	1,395	6.2539	2,202
Hudson Canyon	8,699,436	675	4,902	7.2615	1,775
Elephant Trunk	0	0	0	0	0
DelMarVa	196,225	24	217	9.0227	906
Open Area	28,127,128	1,267	10,087	7.9613	2,788

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	22,346	37	45	1.2269	492
Hudson Canyon	42,676	123	158	1.2832	270
Elephant Trunk	0	0	0	0	0
DelMarVa	1,353	5	9	1.7574	154
Open Area	2,964,520	5,787	4,022	0.695	737

Scallop Fishing Year 2011

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	8,570,376	542	3,387	6.2487	2,531
Closed Area 2	2,879,122	181	1,337	7.3873	2,153
Nantucket Lightship	0	0	0	0	0
Hudson Canyon	5,786,273	408	2,420	5.9311	2,391
Elephant Trunk	928,268	155	1,495	9.645	621
DelMarVa	5,680,085	458	3,388	7.3983	1,676
Open Area	28,493,791	1,223	10,253	8.3833	2,779

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	27,273	47	60	1.2833	452
Closed Area 2	0	0	0	0	0
Nantucket Lightship	0	0	0	0	0
Hudson Canyon	346,691	602	466	0.7735	745
Elephant Trunk	1,340	10	16	1.6395	82
DelMarVa	13,306	64	90	1.4122	147
Open Area	2,498,858	5,963	3,757	0.6301	665

Scallop Fishing Year 2010

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	5,630,166	381	2,441	6.4061	2,307
Hudson Canyon	0	0	0	0	0
Elephant Trunk	9,028,820	902	7,727	8.5668	1,168
DelMarVa	5,843,769	447	2,950	6.5989	1,981
Open Area	29,638,612	1,455	12,489	8.5833	2,373

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	245,919	476	517	1.0863	476
Hudson Canyon	0	0	0	0	0
Elephant Trunk	16,243	56	91	1.6211	179
DelMarVa	308,602	667	558	0.8367	553
Open Area	1,872,252	5,203	3,151	0.6056	594

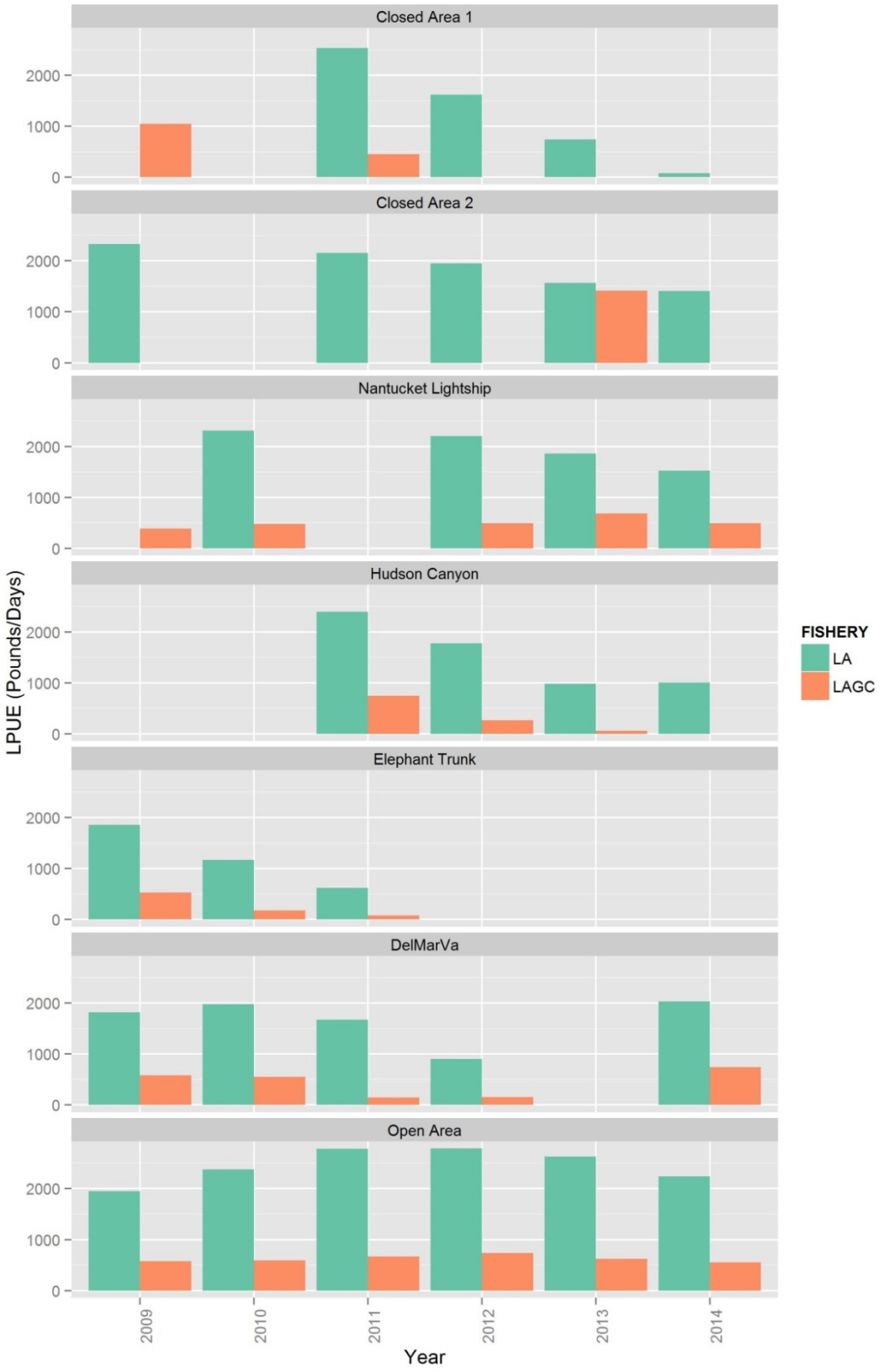
Scallop Fishing Year 2009

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	3,288,141	200	1,409	7.0454	2,334
Nantucket Lightship	0	0	0	0	0
Hudson Canyon	0	0	0	0	0
Elephant Trunk	16,292,184	1,240	8,786	7.0852	1,854
DelMarVa	5,355,394	422	2,943	6.9729	1,820
Open Area	24,108,835	1,394	12,383	8.8833	1,947

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	800	2	1	0.3823	1,046
Closed Area 2	0	0	0	0	0
Nantucket Lightship	400	1	1	1.0222	391
Hudson Canyon	0	0	0	0	0
Elephant Trunk	819,418	1,781	1,544	0.8672	531
DelMarVa	293,114	693	505	0.7281	581
Open Area	3,440,981	9,031	5,973	0.6613	576


Closed Area 1
Closed Area 2
Nantucket Lightship
Hudson Canyon
Elephant Trunk
DelMarVa
Open Area
LPUE (Pounds/Days)
0
1000
2000
2009
2010
2011
2012
2013
2014
Year
FISHERY
LA
LAGC

1.4.4 Trends in the meat count and size composition of scallops

Average scallop meat count has declined continuously since 1999 as a result of effort-reduction measures, area closures, and an increase in ring sizes implemented by the Sea Scallop FMP. The share of larger scallops increased with the share of U10 scallops rising to over 20% during 2006-2008, to 15% in 2009 -2011 and to about 20% in 2012-2013 compared to less than 10% in 2000-2004. Similarly, the share of 11-20 count scallops increased from 13% in 1999 to 79% in 2011 and 63% in 2013. On the other hand, the share of 30 or more count scallops declined from 37% in 1999 to 1% or less since 2008 (Table 3). Larger scallops priced higher than the smaller scallops contributed to the increase in average scallop prices especially since 2010 (Table 4 and Figure 2).

Table 12. Scallop landings by market category

Fishyear	UNDER 10 COUNT	11-20 COUNT	21-30 COUNT	>30 COUNT	Grand Total
1999	3,690,533	2,613,754	6,195,369	7,365,692	19,865,348
2000	2,393,703	6,771,024	14,364,895	7,282,469	30,812,091
2001	1,520,424	10,783,931	24,596,256	4,587,499	41,488,110
2002	2,484,107	7,436,720	34,083,568	2,133,778	46,138,173
2003	3,644,668	12,221,010	31,844,817	1,755,259	49,465,754
2004	5,105,290	28,928,288	24,986,628	588,931	59,609,137
2005	6,906,267	31,608,791	11,482,597	1,126,285	51,123,940
2006	13,273,263	28,801,692	10,772,955	705,158	53,553,068
2007	14,903,951	32,021,763	7,518,148	2,227,602	56,671,464
2008	12,293,851	27,677,737	10,229,476	366,744	50,567,808
2009	8,420,979	35,689,194	12,145,131	172,383	56,427,687
2010	8,737,293	35,978,383	10,932,767	66,311	55,714,754
2011	8,564,518	45,261,304	3,247,867	309,435	57,383,124
2012	10,546,525	41,957,522	3,499,366	77,778	56,081,191
2013	8,661,071	24,739,918	5,579,649	131,537	39,112,175

Table 13. Size composition of scallops

Fishyear	UNDER 10 COUNT	11-20 COUNT	21-30 COUNT	>30 COUNT	Grand Total
1999	19%	13%	31%	37%	100%
2000	8%	22%	47%	24%	100%
2001	4%	26%	59%	11%	100%
2002	5%	16%	74%	5%	100%
2003	7%	25%	64%	4%	100%
2004	9%	49%	42%	1%	100%
2005	14%	62%	22%	2%	100%
2006	25%	54%	20%	1%	100%
2007	26%	57%	13%	4%	100%
2008	24%	55%	20%	1%	100%
2009	15%	63%	22%	0%	100%
2010	16%	65%	20%	0%	100%
2011	15%	79%	6%	1%	100%
2012	19%	75%	6%	0%	100%
2013	22%	63%	14%	0%	100%

Table 14. Price of scallop by market category (in 2013 inflation adjusted prices)

fishyear	UNDER 10 COUNT	11-20 COUNT	21-30 COUNT	>30 COUNT	Grand Total
1999	8.3	8.5	7.8	6.9	7.6
2000	9.2	7.0	6.2	6.3	6.6
2001	7.7	4.9	4.6	4.7	4.8
2002	7.1	5.1	4.8	5.6	5.0
2003	6.2	5.1	5.2	5.7	5.3
2004	7.4	6.4	6.0	6.2	6.3
2005	9.4	9.2	9.1	9.0	9.2
2006	6.9	7.6	8.0	7.9	7.5
2007	7.7	7.4	7.1	6.6	7.4
2008	7.7	7.4	7.3	7.1	7.5
2009	8.7	6.7	6.6	6.3	7.0
2010	11.2	8.0	8.7	9.0	8.6
2011	10.5	10.2	10.7	10.1	10.3
2012	10.4	9.8	9.9	9.8	9.9
2013	12.3	11.3	11.4	11.1	11.5

1.4.5 The trends permits by permit plan and categories

Table 5 shows the number of limited access vessels by permit category from 2003 to 2014. The fishery is primarily full-time, with a small number of part-time permits. There are no occasional permits left in the fishery since 2009 because these were converted to part-time small dredge. Of these permits, the majority are dredge vessels, with a small number of full-time small dredge and

full-time trawl permit holders. The permit numbers shown in Table 5 include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number. The unique vessels with right-id numbers are shown in Table 7 for 2008-2012. For example, only 347 out of 356 permits in 2008 belonged to unique vessels. The number of LAGC permits held by limited access vessels are shown in Table 6.

Table 15. Number of limited access vessels by permit category and gear

Permit category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Full-time	238	242	248	255	256	254	259	252	253	257	254	251
Full-time small dredge	39	48	57	59	63	56	55	54	53	53	52	52
Full-time net permit	16	15	19	14	12	11	11	11	11	11	12	12
Total full-time	293	305	324	328	331	321	326	317	316	321	318	315
Part-time	10	4	3	3	2	2	2	2	2	2	2	2
Part-time small dredge	19	26	30	34	35	32	34	34	32	33	32	33
Part-time trawl	8	3	-	-	-	-	-	-				
Total part-time	37	33	33	37	37	34	37	38	34	35	34	35
Occasional	3	3	1	2	1	1	-	-	-			
Occasional trawl	8	5	5	-	-	-	-	-	-			
Total occasional	11	8	6	2	1	1	0	0	0	0	0	0
Total Limited access	342	346	363	367	369	356	361	353	351	356	352	350

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number.

Table 16. LAGC permits held by limited access vessels by permit category

AP-YEAR	IFQ	NGOM	Incidental
2008	41	19	87
2009	43	28	116
2010	40	28	114
2011	42	28	114
2012	41	27	119
2013	41	27	118
2014	40	27	115

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number. 2014 numbers are preliminary.

Table 17. Scallop Permits by unique right-id and category by application year

Permit category	2008	2009-2014
Full-time	250	250
Full-time small dredge	52	52
Full-time net boat	11	11
Total full-time	**313**	**313**
Part-time	2	2
Part-time small dredge	31	32
Part-time trawl	0	0
Total part-time	**33**	**34**
Occasional	1	0
Total Limited access	347	347

Table 8 shows that the number of general category permits, including permits held by LA vessels, declined considerably after 2007 as a result of the Amendment 11 provisions. Although not all vessels with general category permits were active in the years preceding 2008, there is no question that the number of vessels (and owners) that hold a limited access general category permit under the Amendment 11 regulations are less than the number of general category vessels that were active prior to 2008 (Table 8). The numbers of LAGC permits by category, excluding the LA vessels that also have an LAGC permit, are shown in Table 9. The number of permits includes the permits of the replacement vessels within a given year.

Table 18. General category permit before and after Amendment 11 implementation (including the LAGC permits by Limited access vessels

AP_YEAR		Number of permits qualify under Amendment 11 program			Grand Total
	General category permit (up to 2008)	Limited access general category (A)	Limited access NGOM permit (B)	Incidental catch permit (C)	
2000	2263				2263
2001	2378				2378
2002	2512				2512
2003	2574				2574
2004	2827				2827
2005	2950				2950
2006	2712				2712
2007	2493				2493
2008		342	99	277	718
2009		344	127	301	772
2010		333	122	285	740
2011		288	103	279	670
2012		290	110	280	680
2013		278	97	282	657
2014		263	104	267	634

Table 19. LAGC permits after Amendment 11 implementation (excluding the LAGC permits held by limited access vessels)

AP-YEAR	IFQ	NGOM	Incidental
2008	280	79	173
2009	304	100	190
2010	293	94	172
2011	248	82	166
2012	237	70	163
2013	222	77	149
2014	204	68	136

Note: 2014 is preliminary.

The trends in the estimated number of active limited access vessels are shown in Table 10 by permit plan. Table 11 shows the number of active LAGC vessels by permit category excluding those LA vessels which have both LA and LAGC permits and indicates that there quota has been fished by fewer vessels in 2013 compared to the earlier years.

Table 20. Active vessels by fishyear and permit category (Vessels that landed any amount of scallops, Dealer Data)

Fishyear	FT	PT	FTSD	PTSD	FTTRW	PTTRW	OCTRW	Grand Total
1994	188	9	3	4	24	17	13	258
1995	185	9	2	2	24	12	8	242
1996	183	11	2	5	22	17	6	246
1997	176	8		4	18	16	3	225
1998	182	5	1	2	19	16	2	227
1999	196	8	1	3	14	16	6	244
2000	206	10	1	3	16	16	6	258
2001	212	12	11	6	16	17	6	280
2002	217	12	24	7	16	9	5	290
2003	225	10	30	12	15	6	3	301
2004	230	4	42	18	13	3	3	313
2005	234	3	50	23	12		2	324
2006	243	2	49	28	12			334
2007	248	2	53	30	11			344
2008	243	2	52	28	11			336
2009	244	2	53	31	11			341
2010	249	2	52	32	11			346
2011	250	2	53	32	11			348
2012	252	2	52	30	11			347
2013	250	2	52	30	11			345
2014	241	2	50	28	10			331

Table 21. Number of active vessels with LAGC permits by permit category (VTR data, excludes LA vessels with LAGC permits)

Fishyear	IFQ	INCINDENTAL	NGOM	Grand Total
2009	199	92	14	305
2010	139	76	13	228
2011	138	76	12	226
2012	126	82	19	227
2013	118	70	26	214
2014	111	39	20	170

*Note: The numbers for 2014 is up to September.

1.4.6 Landings by permit categories and gear type

Table 12 through Table 13 describe scallop landings by limited access vessels by gear type and permit category. These tables were obtained by combining the dealer and permit databases. Most limited access category effort is from vessels using scallop dredges, including small dredges. The number of full-time trawl permits has decreased continuously and has been at 11 full-time trawl permitted vessels since 2008 (Table 5). Furthermore, according to the 2009-2011 VTR data, the majority of these vessels (10 out of 11 in 2010) landed scallops using dredge gear even though they had a trawl permit. There has also been an increase in the numbers of full-time and part-time small dredge vessels after 2002.

Table 13 shows the percent of limited access landings by permit and year. In terms of gear, majority of the scallop landings by the limited access vessels were with dredge gear including the small dredges, with significant amounts also landed by full-time and part-time trawls until 2000. Table 13 shows that the percentage of landings by FT trawl permits declined after 1998 to about 3% of total limited access scallop landings in 2011. There were only 11 FT trawl permits in 2011. However, 2009-2011 VTR data also show that over 90% of the scallop pounds by the FT trawl permitted vessels are landed using dredge gear (10 vessels) since these vessels are allowed to use dredge gear even though they have a trawl permit. Similarly, all of the part-time trawl and occasional trawl permits are converted to small dredge vessels. Over 80% of the scallop pounds are landed by vessels with full-time dredge and close to 13% landed by vessels with full-time small dredge permits since the 2007 fishing year. Including the full-trawl vessels that use dredge gear, the percentage of scallop pounds landed by dredge gear amounted to over 99% of the total scallop landings in 2009-2011.

Table 22. Scallop landings (lbs.) by limited access vessels by permit category

Fishyear	FT	PT	FTSD	PTSD	FTTRW	PTTRW	OCTRW
1994	12,992,793	77,668	NA	NA	1,804,974	191,825	4,290
1995	13,752,423	205,147	NA	NA	1,477,777	140,178	45,409
1996	14,185,833	259,791	NA	13,336	1,282,612	376,874	93,375
1997	11,078,071	148,742		19,093	773,243	242,396	NA
1998	9,486,893	84,929	NA	NA	1,111,119	351,722	NA
1999	18,877,937	303,397	NA	15,692	1,382,335	564,111	15,950
2000	29,221,728	599,186	NA	80,741	1,871,048	710,032	14,284
2001	38,707,405	861,087	765,342	208,176	2,578,316	744,057	17,062
2002	42,319,380	918,534	1,757,695	269,284	2,980,542	504,441	31,876
2003	45,461,772	932,815	3,125,474	482,472	2,612,065	272,668	NA
2004	48,873,669	323,389	5,654,387	825,223	2,432,866	125,949	NA
2005	37,935,508	236,757	4,788,085	1,379,360	1,250,771		NA
2006	40,846,955	NA	5,223,125	1,304,877	1,339,748		
2007	43,091,302	NA	6,917,823	1,601,167	1,678,258		
2008	37,617,260	NA	6,117,525	1,298,183	1,536,814		
2009	41,266,837	NA	6,971,699	1,397,169	1,821,156		
2010	42,484,132	NA	6,774,054	1,927,559	1,790,240		
2011	43,662,880	NA	6,944,234	1,651,826	1,908,903		
2012	42,781,924	NA	7,081,245	1,391,171	1,780,017		
2013	30,809,109	NA	4,057,183	937,523	1,226,997		
2014	19,479,493	NA	2,438,280	544,575	700,174		

*Note: Although these vessels have trawl permits, majority of these vessels used dredge gear. As a result, over 90% of the scallop landings by the FT trawl permitted vessels are caught using dredge gear in 2009-2010 according to the VTR data.

Table 23. Percentage of scallop landings (lbs.) by limited access vessels by permit category

Fishyear	FT	PT	FTSD	PTSD	FTTRW	PTTRW	OCTRW
1994	85.93%	0.51%		0.02%	11.94%	1.27%	0.03%
1995	87.74%	1.31%		0.06%	9.43%		0.29%
1996	87.35%	1.60%		0.08%	7.90%	2.32%	0.57%
1997	90.35%	1.21%		0.16%	6.31%	1.98%	0.00%
1998	85.92%	0.77%		0.00%	10.06%	3.19%	0.03%
1999	89.21%	1.43%		0.07%	6.53%	2.67%	0.08%
2000	89.88%	1.84%		0.25%	5.76%	2.18%	0.04%
2001	88.21%	1.96%		0.47%	5.88%		0.04%
2002	86.75%	1.88%	3.60%	0.55%	6.11%		0.07%
2003	85.96%	1.76%	5.91%	0.91%	4.94%		0.00%
2004	83.90%		9.71%	1.42%	4.18%		0.03%
2005	83.18%		10.50%	3.02%	2.74%		0.03%
2006	83.72%		10.70%	2.67%	2.75%		0.00%
2007	80.58%		12.94%	2.99%	3.14%		0.00%
2008	80.41%		13.08%	2.78%	3.29%		0.00%
2009	79.84%		13.49%	2.70%	3.52%		0.00%
2010	79.84%		12.73%	3.62%	3.36%		0.00%
2011	80.29%		12.77%	3.04%	3.51%		0.00%
2012	80.35%		13.30%	2.61%	3.34%		0.00%
2013	82.85%		10.91%	2.52%	3.30%		0.00%
2014	83.83%		10.49%	2.34%	3.01%		0.00%

*Note: Although these vessels have trawl permits, majority used dredge gear in 2009-2010 and over 90% of the scallop landings by the FT trawl permitted vessels are caught using dredge gear during the same years.

Since 2001, there has been considerable growth in fishing effort and landings by vessels with general category permits, primarily as a result of resource recovery and higher scallop prices. Amendment 11 implemented a limited entry program for the general category fishery allocating 5% of the total projected scallop catch to the general category vessels qualified for limited access. The main objective of the action was to control capacity and mortality in the general category scallop fishery. There is also a separate limited entry program for general category fishing in the Northern Gulf of Maine. In addition, a separate limited entry incidental catch permit was adopted that will permit vessels to land and sell up to 40 pounds of scallop meat per trip while fishing for other species.

During the transition period to the full-implementation of Amendment 11, the general category vessels were allocated 10% of the scallop TAC. Beginning with 2010 fishing year, limited access general category IFQ vessels were allocated 5% of the estimated scallop catch resulting a decline in landings by the general category vessels (Table 14 and Table 15). These tables were obtained from the dealer and permit databases. The trip information obtained from the dealer data shows the permit number but does not specify whether a particular trip was taken as a the limited access (LA) or general category (LAGC) trip. Because many vessels had and have both

LA and general category permits, to separate the LA trips from LAGC trips for the same vessel requires some assumptions. If a vessel had both an LA and LAGC-IFQ permit, it was assumed that if scallop landings were equal or less than 400lb. (600lb.) for years up to 2010 (after 2010), that was an LAGC trip. If an LA vessel also had an LAGC-incidental permit, it was assumed that if scallop landings were equal or less than 100lb. that was an LAGC-incidental trip. For the LAGC-NGOM fishery it was assumed that if the scallop landings were equal or less than 200lb., that trip was a LAGC trip, otherwise it was an LA trip. In addition to these issues, there were many trips that were not associated with any valid permit plan (perhaps due to mistakes in the entry of permit number by dealers). Thus, it must be pointed out that the separation of landings by permit plan were estimated from the above assumptions and could differ slightly from actual landings. For example, Table 15 shows that in 2011 fishyear, the *estimated landings* by LAGC vessels including those by vessels with IFQ, NGOM and incidental catch permits and including the LAGC landings by the LA vessels that have both permits, amounted to 5.8% of total scallop landings in that fishyear.

Table 24. *Estimated Landings* by permit plan before and after Amendment 11 implementation

Fishyear	Gencat & LAGC	LA	NA	Grand Total
1994	125,001	15,128,621	1,203,669	16,457,291
1995	123,952	15,675,688	1,080,425	16,880,065
1996	213,535	16,234,409	759,431	17,207,375
1997	357,684	12,264,001	825,890	13,447,575
1998	164,185	11,042,134	567,277	11,773,596
1999	150,498	21,160,523	368,907	21,679,928
2000	425,364	32,510,711	354,600	33,290,675
2001	1,649,749	43,882,217	191,046	45,723,012
2002	1,124,933	48,784,134	132,652	50,041,719
2003	1,861,075	52,930,243	301,670	55,092,988
2004	3,699,334	58,288,383	652,773	62,640,490
2005	7,723,080	45,750,967	184,078	53,658,125
2006	7,097,155	48,888,678	288,678	56,274,511
2007	5,488,221	53,560,101	621,568	59,669,890
2008	4,785,198	46,842,633	847,472	52,475,303
2009	4,203,751	51,738,924	2,030,811	57,973,486
2010	2,330,701	53,277,449	1,352,837	56,960,987
2011	3,122,403	54,432,220	924,766	58,479,389
2012	2,962,148	53,296,551	899,001	57,157,700
2013	2,438,971	37,201,916	710,662	40,351,549
2014	1,539,230	23,264,651	405,847	25,209,728

Table 25. ***Estimated Landings*** **by permit plan (Dealer Data)**

Fishyear	Gencat & LAGC	LA	NA	Grand Total
1994	0.76%	91.93%	7.31%	100.00%
1995	0.73%	92.87%	6.40%	100.00%
1996	1.24%	94.35%	4.41%	100.00%
1997	2.66%	91.20%	6.14%	100.00%
1998	1.39%	93.79%	4.82%	100.00%
1999	0.69%	97.60%	1.70%	100.00%
2000	1.28%	97.66%	1.07%	100.00%
2001	3.61%	95.97%	0.42%	100.00%
2002	2.25%	97.49%	0.27%	100.00%
2003	3.38%	96.07%	0.55%	100.00%
2004	5.91%	93.05%	1.04%	100.00%
2005	14.39%	85.26%	0.34%	100.00%
2006	12.61%	86.88%	0.51%	100.00%
2007	9.20%	89.76%	1.04%	100.00%
2008	9.12%	89.27%	1.61%	100.00%
2009	7.25%	89.25%	3.50%	100.00%
2010	4.09%	93.53%	2.38%	100.00%
2011	5.34%	93.08%	1.58%	100.00%
2012	5.18%	93.24%	1.57%	100.00%
2013	6.04%	92.19%	1.76%	100.00%
2014	6.11%	92.28%	1.61%	100.00%

*Includes landings by LAGC IFQ, NGOM and incidental permits and LAGC landings by LA vessels.

The general category scallop fishery has always been a comparatively small but diverse part of the overall scallop fishery. The number of vessels participating in the general category fishery has continued to rise until 2007 when the New England Fisheries Management Council proposed limiting access in response to concerns of redirected effort from other fisheries. When the limited access general category was implemented, in 2008, there was a corresponding decline in the total number of active vessels. Then again in 2010, there was a decline in the number of active general category vessels when the GC IFQ program began and a "hard" Total Allowable Catch of 5% of the total scallop catch limit was established. These declines are evident in Table 14 and Table 15and Table 11 where the overall number of active vessels and scallop landings dropped, both in 2008 and in 2010.

1.4.7 Landings by permit categories and state

Table 26. Number of limited access trips by primary state of landing (excluding LAGC trips)

State	2009	2010	2011	2012	2013	2014
CT	92	92	93	98	59	30
MA	1,343	1,348	1,305	1,302	1,015	597
ME	24	25	32	25	21	11
NC	269	200	204	211	170	80
NJ	1,009	1,040	867	904	769	450
NY	23	25	19	23	18	NA
PA	11	11	9	8	7	NA
RI	21	23	15	17	13	11
VA	622	588	563	525	421	266

Table 27. Number of limited access trips by home state (excluding LAGC trips)

Home State	2009	2010	2011	2012	2013	2014
CT	92	92	93	98	59	30
FL	46	41	39	39	21	13
MA	1,334	1,338	1,293	1,290	1,008	594
ME	24	25	32	25	21	11
NC	420	332	359	349	272	171
NJ	951	1,010	833	835	722	424
NY	36	25	19	23	18	6
PA	54	39	31	46	35	17
RI	21	23	15	17	13	11
VA	436	427	393	391	324	177

Table 28. Scallop landings by primary state of landing for limited access vessels (excluding LAGC trips)

State	2009	2010	2011	2012	2013	2014
CT	1,671,132	1,653,705	1,725,970	1,705,315	1,089,217	568,371
MA	24,932,641	25,104,066	25,733,949	25,422,389	17,775,783	10,465,243
ME	419,850	416,240	513,595	481,804	316,595	110,666
NC	2,770,711	2,421,264	2,622,506	2,683,507	1,810,390	921,027
NJ	11,813,389	13,054,188	12,825,188	12,267,248	8,880,892	11,309,542
NY	265,543	310,400	261,909	245,561	173,391	NA
PA	163,449	168,220	196,808	147,000	129,918	NA
RI	403,023	427,099	370,684	382,473	283,454	220,612
VA	9,652,431	9,571,926	9,569,827	9,238,818	6,183,487	4,267,786

Table 29. Scallop landings by home state of landing for limited access vessels (excluding LAGC trips)

State	2009	2010	2011	2012	2013	2014
CT	1,671,132	1,653,705	1,725,970	1,705,315	1,089,217	568,371
FL	603,183	547,730	603,549	542,016	282,815	191,460
MA	24,786,691	24,991,691	25,600,949	25,298,809	17,675,733	10,417,443
ME	419,850	416,240	513,595	481,804	316,595	110,666
NC	5,046,205	4,472,765	5,142,301	5,057,049	3,132,035	2,193,256
NJ	11,341,917	12,895,577	12,601,420	11,994,651	8,907,305	11,118,006
NY	422,543	310,400	261,909	245,561	173,391	NA
PA	683,509	552,992	387,755	372,035	249,037	NA
RI	403,023	427,099	370,684	382,473	283,454	220,612
VA	6,714,116	6,858,909	6,612,304	6,494,402	4,533,545	2,885,228

Table 30. Number of LAGC-IFQ permits by home state (excludes LA vessels, Permit data)

HPST	2008	2009	2010	2011	2012	2013	2014
CT	5	5	4	1	3	3	3
DE	3	3	3	3	3	3	3
FL	2	2					
GA	2	1	1				
MA	98	111	107	95	89	84	79
MD	7	11	10	9	8	7	5
ME	26	22	16	12	11	8	6
NC	32	39	40	30	29	25	21
NH	9	10	7	6	6	5	5
NJ	62	69	75	62	56	57	53
NY	19	20	17	17	18	17	17
PA	1	1	1	1	1	1	1
RI	5	5	6	7	7	6	6
TX					1	1	1
VA	9	5	6	5	5	5	4
Grand Total	**280**	**304**	**293**	**248**	**237**	**222**	**204**

Table 31. Number of LAGC-IFQ permits by primary state (excludes LA vessels, Permit data)

PPST	2008	2009	2010	2011	2012	2013	2014
CT	5	5	4	1	3	3	3
DE	1	1	1	1	1	1	1
FL	2	3	1	1			
GA	2	1	1				
MA	101	113	109	97	90	85	80
MD	10	14	13	12	11	10	8
ME	23	20	14	11	11	8	6
NC	30	36	39	29	30	26	22
NH	8	9	6	5	5	4	4
NJ	64	70	75	62	56	57	53
NY	18	20	17	17	18	17	17
RI	6	6	7	7	7	6	6
VA	10	6	6	5	5	5	4

1.4.8 Trends in Foreign Trade

Figure 10 shows scallop exports and imports in pounds including fresh, frozen and processed scallops. Although though numbers possibly include exports of bay, calico or weathervane scallops, it mainly consists of sea scallops.

One of most significant change in the trend for foreign trade for scallops after 1999 was the striking increase in scallop exports. The increase in landings scallops led to a tripling of U.S. exports of scallops from about 5 million pounds in 1999 to a record amount of 32 million pounds in 2011. Total exports declined 21 million lb. in 2013 as the landings declined by 30% in the same year.

In contrast, imports of scallops declined to 42 million lb. in 2011 from about 60 million lb. in 2010, that is by almost 30% (Figure 10). Because of the increase in the value of scallop exports to over $214 million in 2011, the difference in the value of exported and imported scallops, that is scallop trade deficit reached to its lowest level, $42 million, since 1994 (Figure 11). Therefore, rebuilding of scallops as a result of the management of the scallop fishery benefited the nation by reducing the scallop trade deficit in addition to increasing the revenue for the scallop fishery as a whole.

However, this trend was sharply reversed in the 2013 fishing year as the value of imports jumped to about $380 million and the value of exports declined to about $140 million. Unfortunately, trade data doesn't include the market category (size) of the imported and exported scallops. However, Table 22 and Table 23 shows the prices, values and pounds by price group, which could reflect the changes in exports and imports by market category. Table 22 shows that most of the decline in the exported pounds happened in the category of scallops with average price

ranging from $4 to $8 per pound, while Table 23 shows that there was big increase in the imported pounds for category of scallops with average price ranging from $8 to $10 per pound.

Figure 47 - Scallop exports and imports (lb.)

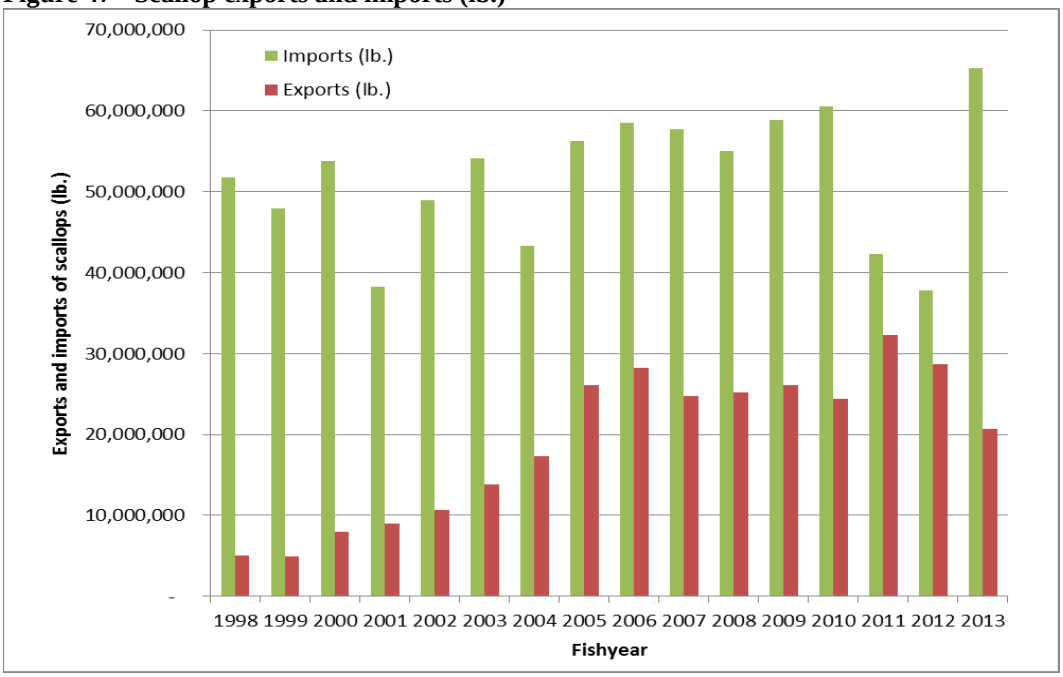


Figure 48 - Value of scallop exports and imports ($, in inflation adjusted 2013 prices))

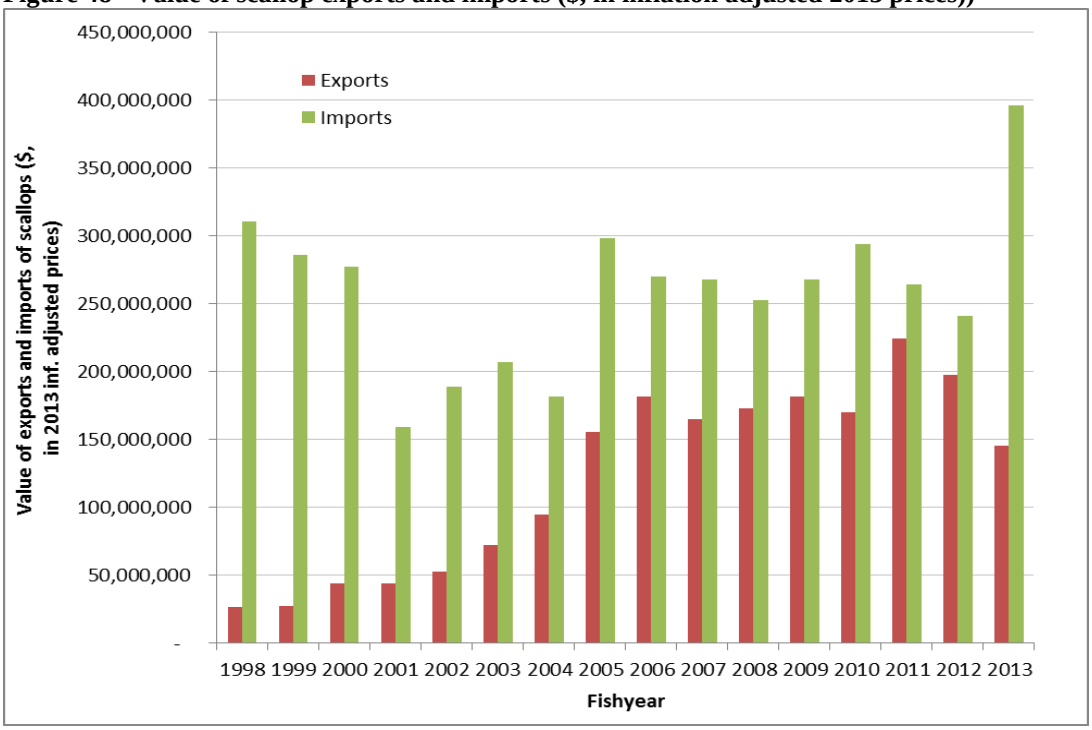


Figure 49 – Average annual price of scallop exports and imports ($, in inflation adjusted 2013 prices))

Table 32. Average price of exported scallops by price category by calendar year (in current prices)

Price group	Values	2011	2012	2013	2014
<=$4	Export lb.	1,127,620	829,379	541,972	251,468
	Export value ($)	3,355,953	2,705,167	1,822,139	807,309
	Average price	3.0	3.3	3.4	3.2
$4 - $8	Export lb.	23,023,200	21,801,576	14,338,774	8,089,819
	Export value ($)	145,267,895	138,437,041	93,920,861	50,288,736
	Average price	6.3	6.3	6.6	6.2
$8 - $10	Export lb.	7,869,161	5,991,124	6,148,233	2,596,624
	Export value ($)	65,808,565	51,042,066	52,914,802	23,749,313
	Average price	8.4	8.5	8.6	9.1
>$10	Export lb.	115,631	133,846	176,366	196,732
	Export value ($)	1,261,326	1,460,860	1,912,062	2,122,441
	Average price	10.9	10.9	10.8	10.8
Total Export lb.		**32,135,612**	**28,755,925**	**21,205,344**	**11,134,643**
Total Export value ($)		**215,693,739**	**193,645,134**	**150,569,864**	**76,967,799**
Average annual price		6.7	6.7	7.1	6.9

Table 33. Average price of imported scallops by price category by calendar year (in current prices)

Price group	Values	2011	2012	2013	2014
<=$4	Import value ($)	117,326,262	43,948,300	77,310,278	63,378,130
	Import lb. ($)	35,408,755	14,155,893	24,460,284	20,811,007
	Average price	3.3	3.1	3.2	3.0
$4 - $8	Import value ($)	53,149,509	44,698,767	74,898,749	43,100,927
	Import lb. ($)	9,333,062	7,244,596	14,215,757	8,806,023
	Average price	5.7	6.2	5.3	4.9
$8 - $10	Import value ($)	33,178,701	39,668,477	120,862,749	47,072,167
	Import lb. ($)	3,565,438	4,095,331	13,247,014	4,945,678
	Average price	9.3	9.7	9.1	9.5
>$10	Import value ($)	96,724,634	96,424,449	98,810,977	109,002,922
	Import lb. ($)	8,496,341	8,966,992	8,955,458	9,347,627
	Average price	11.4	10.8	11.0	11.7
Total import value ($)		**300,379,106**	**224,739,993**	**371,882,753**	**262,554,146**
Total Import lb. ($)		**56,803,596**	**34,462,812**	**60,878,512**	**43,910,337**
Average annual price		5.3	6.5	6.1	6.0

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 34: 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 Complex	Clearnose skate	No	No
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%