Mid-Atlantic Fishery Management Council

Atlantic Surfclam Information Document - May 2013

Management System

The Fishery Management Plan (FMP) for Atlantic surfclam (*Spisula solidissima*) became effective in 1977. The FMP established the management unit as all Atlantic surfclams in the Atlantic EEZ. The FMP is managed by the Mid-Atlantic Fishery Management Council (Council), in conjunction with the National Marine Fisheries Service (NMFS) as the Federal implementation and enforcement entity. The primary management tool is the specification of an annual quota, which is allocated to the holders of allocation shares (Individual Transferable Quotas (ITQs)) at the beginning of each calendar year as specified in Amendment 8 to the FMP (1988). In addition to the Federal waters fishery, there is a small fishery prosecuted in the state waters of New York and New Jersey. The FMP, including subsequent Amendments and Frameworks, is available on the Council website at: http://www.mafmc.org

Basic Biology

Information on Atlantic surfclam biology can be found in the document titled, "Essential Fish Habitat Source Document: Surfclam, *Spisula solidissima*, Life History and Habitat Requirements" (Cargnelli et al. 1999a). Electronic versions are available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. Additional information on this species is available at the following website: http://www.nefsc.noaa.gov/sos/. A summary of the basic biology is provided below.

Atlantic surfclams are distributed along the western North Atlantic Ocean from the southern Gulf of St. Lawrence to Cape Hatteras. Surfclams occur in both the state territorial waters ($\leq$ 3 mi from shore) and within the Exclusive Economic Zone (EEZ, 3-200 miles from shore). Commercial concentrations are found primarily off New Jersey, the Delmarva Peninsula, and on Georges Bank. In the Mid-Atlantic region, surfclams are found from the intertidal zone to a depth of about 60 meters, but densities are low at depths greater than 40 meters.

The maximum size of surfclams is about 22.5 cm (8.9 inches) shell length, but surfclams larger than 20 cm (7.9 inches) are rare. The maximum age exceeds 30 years and surfclams of 15-20 years of age are common in many areas. Surfclams are capable of reproduction in their first year of life, although full maturity may not be reached until the second year. Eggs and sperm are shed directly into the water column. Recruitment to the bottom occurs after a planktonic larval period of about three weeks.

Atlantic surfclams are suspension feeders on phytoplankton, and use siphons which are extended above the surface of the substrate to pump in water. Predators of surfclams include certain species of crabs, sea stars, snails, and other crustaceans, as well as fish predators such cod and haddock.

Status of the Stock

The Atlantic surfclam stock assessment was peer reviewed and approved for use by management at Stock Assessment Workshop 56 (SAW 56). A statistical catch at age and length model called SS3 was used and incorporates age and length structure. Reports on "Stock Status," including annual assessment and reference point update reports, SAW reports, and Stock Assessment Review Committee (SARC) panelist reports are available online at the NEFSC website: http://www.nefsc.noaa.gov

The Atlantic surfclam resource in the US EEZ is not overfished and overfishing is not occurring in 2011 (NEFSC 2013). Estimated biomass of the entire resource during 2011 (approximate 120+ mm shell length, SL) was 1,060 thousand mt (2,337 million lbs), with a 95% confidence interval of 802 – 1401 thousand mt meats (NEFSC 2013). The 95% confidence interval overlaps the B_{Target} = ½ B_{1999} = 972 thousand mt meats (2,142 million lbs) but is entirely above $B_{Threshold}$ = ½ B_{Target} = 486 thousand mt meats (1,071 million lbs; Figure 1). Estimated annual fishing mortality during 2011 for the entire resource was F = 0.027 (95% confidence interval 0.016 – 0.045), which is entirely below the overfishing threshold F_{MSY} proxy = M = 0.15 (Figure 2).

Estimated biomass on Georges Bank during 2011 (ages 7+, approximately 120+ mm shell length, SL) was 357 thousand mt of meats (787 million lbs) with a 95% confidence interval 252 - 506 mt. Surfclams on Georges Bank were not fished from 1990 to 2008 due to the risk of paralytic shellfish poisoning (PSP). There was light fishing in years 2009-2011 under an exempted fishing permit. Fishing mortality on Georges Bank was close to zero (F_{2011} = 0.009; 95% confidence interval 0.006 – 0.013) during 2011. Estimated biomass of the southern area during 2011 (ages 6+, approximately 120+ mm shell length, SL) was 703 thousand mt (1,549 million lbs), with a 95% confidence interval of 481 – 1,028 thousand mt meats (Figure 3). Estimated fishing mortality during 2011 for the southern area was F = 0.037 (95% confidence interval 0.025 – 0.056) (Figure 4). Recruitment (age 0) has been below average for the whole stock since 1999 (Figure 5).

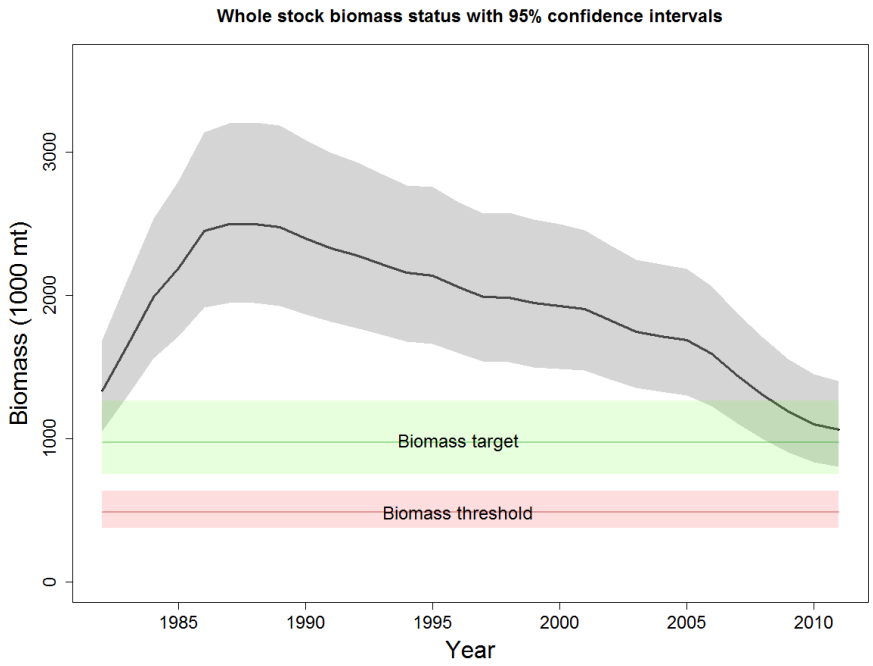

Figure 1. Whole stock biomass status estimates with approximate 95% confidence intervals on the estimates and reference points. Source: Stock Assessment Summary (NEFSC 2013)

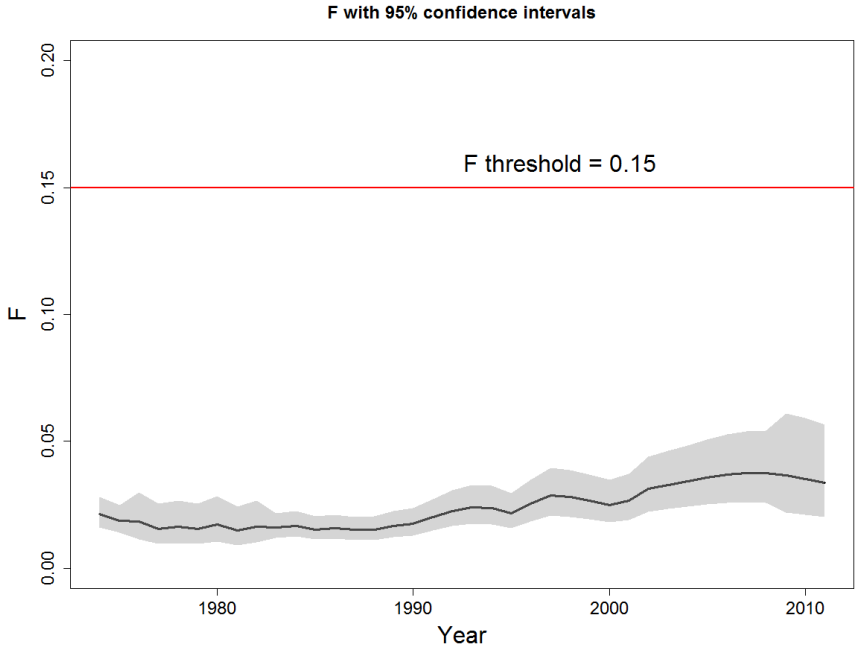

Figure 2. Whole stock fishing mortality estimates with approximate 95% confidence intervals, and the overfishing threshold. Source: Stock Assessment Summary (NEFSC 2013)

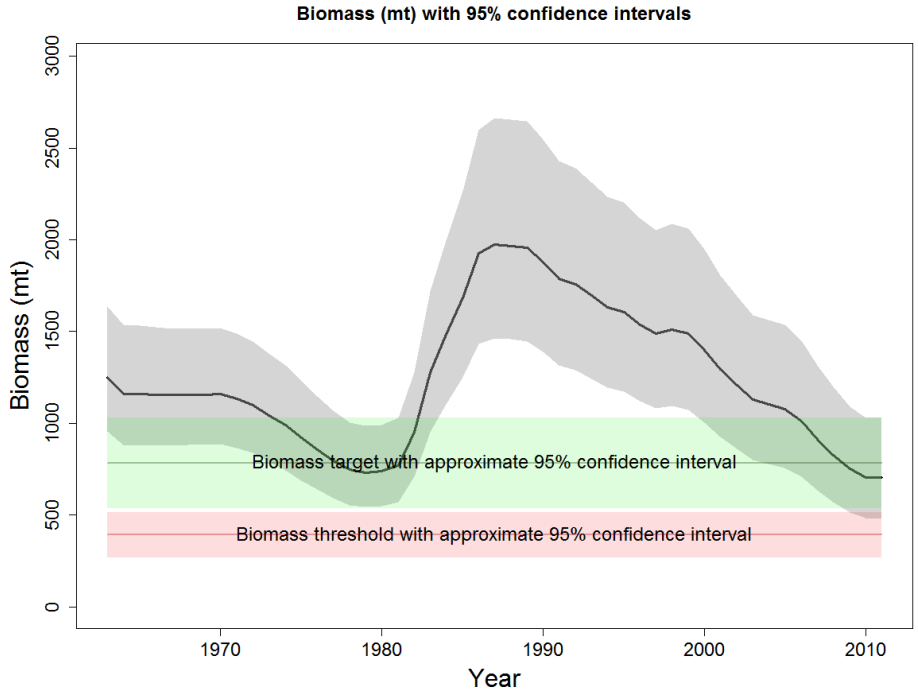

Figure 3. Southern area biomass estimates, and biomass reference points with approximate 95% confidence intervals. Source: Stock Assessment Summary (NEFSC 2013)

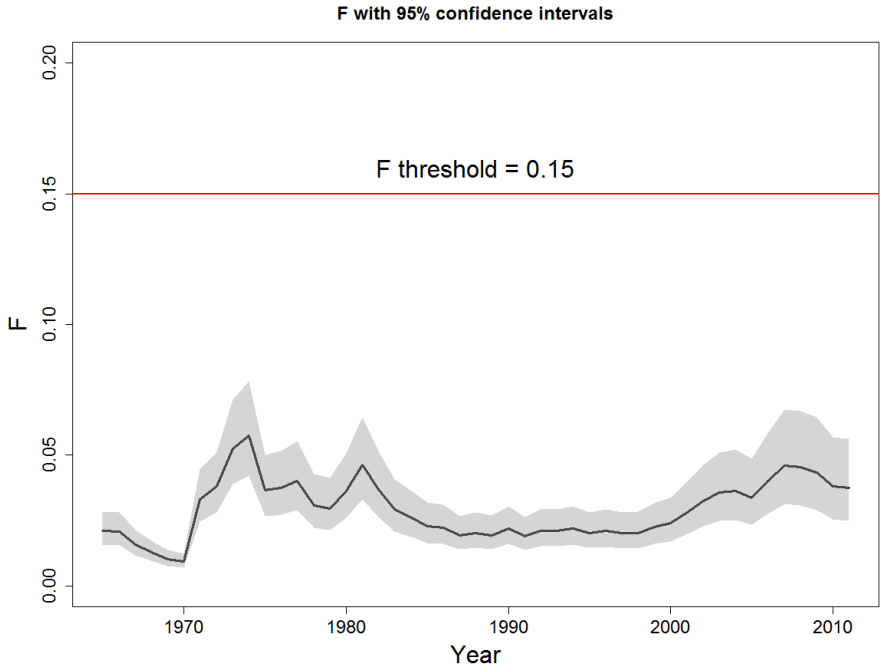

Figure 4. Southern area fishing mortality estimates and with approximate 95% confidence intervals, and the overfishing threshold. Source: Stock Assessment Summary (NEFSC 2013)

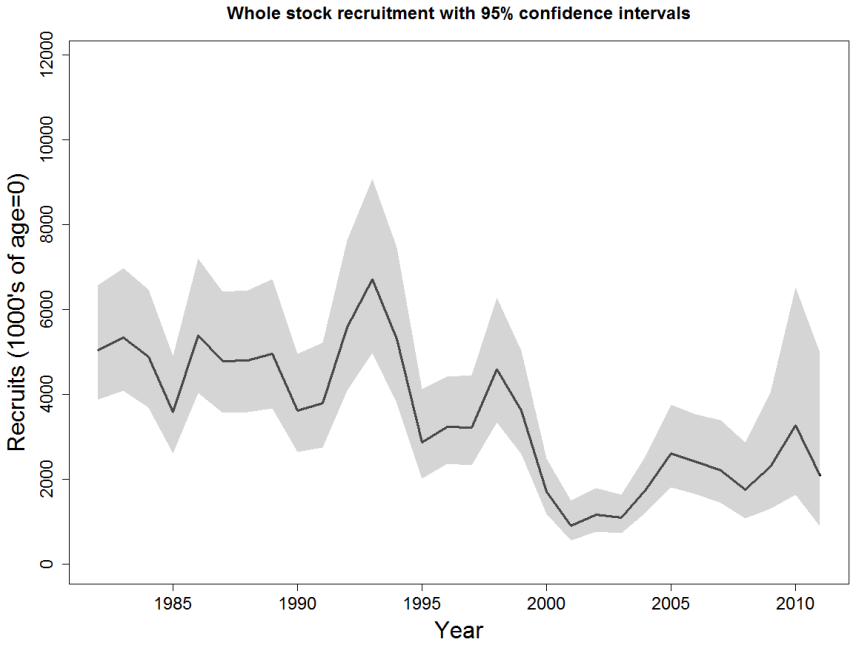

Figure 5. Whole stock recruitment estimates with approximate 95% confidence intervals. Source: Stock Assessment Summary (NEFSC 2013)

Description of the Fishery and Market

The commercial fishery for surfclam in Federal waters is prosecuted with large vessels and hydraulic dredges. Surfclam landings and commercial quotas are given below in Table 1. The distribution of the fishery has changed over time, as shown in Figure 6.

Port and Community Description

When Amendment 13 to the FMP was developed, the Council hired Dr. Bonnie McCay and her associates at Rutgers University to describe the ports and communities that are associated with the surfclam and ocean quahog fisheries. The researchers did an extensive job characterizing the three main fisheries (non-Maine ocean quahog, Maine ocean quahog, and surfclam). The description of the fishing gear, areas fished, etc. are fully described in Amendment 13.

Communities from Maine to Virginia are involved in the harvesting and processing of surfclams and ocean quahogs. Ports in New Jersey and Massachusetts handle the most volume and value, particularly Atlantic City, Point Pleasant, and Cape May/Wildwood in New Jersey, and New Bedford, Massachusetts. There are also significant landings in Ocean City, Maryland, Warren, Rhode Island, and the Jonesport and Beals Island areas of Maine. The Maine fishery is entirely for ocean quahogs, which are sold as shellstock for the half-shell market. The other fisheries are industrialized ones for surfclams and ocean quahogs, which are hand shucked or steam-shucked and processed into fried, canned, and frozen products.

Table 1. Federal Surfclam Quotas and Landings: 1998 - 2013.

Year	Landings[a] ('000 bu)	Quota ('000 bu)	% Harvested
1998	2,365	2,565	92%
1999	2,538	2,565	99%
2000	2,561	2,565	100%
2001	2,855	2,850	100%
2002	3,113	3,135	99%
2003	3,244	3,250	100%
2004	3,138	3,400	92%
2005	2,744	3,400	81%
2006	3,057	3,400	90%
2007	3,231	3,400	95%
2008	2,920	3,400	86%
2009	2,613	3,400	77%
2010	2,349	3,400	69%
2011[b]	2,446	3,400	72%
2012[b]	2,341	3,400	69%
2013[b]	NA	3,400	NA

[a] 1 surfclam bushel is approximately 17 lb.
[b] For 2011-2013, the Scientific and Statistical Committee recommended an overfishing limit (OFL) for 2010, 2011, 2012, and 2013 were specified as 129,300 mt, 114,00 mt, 102,300 mt, and 93,400 mt, respectively, and an acceptable biological catch (ABC) of 96,600 mt (2011-2013). The Council recommended a quota based on a range for optimum yield in the FMP.
Source: NMFS Clam Vessel Logbook Reports

Processing plants are therefore major components of the fishery, and the communities in which they are found must be described as well as the port towns. Some of them meet the definition of "fishing community" found in the Sustainable Fisheries Act of 1996: "[t]he term "fishing community" means a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community." The McCay team characterizations of the ports and communities are based on government census and labor statistics and on observations and interviews carried out during the late 1990s and in the fall of 2001.

Additional information on "Community Profiles for the Northeast US Fisheries" can be found at: http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html.

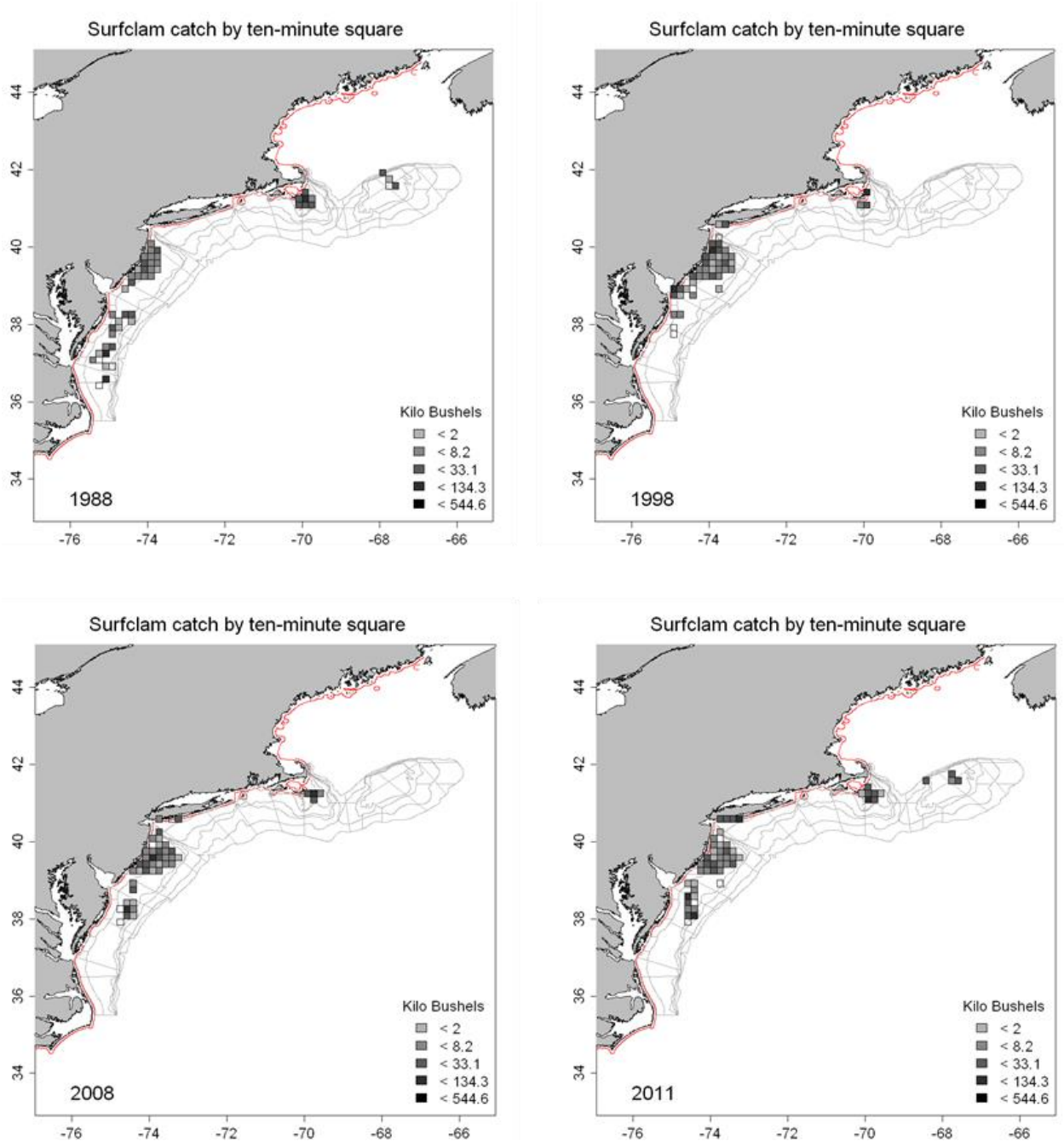

Figure 6. Surfclam landings by ten-minute square (TMSQ), the finest scale location for landings reported in logbooks, by year (1 kilobushel = 1000 bu y-1). Source: Stock Assessment Summary (NEFSC 2013)

Federal Fleet Profile

The total number of vessels participating in the surfclam fishery has been relatively stable from 1997 through 2012, ranging from 29 vessels in 2006 to 42 vessels in 2012. The average ex-vessel price of surflcams reported by processors increased about 4% from $11.90 to $12.37 per bushel in 2012. The total ex-vessel value of the 2012 federal harvest was approximately $28.4 million or 5% increase from the prior year. A fleet-wide calculation of LPUE (landings per unit effort) for the 2003 through 2012 time period showed that the average number of bushels harvested per hour of fishing have ranged from 47 in 2011 to 97 in 2003. LPUE increased from 47 bushels per hour in 2011 to 52 in 2012. In the first four months of 2013, the average LPUE was 42 bushels per hour.

As indicated above, surfclams on Georges Bank were not fished from 1990 to 2008 due to the risk of PSP. There was light fishing on Georges Bank in years 2009-2011 under an exempted fishing permit and LPUE in that area was substantially higher (5-7 times higher) than in other traditional fishing grounds. The Northeast Regional Office reopened a portion of Georges Bank to the harvest of surfclams and ocean quahogs beginning January 1, 2013 (77 FR 75057, December 19, 2012) under its authority in 50 CFR 648.76. Harvesting vessels have to adhere to the recently adopted testing protocol into the National Shellfish Sanitation Program. It is anticipated that allowing clam vessels to fish in the reopened area would significantly reduce the fishing pressure in the southern portion of the surfclam range while providing an economic benefit to the industry because of the higher LPUE from Georges Bank.

Table 2. Federal Fleet Profile, 2003 through 2012.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Harvesting BOTH surfclams & ocean quahogs	11	14	12	9	9	8	8	12	12	13
Harvesting only surfclams	23	21	24	20	24	24	28	22	24	29
Total Vessels	34	35	36	29	33	32	36	34	36	42

Source: NMFS Clam Vessel Logbooks

Processing Sector

Even though this document describes the surfclam fishery, the information presented in this section regarding the processing sector is for both surfclams and ocean quahogs as some of these facilities purchase/process both species. In 2012 there were 9 companies reporting purchases of surfclams and/or ocean quahogs from the industrial fisheries outside of Maine. They were distributed by state as indicated in Table 3. Employment data for these specific firms are not available. In 2012, these companies bought approximately $22.9 million worth of ocean quahogs and $28.4 million worth of surfclams.

Table 3. Companies that reported buying surfclams ocean quahogs and by state (from NMFS dealer/processor surfclam/ocean quahog dealer/processor report database) in 2012.

Number of Companies	MA	NJ	DE	VA
	4	3	1	1

References

Cargnelli, L., S. Griesbach, D. Packer, and E. Weissberger. 1999a. Essential Fish Habitat Source Document: Atlantic Surfclam, *Spisula solidissima*, Life History and Habitat Characteristics. NOAA Tech. Memo. NMFS-NE-142.

Northeast Fisheries Science Center. 2013. 56th Northeast Regional Stock Assessment Workshop (56th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 13-04; 42 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://nefsc.noaa.gov/publications/