

FMP **SEA SCALLOP FMP**  
 STOCK(S) **Sea Scallop (Georges Bank and Mid-Atlantic - combined)**  
 LAST ASSESSMENT **SAW 65, 2018**

Assessment Model, Terminal Year	Description of Assessment Model	Overfishing?/ Overfished?	In Rebuilding Program?	OFL	ABC/ABC CR	ACL	ACT
Combined CASA model, 2017	A statistical length based model. Separate analyses for GB open, GB closed and Mid-Atlantic and results combined to assess the entire stock.	No	No	38,061 mt in 2015 (SAW 59, F=0.48), 68,418 mt in 2016 (SAW 59, F=0.48), 75,485 mt in 2017 (SAW 59, F=0.48), 72,055 in 2018 (SAW 59, F=0.48), 73,421 in 2019 (SAW65, F=0.64)	<b>ABC= Catch associated with fishing rate that has 25% chance of exceeding OFL</b> 31,459 mt in 2015 and 55,737 mt in 2016, 61,741 mt in 2017, 59,968 mt in 2018, 62,989 mt in 2019 (including discards)	<b>ABC- Discards</b> 25,352 in 2015, 37,852 mt in 2016, 46,737 mt in 2017, 45,950 mt in 2018 57,003 mt in 2019 (after discards removed)	Maximum that ACT for LA fishery can be is set at catch associated with an F rate with 25% of exceeding ABC, actual targets often set lower
Adjustment of the access area boundaries to protect small scallops and re-allocation of access trips when an area's biomass proves to be less than expected are ongoing challenges addressed in each framework action.				MSY/OY	AMs	Discards	State Waters
				From SARC 65: MSY = 46,531 mt, B <sub>MSY</sub> = 116,766 mt	Proactive AMs- Setting fishery targets below the catch limits. Reactive AMs - future reductions in allocations equivalent to any overage depending on the impact overage had on fishing mortality.	6,107 mt estimated for 2015, 17,885 mt estimated for 2016, 15,004 estimated for 2017, 14,018 estimated for 2018, 5,986 mt estimated for 2019	Not included in the FMP
<b>Availability of Biological and Assessment Data</b>		<i>Used in Assessment:</i> Federal scallop dredge survey as well as indexes from: additional dredge survey (VIMS); towed digital camera survey (Habcam video survey); and video drop camera survey (SMAST). <i>Other Data:</i> commercial catch, LPUE, commercial shell height compositions, data from dredge surveys conducted by VIMS, growth increment data from scallop shells, and shell height/meat weight data adjusted to take commercial practices and seasonality into account (observer data).					
<b>Recent Performance Against Harvest Control Rule</b>		Stock has remained in rebuilt conditioning with no overfishing occurring in recent years. Landings were 51% of ACL in 2016, 52% of ACL in 2017 fishing year, and 59% of the ACL in 2018. The ACL is based on total exploitable biomass, while fishery allocations follow spatial management of the resource. In years where exploitable biomass is in closed area, landings as a percentage of the ACL is anticipated to decline.					
<b>Current Management Program</b>		Comprised of open area DAS management and access area trip allocations with possession limits for the Limited Access (LA) Fishery. Annual individual quota allocations combined with possession limits for the LAGC fishery with IFQ permits, possession limits for the LAGC fishery for vessels holding NGOM and incidental catch permits. 94.5% of the ACL is allocated to LA fishery, and 5.5% to the LAGC IFQ fishery. Separate TAC for NGOM Management Area.					
<b>Landings, Revenues, and their Variability</b>		Sea scallop landings and revenues increased in 2018 fishing year compared to 2017 and 2016 levels. Landings and revenues (in 2018 dollars) were both higher than the average values in the last 10 fishery years (2009-2018). Landed lbs. 2018 Fishing year=60.09 mil.lbs. vs. 53.61 mil in 2017 and 41.5 mil in 2016. Last 9 fishing years (2009-2017): Avg. 49.38 mil.lbs. Min.32.37 mil.lbs. Max.60.09 mil.lbs. Revenue (in 2018 dollars): 2018 Fishing year= \$519.7 mil vs. \$532.24 mil in 2017 and \$532.24 mil in 2016. Last 9 fishing years (2009-2017): Average= \$447.9 mil., Min.= \$327 mil., Max=\$ 532.57 mil.					
<b>Data - Vessels, Permits, Dealers, Processors, Employment</b>		347 LA permits including 313 FT, 34 PT vessels, all active. There were 304 IFQ (active and in CPH), 102 NGOM, and 232 Incidental permits in the 2018 fishing year. In 2018, 104 of the "IFQ only" and 38 "NGOM only" permit holders were active (i.e., landed scallops). In FY2018, about 2,291 crew positions in LA fishery and 866 crew positions (partly on scallop fishery) in "IFQ only" permits.					
<b>% Food, % Recreational</b>		About 100% Food, recreational fishing is not common due to the gear involved and distribution of stock offshore.					
<b>Fishing Communities</b>		Scallop fishing communities are widely distributed from ME to NC. Ports with this highest recent landings are in MA (New Bedford), followed by NJ (Cape May) and VA (Hampton/Seaford, Newport News). Of the 11 primary scallop ports, eight have over 75% of fishing revenue from scallops. Factors that influence scallop fishing activity in communities include: revenue, geographical distribution of scallop resource, and differences in abundance and access area allocations by area.					
<b>Other Economic/Social Factors</b>		Economic factors that impact prices, revenues, profits and crew shares in the scallop fishery include the size composition of landings, demand for scallops in the domestic and export markets, import prices and net scallop landings. According to price model estimates using data upto 2017 fishing years, price flexibility is low because holding all other factors constant, a 1% increase in landings net of exports would reduce price by less than 1%. Short-term fluctuations in landings due to area and season closures and effort reduction measures also affect prices, revenues, profits and crew shares. The price premiums for the larger size scallops including U10s and U12s increased in the recent years as US has become of the major exporters of large scallops. In 2017 and recently in 2018, scallop prices declined as landings and the proportion of large size U10 and U12 scallops increased. For example, U10 price per pound (in 2018\$) declined from \$18.08 in FY2016 to \$13.16 in FY2017, and \$10.58 in FY2018 with the corresponding landings of 4.72 mil lbs, 10.18 mil lbs, and 10.85 lbs in FY2016, FY2017, and FY2018, respectively.					
<b>Major Sources of Scientific Uncertainty</b>		Highest sources of scientific uncertainty include discard mortality, incidental mortality and stock-recruit relationship. Medium sources of uncertainty are natural mortality, sea scallop growth, maturity and fecundity, density dependence, shell height/meat weight relationship.					
<b>Major Sources of Management Uncertainty</b>		Management uncertainty is due to DAS carry-over, estimate of catch from open areas that are regulated by DAS management, ability to fish unused access area allocation within the first 60 days of the following year and uncertain efficiency due to vessel upgrades and replacements. Management uncertainty is addressed by establishing ACTs which will have an F that has a 25% chance of exceeding ABC.					
<b>How is the probability of overfishing currently addressed?</b>		Uses risk based harvest rules such that ABC is set at an F that has a 25% of chance of exceeding F <sub>max</sub> . This rate is associated with less than 1% loss in yield relative to F <sub>max</sub> . In addition, risk associated with management uncertainty is addressed by setting ACTs for the limited access fleet. Stock assessments and stochastic estimate of F <sub>max</sub> which considers uncertainty in natural mortality, growth, meat yield, selectivity, discard mortality and non-capture mortality.					
<b>What is the consequence of overfishing?</b>		Overfishing could lead to a reduction in overall LPUE and an increase in costs in the short-term and a reduction in scallop stock biomass, yield and net economic benefits over the long-term. However, reactive AMs would be applicable if overfishing is occurring. If the sub-ACL is exceeded, reactive AM would include a reduction in future IFQ for LAGC vessels and a reduction in overall DAS for LA vessels in the subsequent year to account for any overages with the exception that if the overall F estimated after the fishing year has ended is equal to or less than the ACT, no AMS would be triggered. In-season adjustments could also be considered to prevent ACL from reached.					
<b>How are expected net benefits to the Nation currently measured/evaluated?</b>		Expected net benefits to the nation were estimated by the cumulative present value of the (sum of) producer and consumer surpluses (benefits) over the long-term (usually over 15 years) net of status quo benefits using the biological projections for landings, size composition of scallops, projected LPUE, price and cost models.					
<b>Interactions with Other Fisheries/Stocks, Bycatch Issues</b>		Yellowtail flounder and windowpane flounder bycatch is addressed by AMs (gear modification requirements). Sea turtle interactions are addressed by seasonal restrictions and gear modifications to minimize severity of potential impacts.					
<b>Ecosystem Considerations: Trophic Interactions</b>		Predation by cancer crabs and sea stars affect juvenile scallop mortality and sea scallop density. Negative relationship were found between the spatio-temporal abundance of the sea star <i>Astropecten americanus</i> and scallop recruitment. Similarly, scallop density in high density sites has declined due to predation especially by crabs.					
<b>Ecosystem Considerations: Habitat</b>		Impacts on habitat are addressed by effort reduction measures and area closures. The increase in the LPUE due to these measures and area rotation system reduced the area swept by dredge activity considerably. Estimates of area swept corresponding to each alternative is taken into account in the fishery specifications process.					
<b>Ecosystem Considerations: Climate</b>		Increasing ocean acidification could affect the sea scallop seed production negatively. This factor is not incorporated to the assessment at this time.					
<b>Other Important Considerations/Notes</b>		The partial approval of OHA2 in early 2018 facilitated access to areas with high densities of scallops that were previously off-limits to the scallop fishery. The biomass in these closed areas was considered as part of the OFL and ABC estimates in recent years. The fishery is now operating in these newly opened areas. Spatial nature of the fishery and associated risks related to localized fishing pressure/underutilization. Distributional issues related to accessibility for different permit types and vessels from different ports. Differential impacts of the IFQ program on the participants of the LAGC fishery and the issues related to lease and quota prices. Recruitment in the fishery has been unremarkable for several years following exceptional recruitment in 2012 and 2013.					