



New England Fishery Management Council

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MEMORANDUM

DATE: March 24, 2020
TO: Scallop Committee and Scallop Advisory Panel
FROM: Jonathon Peros, Scallop Plan Coordinator
SUBJECT: **Updating 2020-2024 Council Research Priorities Related to Scallops**

Per the Magnuson Stevens Reauthorization Act of 2006, Councils are required to develop five-year research priority plans and submit them to the Secretary of Commerce. The Council had been updating this list once every 5 years. Now, the Council annually updates this list with input from species Committees and the SSC.

Recent Activity: The Scallop PDT met on January 24, 2020 and February 10, 2020 to discuss potential ways to update the Council's research priorities, focusing only on scallop related priorities. In February 2020, the Northeast Fisheries Science Center provided to Council staff notes on what research it is doing that may meet the Council research priorities.

Next Steps: At your next meeting, the AP and Committee may wish to provide recommendations on changes and additions for the 2020 – 2024 list. Input from this meeting will be considered by the Council's SSC at an upcoming meeting. At your meetings, Council staff will present the PDT's recommendations, along with other sources that are being used to update the priority list. Since the Council will not be addressing this list at the April Council meeting, the AP and Committee can choose to finalize input through correspondence following your meeting on March 26 & March 27, 2020. If this approach is used, staff will solicit input from the AP first, and then circulate it to Committee. Staff would [update a table, similar to what has been prepared for the Skate AP and Committee](#) (pages 2 – 4). There will be additional time for the public to comment on these research priorities at an upcoming meeting of the Council's SSC (TBD), and when the full Council approves these at our June meeting.

Anticipated Outcomes:

- AP & Committee: Develop scallop related research recommendations to the SSC and Council for updating the 5-year research priorities (2020-2024).
- The Council is expected to update 5-year research priorities at their June 2020 meeting.

Updates to 2020 – 2024 Research Priorities:

There are several sources of updates to scallop related priorities:

1. PDT recommended updates to the 2019 – 2023 list.

2. SSC recommended research priorities.
3. The 2020/2021 Scallop RSA Research Priorities.
4. Feedback from the NEFSC on the 2019 – 2023 list. (*see* Table 1)
5. Habitat PDT recommendations around research priorities related to offshore wind and the northern edge. (*provided through correspondence*)

1. PDT RECOMMENDED UPDATES TO THE 2019 – 2023 PRIORITY LIST:

New research items:

1. Research to explore how scallop density impacts dredge and survey estimates. (*similar to RSA priority #2 below*)
2. Research to expand the body of knowledge for scallops in the Gulf of Maine bioregion. This could include research aimed at understanding growth, reproduction, natural mortality in this area. (classify as a longer term research need) Address data gaps and research needs for future assessments.

Modifications to existing priorities:

Scallop life history work focusing on natural mortality, including all sources of non-harvest mortality such as predation, disease, and discard mortality.

- Suggestion: **Add** in the Description, Rationale, Potential Use:
 - “Special attention should be directed to the large mortality event in the NLS-West area as a way to inform future management practices.”
- Next research track assessment (benchmark) planned in 2024.
- Suggestion: Change status from unknown to underway.

Research to address potential implications of spat collection, seeding and relocation of scallops for enhancement purposes in light of unknown impacts of diseases and parasites.

- Suggestion: Add “below-average recruitment” and “anomalous slow growth” so that the title reads:
 - Research to address potential implications of spat collection, seeding and relocation of scallops for enhancement purposes in light of **below average recruitment, anomalous slow growth, and** unknown impacts of diseases and parasites.
- Suggestion: Make this an important (near term) priority.

Impacts of offshore wind development on scallop production.

Suggestions: Update “status” from “not begun” to “underway”, and note RSA funding of SMAST larval dispersal model to include impacts of offshore wind.

2. SSC RECOMMENDED RESEARCH PRIORITIES FROM OCTOBER 17, 2019:

1. Research to develop a gonad-based estimate of SSB and reference points.
 - a. Understand how gonad weight changes in space and time.
 - b. When spawning is occurring?
 - c. Development of a standard way to measure gonads (wet v. dry)?
2. Research to investigate different growth rates found in different scallop harvesting areas, particularly the Nantucket Lightship region.

3. Further comparison of assessment model configurations.

3. 2020/2021 SCALLOP RSA RESEARCH PRIORITIES

1. Survey Related Research

Survey results must be available by early August of the year in which the survey is conducted (e.g., survey results that would inform 2021 fishing effort decisions must be available by mid-August 2020). Successful projects may be asked to provide data in a standardized format.

1a. An intensive industry-based survey of each of the relevant scallop rotational areas (Closed Area II, Nantucket Lightship, Elephant Trunk and Hudson Canyon) that will provide estimates of total and exploitable biomass to be used for setting fishery catch limits under the rotational area management program.

1b. an intensive industry-based survey of areas of importance (i.e., open areas with high scallop recruitment or areas of importance to the fishery). For 2019, the priority areas are where scallop recruitment was observed during 2019 surveys, and areas of the Gulf of Maine that have recently been or are likely to be fished.

1c. a resource wide industry-based survey of scallops within Georges Bank and/or Mid-Atlantic resource areas. The survey or surveys do not need to be carried out by a single grant recipient. The primary objective of these surveys would be to provide an additional broad scale biomass index in addition to the federal survey to improve the overall precision of the scallop biomass estimate produced by the Scallop Plan Development Team.

GENERAL RESEARCH (Not in rank order, priorities 2 – 8 are of equal importance)

2. Dredge Efficiency: An evaluation and synthesis of dredge efficiency research to support scallop fishery management. Research may focus on analyses of existing data sets.

3. Research to assess the impact of offshore wind energy development on the Atlantic sea scallop resource, including, but not limited to, baseline information gathering about abundance, biomass, distribution, growth, and seasonal yield; oceanographic models to assess potential for impact on larval patterns and settlement; questions of fishability, including impact of turbine spacing and orientation on safety and gear interactions, potential time-of-year restrictions for construction activities, and potential changes to management plan to increase feasibility of fishing; economic analyses of potential impacts to fishery and individual ports; impacts of noise, vibrations, and sedimentation during construction and operations.

4. Research to support the investigation of turtle behavior and its potential impact on the scallop fishery in the Mid-Atlantic and Georges Bank (via satellite tagging or other means). This could include research to understand their seasonal movements, vertical habitat utilization, and the status and range of the population in response to climate change.

5. Bycatch research: Identification and evaluation of methods to reduce the impacts of the scallop fishery with respect to bycatch of small scallops and non-target species. This would include projects that determine seasonal bycatch rates of non-target species, characterize spatial and temporal distribution patterns, collect and analyze catch and bycatch data on a near-real time basis, as well as the associated discard mortality rates of key bycatch species. Research efforts focusing on non-target bycatch should provide results that would help the scallop industry avoid pending or potential implementation of accountability measures. Projects should consider the enforceability and feasibility of regulations in the commercial fishery.

6. Scallop meat quality research: Research aimed at describing the occurrence of disease and parasites, as well as understanding the mechanisms and processes (including the life cycle, distribution and transmission, and relationship to sea turtles) that affect scallop product quality; research aimed at evaluating the impact of density dependence and the potential impacts of area rotation on scallop product quality, marketability, meat weights, and seasonal monitoring would be particularly useful.

7. Research on scallop biology, including studies aimed at understanding recruitment processes (reproduction, timing of spawning, larval and early post-settlement stages, age and growth, and yield), examination of environmental stressors on reproduction and growth, and research related to scallop spat and seeding projects. This priority also includes research on natural mortality, such as scallop predation (e.g., starfish, crab, snails, and dogfish), discard mortality, and juvenile mortality events. This priority includes research on scallop biology in the Gulf of Maine region.

8. Data collection in the Gulf of Maine: This priority includes research aimed at developing approaches for determining optimal survey coverage, frequency, and design in Gulf of Maine. This may include research that evaluates past and current approaches to survey design in the Gulf of Maine (not just the NGOM management unit). This priority may also include projects that evaluate the cost-benefits of research survey design including coverage, frequency, timing, and survey gear, and monitoring the fishery (landings and discards) relative to the net socio-economic benefits. Possible research includes, but is not limited to, evaluation of past and current approaches to survey design in the Gulf of Maine (not just the NGOM management unit) and simulation modelling.

Table 1 - List of Scallop FMP and Scallop (species) related priorities, with NEFSC input shown in green. To be updated with PDT, SSC input.

No.	Title	Description, rationale, potential use	Priority	Status	Broad categories	Cross-listing	Notes
10	Scallop life history work focusing on natural mortality, including all sources of non-harvest mortality such as predation, disease, and discard mortality.		Important (near term)	unknown	Population dynamics	assessment, RSA	As of the latest assessment (2018), discard mortality questions remain.
37	Research to elucidate modes of infection, transmission and distribution of scallop diseases and parasites that may adversely impact scallop health, meat quality and reproductive viability.	Special attention should be directed to conditions that may result in modifications to the scallop rotational area management strategy to maximize yield.	Important (near term)	underway	Fisheries management	RSA	Susan Ingalls has been funded through S-K in 2017. NEFSC notes: Outside of NEFSC expertise. RSA funded projects on gray meats (SMAST, CFF), and nematodes (VIMS/Rutgers).
38	Evaluate ways to control predation on scallops.	Managing to optimize yield/recruit; natural mortality events can impact short and long-term management.	Strategic (future needs)	not begun	Fisheries management	unknown	NEFSC notes: Outside of NEFSC expertise, but scallop dredge survey has been monitoring sea star abundances since 2000.
39	Research to address potential implications of spat collection, seeding and relocation of scallops for enhancement purposes in light of unknown impacts of diseases and parasites.		Strategic (future needs)	underway	Fisheries management	RSA	CFF has been funded to do some of this work. NEFSC notes: Outside of NEFSC expertise.
40	Research that investigates the factors affecting scallop fishing power and estimates of how they relate to projections of landings per unit of effort.		Important (near term)	underway	Fisheries management	RSA	SMAST (Wright, Cadrin, O'Keefe) funded by RSA to complete LPUE work. It was presented to the SAW 65 workgroup. NEFSC notes: Current LPUE submodel of the SAMS forecasting model is updated and currently working well.

41	Research related to identifying the major sources of scallop management uncertainty and measuring their potential effects on future fishery allocations.	A MSE-like study may be appropriate.	Important (near term)	unknown	Fisheries management	unknown	A15 lists sources of mgmt. uncertainty. Scallop CTE wants to look at carryover as a potential 2019 priority, & the PDT would consider mgmt. uncertainty in this evaluation. NEFSC added description.
61	Research and development of fishery dependent data collection systems that support scallop management.	In-season, near real-time data collection at haul level would inform fishing operations (e.g., bycatch avoidance) and more real-time management.	Important (near term)	underway	Bycatch, Fishery performance & monitoring		This priority was added in 2019. NEFSC notes: FSB deploys IFS observers on 5-15% of all limited access and limited access general category scallop trips and record haul level data for ≥50% of the tows on every scallop trip. Status changed from "not begun" to "underway".
62	Identify "hot spots" within the scallop fishery using data on observed take of sea turtles and other suitable information.	Need data on observed turtle interactions for other fisheries or fishery surveys in the area where the scallop fishery operates.	Strategic (future needs)	underway	Protected species, Bycatch	RSA	There has not been an observed take of a turtle in a scallop dredge in several years. CFF funded for many years to do sea turtle research. NEFSC notes: Some NEFSC collaborations with Scallop RSA projects.
66	Evaluate the socioeconomic impacts and consequences of area rotation on the scallop fishery, including potential distributional effects and impacts on other fisheries.	A MSE-like study may be appropriate.	Important (near term)	not begun	Human dimensions	RSA	2019/2020 Scallop RSA priority to conduct MSE. Also related to 2018 priority of follow-up to OHA2. NEFSC added the description.

71	Characterize and evaluate current and potential HMAs and HAPCs.	Identify nursery and over-wintering habitats of species vulnerable to habitat alteration by fishing gear (e.g., scallop dredge).	Important (near term)	underway	Habitat	RSA	Scallop RSA has funded Scott Gallagher at WHOI to complete 3 years of BACI work in the EGB HAPC. Final report completed; additional analyses forthcoming. Potential for work in GSC HMA; HABCAM and SMAST drop camera data could be applied. Note approved by Habitat Cte. NEFSC notes: NEFSC participating in Northeast habitat assessment.
72	Evaluate habitat recovery following impact by fishing gear (e.g., scallop dredges or trawls, clam dredge, fixed gears), and long-term or chronic effects of fishing on marine resource productivity.	Would help develop or revise spatial management for habitat protection. This includes examining gear impacts on seabed habitats in Northeast US waters that account for effort, season, sedimentary character and biological community.	Strategic (future needs)	unknown	Habitat	unknown	See WHOI project referenced under #70. Re corals, potential to document trawling impacts using existing database of images and/or use these to document baseline conditions in new DSC closures. Estimating effects on resource productivity is more difficult. Recent meta-analysis paper. Note approved by Habitat Cte. NEFSC notes: Ongoing RSA-funded project (WHOI/Gallager).
73	Identify and evaluate methods to reduce the habitat impacts of scallop and clam dredge fishing, including studies that evaluate variability in dredge efficiency across habitats, times, areas.	Would support development of gear-restriction vs. closure area management approaches.	Strategic (future needs)	underway	Habitat	unknown	CFRF-funded ongoing study of the N-Viro scallop dredge: http://www.cfrfoundation.org/piloting-novel-dredge-type. Note approved by Habitat Cte. NEFSC notes: Miller et al. (2019) estimated a lower efficiency on hard bottom (27%) than sand/soft bottom (40%).

92	Impact of offshore wind development on scallop production.	Could include: impacts on scallop larval settlement, growth, reproduction, fishing opportunities, etc.	Urgent (essential)	not begun	Wind energy, Population dynamics, Fisheries management, Habitat	RSA	This priority was added in 2019 and was a 2019/2020 Scallop RSA priority. SMAST-WHOI project awarded May 2019 under 2019-2020 scallop RSA program: Assessing Potential Impacts of Offshore Wind Facilities on Regional Sea Scallop Larva and Early Juvenile Transport; BOEM awarded hydrodynamics study to DHI (Dec 2019) – determining which species to model but scallops are a candidate. Habitat Cte approved note. NEFSC notes: No NEFSC work.
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