No.	Title	Description, rationale, potential use	Rating	Status	FMP	Species	Broad categories	Cross-listing	Notes
6	Scallop surveys (rotational areas or other important areas).	~~Contribute~~ Used to estimate ~~total and exploitable~~ abundance and biomass ~~estimates~~	Urgent (essential)	Underway	Sea scallop	Scallops	Fish surveys	RSA	Priority added in 2020. Is a long-standing Scallop RSA priority; see RSA announcement for details.
21	Expand the body of knowledge on scallops in the Gulf of Maine bioregion.	Understanding growth, reproduction, natural mortality in GOM would address data gaps & assessment needs.	Strategic (future needs)	Underway	Sea scallop	Scallops	Population dynamics	Unknown	Priority added in 2020. A 2020-2023 Scallop RSA priority. Research on growth by Hodgedon et al. (2020). Surveys funded by Scallop RSA. Consider changing rating to "Important" - Amendment 21 approved, upcoming research track assessment
22	Scallop life history work focusing on natural mortality, including all sources of non-harvest mortality such as predation, disease, and discard mortality.	Attention should be directed to the large mortality events to inform future management practices.	Important (near term)	Underway	Sea scallop	Scallops	Population dynamics	Assessment, RSA	A 2021-2023 Scallop RSA priority; see RSA announcement for details. As of the latest assessment (2020), discard mortality questions remain. The next research track assessment (benchmark) planned in 2024.
32	Develop a gonad-based estimate of SSB and reference points for scallops.	Understand how gonad weight changes in space and time, when spawning is occurring, and the reproductive output. Need to develop a standard way to measure gonads (wet v. dry).	Important (near term)	Unknown	Sea scallop	Scallops	Stock assessment, Population dynamics	Unknown	Priority added in 2020. This research has potential use in future stock assessments.
33	Investigate different growth rates found in different scallop harvesting areas, particularly the Nantucket Lightship region.	Understand if growth rates are driven by local production.	Important (near term)	Underway	Sea scallop	Scallops	Stock assessment, Population dynamics	RSA	Priority added in 2020. A 2021-2023 Scallop RSA priority; see RSA announcement for details. VIMS (Rudders et al) funded through Scallop RSA, focus on NLS.
34	Further evaluate and compare stock assessment model configurations.	Compare~~ison of~~ current models used for status determination (CASA, SYM) with age and length based models (SS3). ~~and for~~ Evaluate forecasting model ~~projections~~ (SAMS).	Important (near term)	Underway	Sea scallop	Scallops	Stock assessment	Unknown	Priority added in 2020. RSA funded VIMS to look at age-based scallop model such as SS3 (Mann). NEFSC hired contractor to program GEOSAMS. SAMS will be reviewed in 2023 management track assessment. GEOSAMS may not be ready for review in 2023.
48	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	Sea scallop	Scallops	Fisheries management	Unknown	Source of uncertainty for management. This topic relates to recommendations from the Council's 2022 Evaluation of rotational management. A 2020-2021 Scallop RSA priority. RSA has funded projects on gray meats (SMAST, CFF), and nematodes (VIMS/Rutgers). Oustide of NEFSC expertise.
49	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	Sea scallop	Scallops	Fisheries management	Unknown	Oustide of NEFSC expertise, but scallop dredge survey has been monitoring sea star abundances since 2000. Optical suveys working to identify predators in images.
50	Research to address potential implications of spat collection, seeding and relocation of scallops for enhancement purposes.	Identify standards for future work. Explore ways to supplement wild harvest in light of below average recruitment, anomalous slow growth, and unknown impacts of diseases and parasites.	Important (near term)	Underway	Sea scallop	Scallops	Fisheries management	RSA	Is a 2021-2023 Scallop RSA priority; see RSA announcement for details. ~~CFF has been funded in the past to do some of this work.~~ Topic discussed at 2021 and 2022 Scallop Research Share Days.
51	Research that investigates the factors affecting scallop fishing power and estimates of how they relate to projections of landings per unit of effort.	Modeled LPUE estimates have been overly optimistic in recent management actions. Research could inform assumptions of current or future forecasting models.	Important (near term)	Underway	Sea scallop	Scallops	Fisheries management	Unknown	SMAST (Wright, Cadrin, O'Keefe) funded by RSA to complete LPUE work. It was LPUE research presented to the SAW 65 workgroup. Dr. Hart presented fleet dynamics research to PDT in March of 2020. Current LPUE submodel of the SAMS forecasting model is updated annually. Consider a review of the model as part of the 2023 management track?
52	Research related to identifying the major sources of scallop management uncertainty and measuring their potential effects on future fishery allocations.	Research should build off of the Council's Evaluation of Rotational Management (2022). ~~A MSE-like study may be appropriate.~~ Research to understand current and future changes of seasonal meat weights, possibly with simulations.	Important (near term)	Unknown	Sea scallop	Scallops	Fisheries management	Unknown	A15 lists sources of mgmt. uncertainty. Scallop PDT plan to look at DAS carryover for 2022 as a recommendation of the ERM report. ~~CTE wanted to look at carryover as a potential 2019 priority & the PDT would consider mgmt. uncertainty in this evaluation~~n. MSE may be a tool that can be used for this kind of research.
69	Commercial scallop dredge catch efficiency.	Improve scallop size selectivity, reduce scallop damage, reduce non-target species bycatch, and to reduce fuel consumption.	Important (near term)	Underway	Sea scallop	Scallops	Bycatch, Gear	RSA	Priority added in 2020. A 2021-2023 Scallop RSA priority; see RSA announcement for details. N-Viro (CFRF), modified cutting bar (NFI, CFF) work has been funded recently.
70	Identify and evaluate methods to reduce the impacts of the scallop fishery with respect to bycatch of small scallops and non-target species.	Could include seasonal and spatial patterns.	Urgent (essential)	Underway	Sea scallop	Scallops	Bycatch, Gear	RSA	Priority added in 2020. A 2021-2023 Scallop RSA priority; see RSA announcement for details.
71	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	Sea scallop	Scallops	Bycatch, Fishery performance & monitoring	Unknown	Priority added in 2019. NEFSC/FMO deploys IFS observers on 5-15% of all LA and LAGC scallop trips and record haul level data for ≥50% of the tows. Tools could be expanded to include EM.
~~72~~ [Combine with #74]	~~Identify areas, conditions, or behaviors (both fishing and species-specific) where sea turtle interactions with scallop dredge gear are more likely to occur~~. [Moving text to rationale, use of #74]	~~Need data on observed turtle interactions for other fisheries or fishery surveys in the area where the scallop fishery operates.~~	Strategic (future needs)	Underway	Sea scallop	Scallops	Protected species, Bycatch	Unknown	A 2022-2023 RSA priority. CFF has done turtle research for many years. Some NEFSC work on Scallop RSA projects.
74	Investigate turtle behavior and its potential impact on the scallop fishery in the Mid-Atlantic and Georges Bank (via satellite tagging or other means).	Understand seasonal movements, vertical habitat utilization, & status and range of the population in response to climate change. Identify areas, conditions, or behaviors (both fishing and species-specific) where sea turtle interactions with scallop dredge gear are more likely to occur [moved from #72]	Important (near term)	Unknown	Sea scallop	Scallops	Bycatch, Climate change, Protected species	RSA	Priority added in 2020. A 2021-2023 Scallop RSA priority; see RSA announcement for details. RSA funded work in 2021 (CFF - 2 projects). #72 from 2021 combined with #74 for the 2022-2026.
77	Evaluate the socioeconomic impacts and consequences of area rotation on the scallop fishery, including potential distributional effects and impacts on other fisheries.	Research should build off of the Council's Evaluation of Rotational Management (2022). ~~A MSE-like study may be appropriate.~~	Important (near term)	Not begun	Sea scallop	Scallops	Human dimensions	Unknown	Topic came up in the 2019 interviews of Council members (Williams et al 2020). Evaluation of Rotational Managements was completed in 2022. MSE may be a tool that could be used in this kind of research. ~~This is a 2021 Council work priority~~

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86	Identify & evaluate methods to reduce the habitat impacts of scallop & clam dredge fishing, incl. evaluating variability in dredge efficiency across habitats, times, areas.	Would support development of gear-restriction vs. closure area management approaches.	Strategic (future needs)	Underway	Sea scallop	Scallops	Habitat	Unknown	What are the benefits of modified gear? What are the effects of gear on EFH for other species, e.g., what are the effects of trawl gear on scallop recruitment? Importance of considering impacts in specific settings. Bethoney et al (ongoing) on the N-Viro dredge. Miller et al. (2019) estimated a lower efficiency on hard bottom (27%) than sand/soft bottom (40%). Some international research (see #83).
109	Increase understanding of scallop spatial population structure and population dynamics, including processes such as connectivity, source-sink dynamics	Would improve scallop stock assessment	Strategic (future needs)	Unknown	Sea scallop	Scallops	Population dynamics	Unknown	Priority added in 2021. A 2022-2023 RSA priority.
85	Evaluate habitat recovery following impact by fishing gear (scallop dredges 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. BACI studies are the gold standard, and long term recovery estimates (vs. just 6-month, one year, etc. which you often see) are important for management considerations.	~~Strategic (future needs)~~ Important (near term)	Underway	Multiple	Multiple	Habitat	Unknown	Linking the state of impacts and recovery to managed species could begin by reviewing seafloor images. 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. RSA-funded project Northern Edge Georges Bank (Gallager et al). As of 2022, additional data on the recovery of the sites on the Northern Edge is needed. Also Cau et al. (2020), Steves et al. (2020), Sciberras et al. (2018), Sullivan et al. (2006), Sullivan et al. (2000).
NEW	Research to evaluate the performance of rotational areas, with a focus on the entire cycle from surveys to harvest and closure.	Potential use in management based on lessons learned. Work should build on the 2022 Evaluation of Rotational Management. Focus should include sources of uncertaintly, performance of projections, fishery impacts, area specific allocation decisions, etc.	Important (near term)		Sea Scallop	Scallops	Scallops	Unknown	Combines several ecommendation from the Evaluation of Rotational Management.
NEW	Research on the impacts of fishing in areas with high densities of scallops, including scenarios with heavy fishing pressure.	Would help to better characterize the uncertainty of surveys and forecasting models.	Important (near term)	Unknown	Sea Scallop	Scallops	Scallops	Unknown	Recommendation from the Evaluation of Rotational Management