

Title	Description, rationale, potential use	Priority	Status	FMP	Species	Broad categories	Cross-listing	Notes
Efficiency estimation of NMFS trawl survey gear for monkfish, silverhake, and red hake; estimate efficiency based on gear configuration.	Identify any issues regarding the use of a constant catchability coefficient.	Strategic (future needs)	not begun	Monkfish, Small mesh multispecies	Monkfish, Silver hake, Red hake	Fish surveys	unknown	Absolute abundance and biomass indices are not used for small-mesh multispecies.
Supplement existing surveys with the use of fixed gear and/or advanced sampling techniques to facilitate sampling in inaccessible areas (e.g., use of longline or pot/trap gear to sample within complex habitat areas).				Multiple	Multiple	Fish surveys		
Continue development of hydroacoustic surveys and other resource surveys of pelagic species to provide an independent means of estimating stock sizes and/or defining localized depletion (long-term research).	This priority has two parts, the first to help evaluate status of resource with acoustic survey and the second to see if that tool could be useful for defining localized depletion.	Important (near term)	underway	Atlantic herring	Atlantic herring	Fish surveys	assessment, RSA	One RSA project was funded to look at defining localized depletion but the work was not completed due to issues securing the research funds. Project did test potential utility of that survey technology.
Conduct deep water (>200 m) surveys for red crab.				Red crab	Red crab	Fish surveys		
Develop a conversion factor between the survey results for the R/V Albatross and R/V Bigelow for wolffish.				Northeast multispecies	Atlantic wolffish	Fish surveys		This factor becomes less important as more years of RV Bigelow data are used in assessments
Investigate availability and detectability of Atlantic herring in the NEFSC spring and fall trawl survey.	To improve data on estimate of herring biomass.	Important (near term)	underway	Atlantic herring	Atlantic herring	Fish surveys		
Develop fishery acoustic indices for herring, and develop a volume-to-weight conversion factor for herring.	To improve data on estimate of herring biomass.	Important (near term)	underway	Atlantic herring	Atlantic herring	Fish surveys		
Further investigations into stock definition, stock movements, mixing, and migration through tagging studies, DNA markers, morphological characteristics and other means for groundfish (Atlantic cod and Atlantic halibut).				Northeast multispecies	Cod, Halibut	Population dynamics		

Further investigations into stock definition, stock movements, mixing, and migration through tagging studies, DNA markers, morphological characteristics and other means for Atlantic herring.				Atlantic herring	Atlantic herring	Population dynamics		
Further investigations into stock definition, stock movements, mixing, and migration through tagging studies, DNA markers, morphological characteristics and other means for silver hake and red hake.	This has always been an issue for stock assessments and climate change has added to the uncertainty.	Important (near term)	not begun	Small-mesh multispecies	Silver hake, Red hake	Population dynamics	unknown	One genetic study for red hake has occurred and will be reviewed at the 2020 benchmark assessment.
Monkfish life history work focusing on age and growth, longevity, reproduction, and natural mortality.				Monkfish	Monkfish	Population dynamics		
Scallop life history work focusing on natural mortality, including all sources of non-harvest mortality such as predation, disease, and incidental mortality.				Sea scallop	Scallops	Population dynamics		
Investigate age, growth, maturity, and fecundity of managed skate species.				Skates	Skates	Population dynamics		
Extensive investigation concerning the biology of red crab: growth rates; molt; reproductive cycles; maturity schedule; fecundity; sex ratios by depth and year; larval supply, transport and settlement; early juvenile distributions and abundance; and particularly the reproductive consequences of depleting large males.				Red crab	Red crab	Population dynamics		
Calculate and/or improve river herring and shad life stage-specific estimates of range-wide natural and human mortality rates, including fishing.					River herring, Shad	Population dynamics		

Collect information on the marine phases of river herring and shad specific to: migrations at sea (e.g., determination of river origin of individual catch in coastal/ocean independent surveys, tagging); determination of river origin of incidental catch in non-targeted ocean fisheries; and marine survival.					River herring, Shad	Population dynamics		
Investigate fine-scale spawning dynamics and the appropriate size and timing of spawning area closures.				Multiple	Multiple	Population dynamics		
Continue to explore the sources of uncertainties in groundfish stock assessments, including retrospective patterns, and identify appropriate adjustments (e.g., data or modeling revisions) to resolve those patterns.				Northeast multispecies	Groundfish	Stock assessment		
Continue to explore the sources of uncertainties in Atlantic herring stock assessments, including retrospective patterns, and identify appropriate adjustments (e.g., data or modeling revisions) to resolve those patterns.				Atlantic herring	Atlantic herring	Stock assessment		
Develop guidance for rejecting stock assessments, and provide guidance on next steps after an assessment has been rejected.				Multiple	Multiple	Stock assessment		
Improve and standardize data collection methods for river herring and shad stocks, and develop biological benchmarks used in assessment modeling and management (e.g., for setting catch caps).				Atlantic herring	River herring, Shad	Stock assessment		
Explore use of survey results from the R/V Bigelow as a separate index of abundance as the survey time series lengthens.				Multiple	Multiple	Stock assessment		

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Incorporate other surveys into stock assessments as appropriate (e.g., industry-based surveys, state surveys, North East Area Monitoring and Assessment Program, collaborative surveys between industry and fishery scientists).				Multiple	Multiple	Stock assessment		
Investigate the use of fishing mortality rates (i.e., F-ramp procedures) in setting harvest control rules.				Multiple	Multiple	Fisheries management		
Investigate the modern groundfish fishery: Is the current definition of the directed fishery (landing >1 lb. groundfish per year) still appropriate?				Northeast multispecies	Groundfish	Fisheries management		
Investigate the modern groundfish fishery: How should the inshore and offshore components of the groundfish fishery be identified?				Northeast multispecies	Groundfish	Fisheries management		
Investigate potential means to improve access to healthy stocks while minimizing impacts to stock in need of conservation: Feasibility of permit splitting by stocks.				Northeast multispecies	Groundfish	Fisheries management		
Investigate potential means to improve access to healthy stocks while minimizing impacts to stock in need of conservation: Catch efficiencies by mesh size, when new minimum fish size regulations are implemented.				Northeast multispecies	Groundfish	Fisheries management		
Investigate potential means to improve access to healthy stocks while minimizing impacts to stock in need of conservation: Options to broaden the definition of the sector system and increase flexibility in groundfish fishery operations (e.g., expanding the range of participants allowed to join the sector system and the suite of permits and their associated allocations that can be used under the sector system).				Northeast multispecies	Groundfish	Fisheries management		

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Investigate potential means to improve access to healthy stocks while minimizing impacts to stock in need of conservation: Evaluate the efficacy of existing and potentially new small-mesh multispecies exemption areas and seasons.				Northeast multispecies, Small-mesh multispecies	Groundfish, Small-mesh multispecies	Fisheries management		
Investigate potential means to improve access to healthy stocks while minimizing impacts to stock in need of conservation: Evaluate the efficacy of existing and potentially General Category scallop exemption areas and seasons.	Letter from Council to GARFO in 2017 requesting the expansion of exemption areas.	Important (near term)	underway	Northeast multispecies, Sea scallop	Groundfish, Scallops	Fisheries management		Council sent letter to GARFO requesting expasions of exemption areas, GARFO working to evaluate
Investigate groundfish control rules. Evaluate the effectiveness of the SSC control rule for setting groundfish catch advice.	The SSC’s control rule is used in the absence of better information that may allow a more explicit determination of scientific uncertainty for a stock or stocks. Develop guidance on when to use “Option C” and how to estimate ABC under “Option C”. Option C states that for stocks that cannot rebuild to BMSY in the specified rebuilding period, even with no fishing, the ABC should be based on incidental bycatch, including a reduction in bycatch rate (i.e., the proportion of the stock caught as bycatch).			Northeast multispecies	Groundfish	Fisheries management		
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	RSA	Susan Ingalls also funded through S-K
Evaluate ways to control predation on scallops.	Managing to optimize yeild per recruit, natural mortality events can impact short and long term management strategies	Strategic (future needs)	not begun	Sea scallop	Scallops	Fisheries management	unknown	

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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	Sea scallop	Scallops	Fisheries management	RSA	CFF has been funded to do some of this work.
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	Sea scallop	Scallops	Fisheries management	RSA	SMAST (Wright, Cadrin, O'Keefe) funded through RSA to complete LPUE work. This was presented to the SAW 65 workgroup.
Research related to identifying the major sources of scallop management uncertainty and measuring their potential effects on future fishery allocations.		Important (near term)	unknown	Sea scallop	Scallops	Fisheries management	unknown	A15 identifies sources of management uncertainty. Scallop CTE wants to look at carryover as a potential 2019 priority- PDT would consider management uncertainty in this evaluation.
Develop effective skate species identification methods for fishermen, dealers, and port samplers (e.g., inexpensive biochemical/genetic assay method, better training and better morphological keys for juvenile skates and skate wings).	To improve data on species composition of landings and discards.			Skates	Skates	Fisheries management		
Evaluate the benefits of skate species-specific management.	Recommended by the SSC.			Skates	Skates	Fisheries management		
Investigate skate discards, including: discard mortality rate estimates for any outstanding species and gear type to move away from the assumed discard rate; alternative methods of estimating dead discards in the specifications process, e.g. forecasting; and examining trends in magnitude of discards.				Skates	Skates	Fisheries management		
Investigate monkfish age validation.	Resolve the age and growth issues that prevented the stock assessment model from being updated in the 2016 Operational Assessment.			Monkfish	Monkfish	Fisheries management		

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Investigate monkfish discard mortality rate estimates across gear types.	The assumed rate is currently set at 100%			Monkfish	Monkfish	Fisheries management		
Continue to improve reporting accuracy, including accurate reporting of species and area fished. This includes proper identification of key species, which are often misreported by fishermen (e.g. red/white hake; silver/offshore hake).				Multiple, Small-mesh multispecies, Northeast multispecies	Multiple, Offshore hake, Red hake, White hake	Fishery performance and monitoring		
Improve sampling for commercial Atlantic herring catch at age data, such as through cooperative NMFS-industry programs to supplement port agent activities, with an emphasis on bycatch (including incidental catch).				Atlantic herring	Atlantic herring	Fishery performance and monitoring		
Improve sampling for commercial groundfish catch at age data, such as through cooperative NMFS-industry programs to supplement port agent activities, with an emphasis on bycatch (including incidental catch).				Northeast multispecies	Groundfish	Fishery performance and monitoring		
Define localized depletion of spawning components on a spatial and temporal scale for Atlantic herring.				Atlantic herring	Atlantic herring	Fishery performance and monitoring		
Investigate Atlantic herring fishery fleet behavior and decision-making with respect to their relationship to population dynamics, closed areas, catch rates, etc.				Atlantic herring	Atlantic herring	Fishery performance and monitoring		
Evaluate spatially-explicit changes in groundfish fleet behavior in response to restricted fishing in closed areas.				Northeast multispecies	Groundfish	Fishery performance and monitoring		It is important to understand the effects of a primary management tool, i.e. closed areas
Research the extent and composition of discards and bycatch in the skate and monkfish fisheries.				Skates, Monkfish	Skates, Monkfish	Fishery performance and monitoring		
Research the extent and composition of discards and bycatch in the large-mesh groundfish fishery.				Northeast multispecies	Groundfish	Fishery performance and monitoring		

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Research the extent and composition of discards and bycatch in the small-mesh multispecies fishery.	Could be used to design selective gear or area/season management .	Strategic (future needs)	not begun	Small-mesh multispecies	Small-mesh multispecies	Fishery performance and monitoring	unknown	
Investigate discard mortality rates by gear for monkfish and groundfish.				Monkfish, Northeast multispecies	Monkfish, Groundfish	Fishery performance and monitoring		
Investigate discard mortality rates by gear type, area, season, depth, and bottom type for all seven skate species with an emphasis on overfished species (thorny and smooth skates).				Skates	Skates, Smooth skate, Thorny skate	Fishery performance and monitoring		
Improve estimates of red and silver hake discards from the northern shrimp fishery (if re-opened).	Could be used to design selective gear or area/season management .	Strategic (future needs)	not begun	Small-mesh multispecies	Red hake, Silver hake	Bycatch	unknown	This priority was more important when northern red hake overfishing was occurring.
Identify gears and/or methods that would reduce bycatch and/or improve discard survival of unwanted catch of red hake discards in the small mesh fishery.	Could be used to design selective gear or area/season management .	Urgent (essential)	not begun	Small-mesh multispecies	Red hake	Bycatch	unknown	This priority is very important because southern red hake is overfished and the Council is initiating action, although research results are unlikely to be available in time.
Identify gears and/or methods that would reduce bycatch and/or improve discard survival of unwanted catch of silver hake discards in the large mesh fishery	Could be used to design selective gear or area/season management .	Strategic (future needs)	not begun	Small-mesh multispecies, Northeast multispecies	Silver hake	Bycatch	unknown	Silver hake catches have been a fraction of the ACL, but we have reduced the southern whiting specifications by 38% due to declining biomass.
Identify gears and/or methods that would reduce bycatch and/or improve discard survival of unwanted catch, that may change the ratio of component catch species or improve size and species selectivity of gear for groundfish.				Northeast multispecies	Groundfish	Bycatch		
Identify gears and/or methods that would reduce bycatch and/or improve discard survival of unwanted catch, that may change the ratio of component catch species or improve size and species selectivity of gear for monkfish, herring and skates.				Monkfish, Atlantic herring, Skates	Monkfish, Atlantic herring, Skates	Bycatch		



Investigate portside sampling and electronic monitoring as tools to monitor the Atlantic herring fishery.				Atlantic herring	Atlantic herring	Bycatch		
Collect data on discards of other clupeids in the sea herring and other fisheries, and develop improvements to river herring/shad catch estimation methods in the Atlantic herring fishery.				Atlantic herring	River herring, Shad	Bycatch		
Continue River Herring Bycatch Avoidance Program in the Atlantic herring fishery, and develop or evaluate innovative approaches for avoidance or monitoring river herring/shad catch in small mesh fisheries (e.g., environmental cues and bycatch avoidance, electronic monitoring and portside sampling).				Atlantic herring	River herring, Shad	Bycatch		
Policy evaluation of bycatch management, including possible implementation of a 100% retention policy to minimize discarding and ecosystem effects.				Multiple	Multiple	Bycatch		
Research the extent and composition of discards and bycatch in the groundfish fishery, including research to estimate discard mortality rates by gear for groundfish.				Northeast multispecies	Groundfish	Bycatch		

Research resulting in greater understanding of the relationships between managed species and the geological, biological, and physical features of the habitats they occupy.	Research that produces information to assess spatial variation in habitat use and fisheries productivity is the highest priority (i.e., research results with demonstrable utility to analyze spatial management alternatives for habitat). Ideally, these results will contain spatially explicit data including species abundances at different life-history stages, measures of species condition (or survivorship, growth rate, or similar metric linked to variation in productivity across the landscape) and the characteristics of concurrently sampled habitat features, substrates and associated prey. The resulting research and data products should contain explicit statements regarding the limitations of the data for defining essential fish habitat, given the original sampling design and spatial and temporal scales of sampling.	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		This is also an important priority for habitat management in an ecosystem plan. This is a very general topic and other listed priorities are related to this (74, 75, 78)
Geological and biological sampling of the Gulf of Maine region to improve spatial resolution [of habitat distributions] and characterize temporal variability.	Some areas of the GOM are very sparsely sampled in terms of benthic habitat characteristics. Would improve support for spatial management	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		This is also an important priority for habitat management in an ecosystem plan.
Targeted sampling of benthic community structure (infauna and epifauna) in representative substrate types (e.g., mud, sand, gravel, cobble, and boulder in high and low energy environments) across multiple environmental settings.	Would improve support for spatial management intended to target specific habitat types for protection.	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		This is also an important priority for habitat management in an ecosystem plan.

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Concurrent spatial data on recruitment, growth and reproduction of managed fish and shellfish across habitats and environmental settings.	Would improve our understanding of the linkages between habitat type and the attributes of habitat that enhance managed species production.	Strategic (future needs)	not begun, unknown	Multiple	Multiple	Habitat		This is also an important priority for habitat management in an ecosystem plan. Often when the term "benthic" is mentioned, only epifauna are implied, but particularly in the GOM with it's large areas of soft bottom substrate (esp. mud), I'd like to see infauna included/mentioned as well, as in the next row 73. While infaunal surveys are very time consuming, but without them, we're leaving out a big part of the benthic community structure, as well as possible fish food.
Studies that ground-truth, via physical sampling, epibenthic fauna observed in video and still imagery-based datasets.	Would facilitate estimation of biodiversity; this could be important in a deep-sea coral context as interactions between corals and other species can be quite specific.	Strategic (future needs)	underway	Multiple	Multiple	Habitat		This sort of work is being done for deep-sea corals.
Links between habitat characteristics and primary prey species.	I.e. a concurrent assessment of habitat characteristics and prey speices occurrence. Would improve our understanding of the linkages between habitat type and the attributes of habitat that enhance managed species production.	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		Related to item 75, assuming infauna is included in the studies.
Acoustic surveys (e.g., multibeam, side-scan sonar) to add to the growing number of seafloor habitat maps in the region, particularly in the Gulf of Maine.	Would facilitate development of spatial management approaches designed to encompass specific habitat types.	Strategic (future needs)	underway	Multiple	Multiple	Habitat		Also being discussed in Great South Channel/Nantucket Shoals region. Underway in GOM
Evaluate and quantify linkages between habitat types (e.g., space/time variation of shelter and prey) and the productivity of managed species.	This could help refine EFH designations to understand the relative benefits of EFH impact minimization alternatives, and possibly to inform reference point definitions.	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		Very similar to 71, consider pooling some of these items together?

Experimental examination of gear impacts on seabed habitats in Northeast US waters that take effort, season, sedimentary character and biological community into account.	Sampling should follow an appropriate experimental design, such as before-after control impact (BACI). Particular attention should be paid to studies that replicate the broad scale impacts of commercial levels of fishing activity rather than single impact studies, and to studies that monitor long-term recovery of affected habitat features.	Important (near term)	underway	Multiple	Multiple	Habitat		Scott Gallagher's Closed Area II study of scallop dredge impacts is an example of this. See items 88 and 89.
Studies that would inform assessments of the effects of fixed gears on seabed habitat components.	The extent of fixed gear movement along the seabed during setting, soaking, and hauling is not known. Would support refinements to SASI/Fishing Effects model. Also	Strategic (future needs)	underway	Multiple	Multiple	Habitat		Schweitzer/Stevens paper on trap gears seems to be an example of this. Consider impacts to coral and sponge habitats specifically, possibly using Jordan Basin as a study site.
Comparative studies of the effects of various trawl gear configurations on seabed habitat components.	Inform estimates of the possible benefits of gear restrictions/modifications. Would support refinements to SASI/Fishing	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		
Studies that quantify the degree of seabed contact for particular gears and their component parts, within a variety of habitat types.	Would support refinements to SASI/Fishing Effects model.	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		
Studies that refine estimates of benthic boundary shear stress at the seabed/water column interface and ground-truth critical shear stress thresholds across seasons and depths (i.e., are seabed sediments stable/unstable at various levels of flow, as predicted by models, what are effects of variation in biological attributes that influence disturbance via shear stress).	Would support refinements to SASI/Fishing Effects model. Where possible, use data from sensors deployed on the seabed to ground-truth modeled estimates.	Strategic (future needs)	unknown	Multiple	Multiple	Habitat		Understanding this (i.e., sheer stress) might also be important for deep-sea coral habitat suitability modeling and perhaps other biological components of the benthos.

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Targeted studies following the 2013-2015 Northeast region deep-sea coral research work in the Gulf of Maine and in the offshore canyons and seamounts that focus on defining areas/habitat conditions that support coral and sponge “garden” habitats. Studies of growth, reproduction, population connectivity and functional role as fish habitat are of particular interest. Develop more sophisticated, higher-resolution models that predict coral presence/absence or relative abundance, not just likelihood of occurrence or habitat suitability.	Would facilitate future revisions (boundary changes, or additions of new areas) to deep-sea coral management zones in the Gulf of Maine and canyon.	Strategic (future needs)	underway	Multiple	Multiple	Habitat		It would also be nice to do more general DSC surveys, so as to both groundtruth/improve the habitat suitability model, and lessen our need for it. Would also give us a handle on DSC biodiversity, biogeography, and genetics (or "population connectivity"). During discussion fo the Jordan Basin coral DHRA the Council requested studies on the effects of mobile trawl gear. Potentially a separate topic.
Studies of invasive organisms to understand their distribution and spread, and to evaluate impacts on habitats, ecosystems, and target species.	Invasive species are a factor that could be considered when allocating fishing privledges spatially, if fishing facilitates their spread, or if invasive species impact managed resources or habitat function.	Strategic (future needs)		Multiple	Multiple	Habitat		
Perform comparative studies of the impacts of varying gear configurations on habitat (e.g., differential impacts of chain vs. roller sweeps; catchability and concurrent habitat effects modified ground cables (e.g. shortened, raised), semi-pelagic doors, etc.).	Would support SASI/Fishing Effects model, and facilitate the design of gear-restriction vs. closure area management approaches.	Strategic (future needs)		Northeast multispecies	Groundfish	Habitat		This could be combined with items 81-82.
Characterize habitats within scallop fishing grounds, including: identification of nursery and over-wintering habitats of species vulnerable to habitat alteration by scallop fishing.	Would facilitate development of or revisions to spatial management approaches for habitat protection.	Strategic (future needs)	completed	Sea scallop	Scallops	Habitat	unknown	Completed through OHA2? I would suggest ongoing (Michelle).
Characterize habitats within scallop fishing grounds, including: studies that evaluate habitat recovery following impact with scallop dredges or trawls.	Would facilitate development of or revisions to spatial management approaches for habitat protection.	Urgent (essential)	underway	Sea scallop	Scallops	Habitat	RSA	RSA has funded Scott Gallagher at WHOI to compete 3 years of BACI work in the HAPC on EGB
Characterize habitats within scallop fishing grounds, including: studies that examine fine scale fishing effort distributions in relation to fine scale habitat distribution.	Would facilitate development of or revisions to spatial management approaches for habitat protection.	Urgent (essential)	underway	Sea scallop	Scallops	Habitat	RSA	RSA has funded Scott Gallagher at WHOI to compete 3 years of BACI work in the HAPC on EGB

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Characterize habitats within scallop fishing grounds, including: studies that directly support evaluation of present and candidate habitat management areas and Habitat Areas of Particular Concern.	Assess whether these areas are accomplishing their stated purposes and to assist in better defining the complex ecosystem processes that occur in these areas.	Important (near term)	underway	Sea scallop	Scallops	Habitat	RSA	RSA has funded Scott Gallagher at WHOI to compete 3 years of BACI work in the HAPC on EGB
Evaluate long-term or chronic effects of scallop fishing on marine resource productivity.	Would facilitate development of or revisions to spatial management approaches for habitat protection.	Strategic (future needs)	unknown	Sea scallop	Scallops	Habitat		
Identify and evaluate methods to reduce the habitat impacts of scallop fishing, including studies that evaluate variability in scallop 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		
Conduct monkfish tagging and telemetry studies that focus on basic life history and habitat use.				Monkfish	Monkfish	Habitat		
Research ecosystem operational advice, emphasizing synthesis of existing data, modelling, and meta-data analysis, including environmental variability and climate change; relationship between habitat and fishery resource productivity (including the impact of fishing on functional value of habitat); trophic interactions and their implications; managing mix species fisheries; function and effectiveness of closed area management.	Information is needed to develop ecosystem management tools and approaches	Important (near term)	underway	Multiple	Multiple	Ecosystems	unknown	This priority integrates other habitat management priorities above, including the importance and role of quality habitat on recruitment and juvenile productivity/survival.
Synthesize predator/prey information on Atlantic herring and other forage fish and fill data gaps; investigate the role of forage fish in the Northwest Atlantic ecosystem and their importance for other managed species; assess the relative importance of herring vs. other forage species as both prey and predator in the ecosystem (e.g., competition with right whales and juvenile cod for C. finmarchicus).	Information is needed to develop ecosystem management tools and approaches	Important (near term)	not begun	Atlantic herring	Atlantic herring	Ecosystems	unknown	

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Evaluate potential resilience of managed species to climate change and ecosystem change through preservation of forage diversity.	Information is needed to develop ecosystem management tools and approaches	Important (near term)	not begun	Multiple	Multiple	Ecosystems	unknown	
Quantify predator/prey relationships that are important to the development of management strategy evaluations.	Information is needed to develop ecosystem management tools and approaches	Important (near term)	not begun	Multiple	Multiple	Ecosystems	unknown	
Evaluate whether stock status of some species is increasing the rebuilding timeline of groundfish stocks.	Information is needed to develop ecosystem management tools and approaches	Urgent (essential)	not begun	Northeast multispecies	Groundfish	Ecosystems	unknown	This is the complimentary factor of priority #95
Conduct research concerning trophic interactions of monkfish predation on other species and monkfish cannibalism; recognize the need to incorporate monkfish into prey assessments.				Monkfish	Monkfish	Ecosystems		Some of these priorities can be combined with a broader issue under ecosystems research
Investigate the influence of physical factors (including environmental changes) on shifts in the range and distribution of species within the skate complex.				Skates	Skates	Ecosystems		Some of these priorities can be combined with a broader issue under ecosystems research
Examine trophic interactions between skate species and other bottom species that occupy the same habitats.				Skates	Skates	Ecosystems		Some of these priorities can be combined with a broader issue under ecosystems research
Investigate effectiveness of seasonal and year-round spatial management areas to achieve desired goals, including improved yield, mortality reduction, spawning protection, bycatch avoidance/reduction, and ecosystem protection and improvement.	Information is needed to develop ecosystem management tools and approaches	Strategic (future needs)	unknown	Multiple	Multiple	Ecosystems	unknown	
Monitor trends in non-target, ecosystem components.	Information is needed to develop ecosystem management tools and approaches	Strategic (future needs)	unknown	Multiple	Multiple	Ecosystems	unknown	
Develop and enhance industry-based oceanographic data collection (e.g., physical, primary productivity, habitat metrics).	Information is needed to develop ecosystem management tools and approaches	Strategic (future needs)	underway	Multiple	Multiple	Ecosystems	NEFSC	

Identify "hot spots" within the scallop fishery using data on observed take of sea turtles and other suitable information (e.g., 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	RSA	There has not been an observed take of a turtle in a scallop dredge in several years. CFF funded for many years to complete sea turtle research
Develop gear modifications or fishing techniques that may be used to reduce or eliminate the threat of sea turtle interactions without unacceptable reductions in target retention in all fisheries.				Multiple	Multiple	Protected species		
Investigate protected species bycatch/discards in the Atlantic herring fishery				Atlantic herring	Atlantic herring	Protected species		
Continue to support data collection efforts for improved social and economic impact analyses, as well as cost-benefit analysis, for all fisheries, but particularly groundfish.				Northeast multispecies, Multiple	Groundfish, Multiple	Socioeconomics		
Continue to support data collection efforts for improved social and economic impact analyses, as well as cost-benefit analysis, for all fisheries, but particularly Atlantic herring.				Atlantic herring, Multiple	Atlantic herring, Multiple	Socioeconomics		



For the Atlantic herring fishery: (1) Characterize the individuals, families, firms, organizations, and communities involved in the Atlantic herring fishery; (2) Identify capacity use and fixed costs of Atlantic herring vessels; (3) Characterize Atlantic herring stakeholders besides those of the commercial herring fishery (e.g., whale watching, tuna, groundfish, lobster fisheries); (4) Characterize Atlantic herring dealers and processors (e.g., dependence on herring, location, costs, earnings, employment); and (5) Characterize market dynamics (e.g., relationships between fishermen, buyers, and processors; and end users in bait and fresh markets).				Atlantic herring	Atlantic herring	Socioeconomics		
Improve the ability to quantify economic impacts from restricted fishing in closed areas (e.g., develop spatially-explicit fleet behavior model).				Multiple	Multiple	Socioeconomics		
Evaluate the social and economic impacts and consequences of the area rotation program of the scallop fishery, including evaluation of potential distributional effects as well as impacts on other fisheries.		Important (near term)	not begun	Sea scallop	Scallops	Socioeconomics	RSA	2019/2020 RSA priority to conduct MSE. Also related to 2018 priority of follow-up to OHA2.
Evaluate barriers to marketing whiting and red hake, which could lower fishery discards and improve profitability.	Could help the industry to improve opportunities to market fish that might otherwise be discarded.	Strategic (future needs)	not begun	Small-mesh multispecies	Small-mesh multispecies	Socioeconomics	unknown	
Investigate the existence value of deep-sea corals and evaluate tradeoffs between coral protection and fishing.				Multiple	Multiple	Socioeconomics		
Effects of noise on behavior and reproductive success of managed fish species	Information needed to assess impacts of offshore wind farms on marine fishery resources	Important (near term)				Habitat		The Habitat PDT recommended this be added in Summer 2018.

Ecosystem services/fishery benefits provided by habitat management areas in New England	This is actually a MSA requirement; the info is badly needed to support habitat area management decisions, eg example EBFM plan for GB currently being developed	Strategic (future needs)				Habitat		The Habitat PDT recommended this be added in Summer 2018. A literature review would be a good place to start, use it to plan/design targeted research projects
Recovery trajectories of benthic habitats following cessation of fishing	Information needed to inform possible rotational area decisions that are designed to allow for habitat recovery following closure to fishing gear	Important (near term)				Habitat		The Habitat PDT recommended this be added in Summer 2018. Research in SBNMS indicates that impacted communities do not return to pre-impact states