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Atlantic Coastal Cooperative Statistics Program  
Operation and Advisory Committee  
1050 N. Highland Street, Suite 200A-N  
Arlington, VA 22201

August 16, 2022

We are pleased to submit the revised proposal entitled **“Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries”**

This is a maintenance proposal that has not changed its scope from the previously funded project in 2021. The top priority is the biological sampling of the Atlantic herring and Atlantic menhaden commercial fishery because the information derived has critical value on the health of herring and menhaden populations.

We have addressed all the general comments and have had no specific comments for this year. We did, however, add a paragraph for clarity in the Need section. Changes from the original proposal are highlighted in yellow as directed.

Dr. Matthew Cieri and Erin Summers

Proposal for Funding made to:  
Atlantic Coastal Cooperative Statistics Program  
1050 N. Highland Street, Suite 200A-N  
Arlington, VA 22201

**Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries**

Total Cost: \$26,253.50

Submitted by:

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**Applicant Name:** Maine Department of Marine Resources (MEDMR)

**Principal Investigator:** Matthew Cieri, Marine Resource Scientist

**Project Title:** Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries

**Project Type:** Maintenance Project

**Requested Award Period:** One year after receipt of funds

**Change in Scope/Cost from Previous Year Project:**

This is a maintenance proposal that has not changed its scope from the previously funded project in 2021. The overall cost is slightly more than the FY21 final award amount due to projected increased costs in mileage and vehicle costs.

**Objectives:**

To maintain and expand the biological sampling of primarily the Atlantic herring commercial fishery including Atlantic menhaden and mackerel and other incidentally retained species of interest.

A secondary objective is to continue the portside bycatch sampling for trips targeting Atlantic herring.

**Need:**

Atlantic herring and Atlantic menhaden are important forage and bait species with fisheries from Maine to North Carolina in the US. A recent benchmark for Atlantic herring found declining stock size and an overfished designation which resulted in much lower quotas through 2022 when compared to recent history. Each of the focus pelagic fisheries has recently become the subject of management action because of their status as forage species and because of potential bycatch problems associated with the directed fishery. In particular, Atlantic herring and Atlantic menhaden have been the focus of the emerging trend towards ecosystem management. Additionally, the commercial catch sampling portion of this project covers four important species: River herring (*Alosa sp.*), Atlantic menhaden (*Brevoortia tyrannus*), Spiny dogfish (*Squalus acanthias*), and Shad (*Alosa sapidissima*).

Atlantic herring (*Clupea harengus*), Atlantic menhaden (*Brevoortia tyrannus*), and Atlantic mackerel (*Scomber scombrus*) are three of the most ecologically and economically important fish species in the western Atlantic. All three are high volume, low-value species utilized for bait, reduction, or human consumption. The three species are oceanic plankton-feeding fish that occur in large schools, inhabiting coastal and continental shelf waters from Labrador to Florida. These species provide a significant forage base for other fish species, marine mammals, and birds. Atlantic herring landings in 2020 (the last year that NMFS data was available) were reported at approximately 9,368.5 mt with an estimated value above \$2.3 million; the result of drastically reduced quotas. In addition to the direct economic contribution of herring landings, this fishery supports a domestic value-added industry worth approximately \$15 million, and the North Atlantic lobster fishery which is estimated at over \$500 million. Atlantic mackerel landings in 2020 were reported as approximately 8,215 mt with an estimated value above \$9 million. The domestic value-added industry (frozen whole fish) for mackerel, based in Cape May, NJ, and Fall River, New Bedford, and Gloucester, MA, is estimated at \$14 million. The Atlantic menhaden 2020 catch was ~191,000 mt valued at ~\$90 million. Generally, 35-40% of all menhaden are landed for bait.

This study will continue the biological commercial catch sampling of Atlantic herring, Atlantic mackerel, and Atlantic menhaden. Additionally, other species of interest, such as dogfish, both river herring species, and shad will be sampled as they are routinely encountered in this study.

This proposal will also continue to survey bycatch during trips targeting Atlantic herring using the protocols developed over the last decade of sampling. Approximately seventy percent (70%) of project resources are needed

to carry out the first and prime objective (or module) of the sampling portion of the project while thirty percent (30%) of resources are needed for the bycatch module.

Since this proposal was first submitted, we have carried over the FY 2020 award to FY 2021. We anticipate that all of the FY 2021 award and unspent FY 2020 carried over into FY 2021 will be spent before the start of the FY 2022 sampling season. In the event a resurgence in COVID-19 prevents full utilization of these funds, we anticipate extending any unspent award from FY 2021 into FY 2022. As FY 2022 is the final year of this project, any unspent FY 2022 award will be either returned to ACCSP or be used to sample the summer-autumn sampling spawning season for herring and menhaden, at ACCSP's discretion. Given the recent activity in fishing effort targeting menhaden in the Gulf of Maine over the past two years and the projected increase in herring landings in FY 2022, we do not anticipate any remaining award at the end of FY 2022.

### ***Commercial catch sampling of Atlantic herring, Atlantic mackerel, and Atlantic menhaden***

MEDMR has collected and processed Atlantic herring commercial catch samples since 1960. A significant focus of this proposal is a continuation of the commercial catch sampling program for Atlantic herring along the east coast. MEDMR maintains primary responsibility for the fishery-dependent sampling of the east coast Atlantic herring fishery. Duties include processing biological samples, compiling catch data, and constructing the catch at age matrix for the age-structured model. Currently, staffing and financial limitations prevent MEDMR from providing adequate commercial catch sampling coverage without ACCSP support. Furthermore, NMFS has reduced port agents and other staff, such that biological sampling of herring has become a lower priority. To improve the commercial catch sampling program, MEDMR has supported a dedicated northeast herring sampler who covers fishery landings from NJ through Maine.

The Atlantic herring fishery has recently undergone significant management changes as a result of federal action through Amendment 8. Also, a large reduction in both quotas and stock status was implemented in 2019. A recent update to the Atlantic herring benchmark assessment has also revealed a potential re-emergence of a retrospective pattern. Such a pattern for Atlantic herring tends to overestimate spawning stock biomass and underestimate fishing mortality in the terminal year. While changes to selectivity and natural mortality may be the cause of this pattern, age discrepancies between fishery dependent and commercial catch sampling may also play a role. As such, continued commercial catch sampling will be vital in the potential resolution of this issue

Without ACCSP support, samples would not be collected or aged, resulting in no catch-at-age information for the assessment. Atlantic herring would move from an age-structured stock assessment to one developed for data-poor species and would be categorized as a data-poor species in need of sampling. Because ACCSP has funded this project, however, Atlantic herring are currently adequately sampled and are not scored by ACCSP. Given the most recent management changes, changes in the most recent stock assessment, ongoing litigation, and the importance to both state and federal partners, Atlantic herring would have scored very high in the process had it been part of the scoring.

Although ACCSP has not identified Atlantic mackerel as a priority, commercial catch sampling should be important given recent changes to the Squid, Mackerel, and Butterfish Plan as implemented by the Mid-Atlantic Council. Further mackerel has transitioned to an age-structured assessment, further increasing the importance of fishery-dependent sampling for this stock. Like Atlantic herring, fleet behavior may change markedly, as a result of bycatch quotas recently implemented for River herring and ongoing discussions between Mid-Atlantic and New England Councils on incidental catch limits of Atlantic herring. Traditionally the commercial mackerel catch was sampled by NMFS; however, due to the closure of port offices and limited personnel, current mackerel sampling is limited. With the existing and predicted growth in the domestic mackerel harvest, additional sampling is necessary to adequately cover the fishery.

Since 2016 Atlantic menhaden have been increasing in numbers in Maine state waters. As a result of this, and a lack of herring being landed from all areas, Maine landings have increased for this important baitfish. Because of this, Maine has increased its biological sampling program for this species to both fulfill ASMFC sampling objectives and to provide valuable fishery-dependent data for the stock assessment.

Continued commercial catch sampling has been put forth as imperative research need in the most recent menhaden assessment. Further importance has been placed on increased commercial catch sampling in the northern portions of the

stock's range and the bait fishery in general. This is particularly important as the menhaden assessment team analyzes changes in selectivity resulting from changes in state-by-state allocation of the resource.

As the Atlantic herring, Mackerel, and Menhaden fisheries encounter bycatch, this project also samples all species encountered during either the bycatch or commercial catch sampling modules. Four species River herring (*Alosa sp.*), Atlantic menhaden (*Brevoortia tyrannus*), Spiny dogfish (*Squalus acanthias*), and Shad (*Alosa sapidissima*), are routinely encountered and samples for length, weight, and otolith/scales are forwarded to other institutions for age analysis.

### ***Continued bycatch sampling***

During at-sea operations NMFS observers use basket sampling to document the occurrence of other species during targeted Atlantic herring and mackerel trips. These non-target species are then included in the data as retained or “Kept” ([http://www.nefsc.noaa.gov/fsb/manuals/2013/NEFSC\\_Observer\\_Program\\_Manual.pdf](http://www.nefsc.noaa.gov/fsb/manuals/2013/NEFSC_Observer_Program_Manual.pdf)). Normally, ten 50 lb. basket sub-samples are taken at regular intervals during the pumping process from the net to hold. These samples are then checked for bycatch and the results expanded. Because the Atlantic herring fishery is a high volume fishery much of the bycatch is retained during the pumping process, particularly for co-occurring pelagic species such as river herring.

Until the spring of 2011 MEDMR port sampling procedure measured bycatch using a “lot” (~40,000 lbs.) approach. Lot sampling involves looking intensively at a portion of a vessel’s landings and then extrapolating those results to the entire offload. This sort of sampling contrasts that done by NMFS and MADMF, which takes regularly spaced basket subsamples during pumping.

Analysis of more than ten years (2005-2014) of both portside and at sea bycatch data and results from the DMR, DMF, and NMFS databases revealed that “lot” sampling, as MEDMR had been conducting it, was not useful when comparing the portside and at-sea programs. The reasoning behind this stems from the variability of catch composition in vessels with multiple fish holds. Fish being partitioned into separate holds may be from the same, different, or a mixture of multiple tows or sets. While lot sampling has provided valuable spatial and temporal insights to bycatch distribution and frequency, it is unable to resolve variability between vessel holds. Sampling entire vessel offloads allows that variability to be reflected in the data.

In an attempt to more closely align our data with both the at-sea observer data and DMF portside data, we (DMR) have moved away from the practice of “lot” sampling in 2011 and instead now use a protocol similar to DMF and NMFS.

In 2012 MEDMR, with ACCSP funding, implemented concurrent sampling of Atlantic herring trips portside that had also been sampled by at-sea observers. After 4 years, MEDMR had the required number of trips, by gear, area season, and year, to analyze the data and statistically determine if portside and at-sea sampling give similar results. Further analysis was provided upon request during the FY 2019 proposal process as a result of a request by the reviewers and will be included in the 5-year report During Sept 2019. That said the summary of the findings suggests results between portside and at-sea sampling are statistically similar for small-bodied species in high volume fisheries.

Given the results, MEDMR is now using this newly revamped protocol and during routine portside bycatch monitoring of the Atlantic herring fishery. DMR’s efforts, coupled with ongoing work by MA DMF and the NEFOPS program will help to increase sample sizes for determining bycatch amounts in the Atlantic herring fishery. Data from both MEDMR and MA DMF portside programs are used to monitor bycatch quotas for haddock or River herring, data from both programs were also used to set the River herring quotas by gear type (<https://s3.amazonaws.com/nefmc.org/NEFMC-Adopts-2021-2023-Herring-Specifications-Adjusts-Herring-Measures-to-Facilitate-Mackerel-Harvest.pdf>)

### **Results and Benefits:**

### ***Commercial catch sampling***

This program collects all the Atlantic herring-directed samples from the U.S East coast fishery and a portion of all the collected mackerel and menhaden samples use in assessments of the stocks and management of the fisheries. Regarding the need for the work as stated above, if this project was not funded there are currently no other resources that would or could be shifted to collect samples of Atlantic herring, Atlantic mackerel, or Atlantic menhaden. There are also limited resources to perform Atlantic herring, Atlantic mackerel, or Atlantic menhaden bycatch studies. The catch at age analysis for all three species would lack coverage for the full range of the fishery without this project.

Annually collected samples of Atlantic herring from the commercial fishery provide the cohort catch at age data for the SARC's periodic assessment of the herring population and are used to predict and define the ASMFC's (Atlantic States Marine Fisheries Commission) rolling spawning area closures and give evidence of overall health of the Coastal Stock Complex. All Atlantic herring sample data is uploaded to the ACCSP data warehouse. Commercial catch sampling can also provide insight into the biological and management processes that drive the stock and fishery. Recently an analysis was performed to examine changes in length at spawning for Atlantic herring. Results were presented to the ASMFC Atlantic Herring Section that is in the process of finalizing spawning relationship changes to account for a decrease in herring length at full maturation.

Maine DMR processes all commercial catch herring samples for the east coast fishery. DMR maintains a lab facility with the equipment and staffing necessary for processing more than 200 commercial herring samples a year. Also, DMR provides staff oversight of the field sampling program and scientific analysis of the data generated from the program which is then fed directly into the assessment. Without the ACCSP funded program, samples would not be collected or aged, resulting in no catch-at-age information to inform the assessment. As such, Atlantic herring would move from an age-structured stock assessment to one developed for data-poor species and would be categorized as a data-poor species in need of sampling. Because ACCSP has funded this project, however, Atlantic herring are current adequately sampled and are not scored by ACCSP. This may change, however, as this is the last year this project is eligible for funding through ACCSP.

In addition to sampling Atlantic herring and mackerel to develop catch-at-age matrices, this program has provided biological samples for multiple research projects. Herring have been collected for the Gulf of Maine Research Institute acoustics project, the NEFSC's (North East Fishery Science Center) morphometrics study, genetics studies, and most recently stomach and fat content samples have been provided to various organizations to examine the role of climate change in the nutritional content of herring. The commercial catch samples also provide the basis for determining the start date for the three Atlantic States Marine Fisheries Commission herring spawning closure areas (two along the Maine coast and one along the NH/MA coast).

Atlantic menhaden were added as a sample species in 2010. Menhaden can be collected as bycatch during herring operations as well as from a growing purse seine directed fishery for lobster bait in the Northeast. While the bulk of this fishery occurs in the Mid-Atlantic, there is a growing interest in menhaden as a result of recent management changes in the Atlantic herring fishery. Bait landings of menhaden in Southern New England and the Mid-Atlantic have tripled in the past two years. Even more recently, Maine landings have risen sharply as the stock has entered the state of Maine waters. Because menhaden stratify in latitude by age, a more complete sampling of the menhaden catch in the northern parts of its range may improve our understanding of the population dynamics of this important forage species.

The commercial catch sampling program funded historically by ACCSP has proven extremely successful and has provided important information to the fishery managers. The biological information on size, age, and maturation of herring feeds directly into the stock assessments for Atlantic herring, Atlantic mackerel, and Atlantic menhaden. ASMFC has routinely used the data collected from this project to implement management changes to herring spawning regulations, as well as to make other decisions with regards to the allocation of quota among management areas.

### ***Bycatch sampling***

The data collected through the bycatch survey supplements the federal at-sea observer coverage program, as well as the MA DMF River Herring Avoidance Program, which has vastly increased the amount of information available on bycatch in the herring fishery. This project will maintain and expand an effective and scalable method for the long-term

monitoring of bycatch in the Atlantic herring fishery. A portside bycatch sampling methodology has been developed and tested and has demonstrated the ability to observe high volumes of landed herring catch. Portside efforts will complement but not replace the NMFS at-sea observer coverage. This proposed bycatch survey represents a unique opportunity to collect data in an inexpensive but efficient and accurate way. Given this, in 2018 NMFS started the process of incorporating Maine DMR and MA DMF portside sampling into the quota monitoring system for Haddock and river herring bycatch quotas. This effort is now fully implemented with data from Maine DMR and MA DMF being incorporated fully into the process of quota monitoring.

Beyond the immediate benefit to the NMFS, MA DMF, and MEDMR bycatch sampling in this fishery, the proposed project may guide other bycatch sampling programs in other fisheries. More importantly, DMR's proposed portside sampling will augment the MA DMF and NEFOP efforts allowing for better estimation of River herring, haddock, and potentially other species caught as bycatch in the directed Atlantic herring fishery.

### **Review of Previous Results:**

This proposal is a continuation of an ACCSP funded herring sampling and combined portside bycatch survey. The project has evolved over the past several years to maximize the use of funds. Project history is shown in Attachment 2 and explains the evolution of the project, including the transition to an emphasis on portside bycatch sampling in conjunction with biological sampling along with a review of project costs. The Project for FY 2020 has just ended so full analysis has yet to be completed, but the most recent semi-annual report is in Attachment 3. This report concluded that the data collected from both the and Commercial Catch Sampling Program were useful for the Atlantic herring stock assessment as well as for mackerel. Additionally, Portside Bycatch Program quantified incidental catch particularly River herring; and that these dates are starting to be used to monitor the River herring/Shad bycatch quotas for the Atlantic herring fishery.

### **Approach:**

It should be noted that for both bycatch and biological sampling, ME DMR expects the continuation of full sampling effort despite lower Atlantic herring quotas. While herring quotas have and will continue to decline, the number of trips should be only slightly less. This in part, due to ASMFC imposed effort controls, as well as the sampling frame. The sampling frame is designed on a trip basis, rather than by volume landed. Thus, it is anticipated that the number of trips is likely to remain similar to 2020 levels, but that the volume of each trip might decline. As such, any reduction in herring bycatch and biological sampling is expected to be offset by increased sampling effort in menhaden and mackerel. In particular menhaden landings have increased dramatically in the state of Maine over the past few years, requiring more effort to sample effectively. Additionally, depending on the New England Fishery Management Council (NEFMC) actions later this year, it is expected that quotas for Atlantic herring may increase starting in 2022 if only marginally.

As of June 2021, this project is being completed under the Spring 2021 social distancing guidelines as per the Governor's Office for the State of Maine. Because it is anticipated that these measures will be relaxed in the coming months, no impact on sampling in 2022 is anticipated.

### ***Commercial catch sampling of Atlantic herring, Atlantic mackerel, and Atlantic menhaden***

Commercial catch sampling will be conducted at herring and mackerel pumping and processing sites along the east coast. As a general rule commercial catch sampling occurs such that there is at least one sample per statistical area, per week, per gear type and generally meets NMFS protocols of one sample per 500 mt.

The samplers will follow the existing protocol developed for commercial catch sampling of Atlantic herring (Attachment 4). This protocol complies with the guidelines laid out by ACCSP. Samples will be processed and aged by in-house staff, primarily Lisa Pinkham. Samples are processed for length; weight, maturity, and aged per NMFS (National Marine Fisheries Service) protocols (please see [www.nefsc.noaa.gov/publications/crd/crd0406/crd0406.pdf](http://www.nefsc.noaa.gov/publications/crd/crd0406/crd0406.pdf) Page 22). This information is uploaded to the ACCSP warehouse and is used for the assessment of Atlantic herring.

The same vessels that harvest Atlantic herring primarily pursue Atlantic mackerel on the east coast. Traditionally, when markets are available the pelagic fishing fleet transfers some of their effort from herring to mackerel in the winter and early spring. The samplers funded by this grant can easily collect mackerel by keeping in touch with the herring vessels that enter the mackerel fishery. Most of the ports where significant mackerel landings occur overlap with major herring ports; this is largely because herring processing facilities are also capable of freezing mackerel. Sampling will follow the existing NMFS protocol for mackerel and the guidelines established by ACCSP (Attachment 4).

### **Atlantic menhaden sampling**

Support for port sampling for Atlantic menhaden (*Brevoortia tyrannus*) is also requested. Currently, there have been increased menhaden catches in the New England Area, particularly Maine, when compared to previous years. This trend is expected to continue for the next several years. National Marine Fisheries Service in Beaufort, North Carolina has requested commercial samples from the northern extent of this stock's range (north of Cape Cod). Such sampling of the "snapper rig bait fishery" (Northeast purse seine) is also listed as a priority research initiative in the most recent menhaden assessment. Such samples are critical to the assessment process for Atlantic menhaden and in accurately estimating the catch at age. During our normal sampling of the Atlantic herring bait fishery, we will collect Atlantic menhaden samples primarily from purse seines using the protocols outlined by NMFS, Beaufort (Attachment 4), and forward scales and measurements for use in the next assessment.

ASMFC sample requirements state "One 10-fish sample (age and length) per 300 metric tons landed for bait purposes for ME, NH, MA, RI, CT, NY, NJ, and DE. While minimums have been met, a more rigorous sampling design by gear, time, and fishing area is planned at the end of this year. This sort of analysis has been delayed in part due to personnel changes and COVID restrictions.

### **Bycatch sampling**

The herring industry has changed tremendously resulting in a much more centralized distribution structure. Generally, the herring used for bait goes through a wholesale dealer to smaller dealers and lobster wharves along the coast. The wholesale dealers have facilities where they sort, barrel, freeze, and store bait for redistribution. It is at these sites where effective bycatch surveys can also be done, thereby including the bait sector in this study. Herring is also landed at larger centralized processing plants which may process for a food-grade market for export or direct sale into the regional bait market.

The sampling takes place at centralized processing plants and bait dealers. A goal of observing 2 trips per month from January through May and one or two trips per week during the June-Oct period (when the fishery is most active) is proposed. Trip selection will be haphazard, with an overall goal of sampling multiple gears and management areas each month and to scale bycatch sampled trips with the activity of the fishery.

The samplers will quantify bycatch from individual off-loadings that enter the processing and bait plants according to a NMFS specified protocol. The total weight of any observed bycatch will be recorded along with species identification, total species weight, individual lengths, and weights of all fish or a representative sub-sample. The total estimated bycatch weight by species will then be compared to census sampling by MA DMF and/or at sea basket sampling conducted by NEFOP as appropriate.

Using existing MEDMR protocols (Attachment 5) and in close concert with NMFS observers and MA DMF portside samplers, staff will directly target trips that have been observed by either of those two programs. Where possible, and as practicable, staff will also conduct a full census of landed bycatch from full offloading events (trips) which have also been sampled at-sea; thereby allowing a direct analysis and validation of current at-sea bycatch monitoring methods. Particular emphasis will be placed on sampling those trips, using current MEDMR methods that had both NMFS and MA DMF bycatch sampling.

Once the data are collected, they will be housed and archived in a MEDMR relational database. Data requests and queries will be performed to assist in monitoring quotas, as well as to provide bycatch information to the NEFMC Plan



Development Team, NMFS, and other interested parties. Data on River herring/Shad as well as Haddock are routinely provided to the Regional Office at NOAA for use in quota monitoring activities.

**Geographic Location and Temporal Distribution of Effort:**

Sampling will occur in ports from Prospect Harbor, ME to Cape May, NJ, and reflect landings and effort from NC, through ME. Efforts will be coordinated with the NMFS NEFSC in Woods Hole, NMFS, Beaufort, NC, NJ, MA, MA DMF, NH F&G, and RI, DEM, and other state agencies throughout the range of the herring and mackerel fisheries. Staff will be based out of the MEDMR Boothbay Harbor lab facility. Because of herring and mackerel availability to the fishery, market conditions, and other factors, it is difficult to pinpoint where the fleet may be landing at any given time. Sampling will thus occur after direct contact with vessel captains and plant managers to identify where sampling should take place.

In general herring, biological and bycatch sampling is primarily conducted spring, summer, and fall, with some effort during the winter months. Mackerel sampling occurs primarily in the winter months, and it's anticipated that menhaden sampling will occur in the late summer to early fall. Bycatch sampling and commercial sampling become more infrequent in the winter months, while travel to get to the landing sites increases. Report writing and data analysis occur between regular commercial and bycatch sampling.

**Data Management:**

Data collected through this study are regularly entered into the MARVIN biological database housed at MEDMR. Data are first entered into MARVIN and run through Quality Assurance/ Quality Control (QA/QC) routines to ensure accurate reporting. Data can then be utilized for running analyses and/or stored until needed for the assessment or use by managers.

Metadata will be created with ArcCatalog to conform to the (Federal Geographic Data Committee (FGDC)) standards and specifications. Created metadata will be available in text and XML formats.

**Milestone Schedule:**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Catch Sampling-HERR	x	x	x	x	x	x	x	x	x	x	x	x
Catch Sampling-MACK	x	x	x	x	x							x
Bycatch Sampling-co-occurring NMFS	x	x	x	x	x	x	x	x	x	x	x	x
Analysis	x	x	x	x	x	x	x	x	x	x	x	x

\* - Upon request, MEDMR will provide bycatch sampling data on a state-by-state basis three times a year.

**Project Accomplishment Measurement****Commercial Catch  
Sampling**

Atlantic herring	At Least 10% sampled trips by gear type and month
Atlantic mackerel	At Least 10% sampled trips by gear type and month

**Bycatch Sampling**

Atlantic herring	At least 40 trips sampled by area, gear type and quarter
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## FY 2022 Budget & Narrative

FY2021 Budget (State FY22) 7/1/22 - 6/30/23			
<b>Cost Summary: Portside bycatch sampling</b>			
<b><u>Personnel Services</u></b>	<b>Description</b>	<b>ACCSP</b>	
None			
<b><u>All Other</u></b>			
<b>Travel Expenses</b>			
PROJECT VEHICLE 12 months	\$300/mo	\$	3,600.00
Mileage fee	31000 @ \$.22/mi	\$	6,820.00
Toll allowance		\$	150.00
35 Overnight stays	\$105/night	\$	3,675.00
Per diem (includes extended days)	\$50/day	\$	2,750.00
		<b>\$</b>	<b>16,995.00</b>
<b>Office Supplies &amp; Minor Equipment</b>			
2 Cell Phones	2 @ \$50/month	\$	1,200.00
1 air card	1 @ \$75/month	\$	900.00
Sampling Gear		\$	500.00
Lab Supplies		\$	600.00
		<b>\$</b>	<b>3,200.00</b>
Total Direct Costs		<b>\$</b>	<b>20,195.00</b>
Indirect Costs (30%)		<b>\$</b>	<b>6,058.50</b>
<b>Award to DMR</b>		<b>\$</b>	<b>26,253.50</b>

### **Partner Contribution – For ACCSP Purposes**

Scientist IV (10% time)	\$10,000
Scientist III (25% time)	\$15,000
Scientist I (100% time)	\$90,000
Specialist I (25%)	\$12,000
Total	\$127,000

### **Future Project Needs:**

This project is designed to benefit all states from Maine to New Jersey, ASMFC, and federal management agencies including the NEFMC, NMFS, and the Mid-Atlantic Fishery Management Council (MAFMC). While accessory funding is available for FY 22 to cover all personnel costs, MEDMR continues to pursue long-term and permanent funding for this project through a commitment made by the participating states and the federal government. Given that this is the last year of ACSP funding for this project and should a funding solution not be found, this project will terminate at the end of FY 2022.

### **Budget Narrative:**

**Personnel and Fringe Benefits:** Because of state funding resources, we are not requesting to fund either Scientist I (Chris Ura-neck) or Specialist I (Lisa Pinkham).

#### **Travel and vehicles**

Travel is requested for 35 overnight trips and an additional 20 extended days. The exact number and length of trips will depend on the fleet activity and port of landing. A small utility 4x4 truck is proposed for safety reasons during winter sampling in remote locations, as well as to haul equipment from time to time. Central fleet for the State of Maine stipulates rates, and private rentals are prohibited by state policies. The current request reflects a recent policy change by Central Fleet to charging less per month but increasing the mileage rate for trucks.

**Office Supplies & Minor Equipment**

Two cell phones and an “Air Card” are requested. One cell phone is for the sampler to contact vessels and to coordinate with NEFOP and MA DMF personnel. A second phone is requested for the supervisor to provide direction if needed and to allow for communication in case of an emergency. An air card is also requested which allows the user to connect to the State network from any location with cell phone coverage. Air cards allow for the efficient entry of data while waiting for vessels to land, along with allowing access to the VMS system to better pinpoint landing events. While tethering to a state phone for access is possible, negating the need for an air card, the change in plan required would increase the cell phone costs beyond the total cost of the air card.

Other Lab and Sampling supplies include baskets for sampling, scale calibration, rain gear, waterproof paper, sample boxes, safety equipment, and other items. These have been reduced in part to offset the increase in vehicle costs.

**Indirect costs:** The Department of Marine Resources has an indirect cost rate of 30%. See Attachment 6 for the Negotiated Indirect Cost Agreement.

## Attachment 1: FY 2021 Budget & Narrative

### FY 2021 Budget & Narrative

FY2021 Budget (State FY22) 7/1/21 - 6/30/22		
<b>Cost Summary: Portside bycatch sampling</b>		
<b><u>Personnel Services</u></b>	<b>Description</b>	<b>ACCSP</b>
None		
<b><u>All Other</u></b>		
<b>Travel Expenses</b>		
PROJECT VEHICLE 12 months	\$295/mo	\$ 3,540.00
Mileage fee	31000 @ \$.21/mi	\$ 6,510.00
Toll allowance		\$ 150.00
35 Overnight stays	\$102/night	\$ 3,570.00
Per diem (includes extended days)	\$50/day	\$ 2,750.00
		<b>\$ 16,520.00</b>
<b>Office Supplies &amp; Minor Equipment</b>		
2 Cell Phones	2 @ \$50/month	\$ 1,200.00
1 air card	1 @ \$75/month	\$ 900.00
Sampling Gear		\$ 500.00
Lab Supplies		\$ 800.00
		<b>\$ 3,400.00</b>
Total Direct Costs		<b>\$ 19,920.00</b>
Indirect Costs (30%)		<b>\$ 5,976.00</b>
<b>Award to DMR</b>		<b>\$ 25,896.00</b>

#### **Partner Contribution – For ACCSP Purposes**

Scientist IV (10% time)	\$10,000
Scientist III (25% time)	\$15,000
Scientist I (100% time)	\$90,000
Specialist I (25%)	\$12,000
Total	\$127,000

### Budget Narrative: 2021

**Personnel and Fringe Benefits:** Because of state funding resources, we are not requesting to fund either Scientist I (Chris Urameck) or Specialist I (Lisa Pinkham). Since the last proposal, the Specialist II position occupied by James Becker has been occupied by Chris Urameck and upgraded to a Scientist I. This change to State funding of personnel is a shift in the project which reduces overall costs to ACCSP.

#### **Travel and vehicles**

Travel is requested for 35 overnight trips and 20 extended days. The exact number and length of trips will depend on the fleet activity and port of landing. A small utility 4x4 truck is proposed for safety reasons during winter sampling in remote locations, as well as to haul equipment from time to time. Central fleet for the State of Maine stipulates rates, and private rentals are prohibited by state policies. The current request reflects a recent policy change by Central Fleet to charging less per month but increasing the mileage rate for trucks.

**Office Supplies & Minor Equipment**

Two cell phones and an “Air Card” are requested. One cell phone is for the sampler to contact vessels and to coordinate with NEFOP and MA DMF personnel. A second phone is requested for the supervisor to provide direction if needed and to allow for communication in case of an emergency. An air card is also requested which allows the user to connect to the State network from any location with cell phone coverage. Air cards allow for the efficient entry of data while waiting for vessels to land, along with allowing access to the VMS system to better pinpoint landing events.

Other Lab and Sampling supplies include baskets for sampling, scale calibration, rain gear, waterproof paper, sample boxes, safety equipment, and other items

## Attachment 2: Project history

YEAR	TITLE	COST	Rational/Emphasis	RESULTS
2001	Commercial catch sampling of Atlantic herring	\$52,299	catch sampling, herring	expanded sampling of herring
2002	Commercial catch sampling of Atlantic herring	\$67,168	catch sampling, herring	herring and mackerel sampling
2003	Commercial catch sampling of Atlantic herring and other northeast fisheries	\$67,168	catch sampling, herring	herring, mackerel, and halibut
2004	Commercial catch sampling and bycatch survey of the northeast Atlantic herring fishery	\$70,441	catch sampling, herring and mackerel	herring, halibut, mackerel and pilot portside bycatch sampling
2005	Commercial catch sampling and bycatch survey of two pelagic fisheries	\$69,949	catch sampling, herring and mackerel	herring, halibut, mackerel and pilot portside bycatch sampling
2006	Portside bycatch sampling and commercial catch sampling of the Atlantic herring and Atlantic mackerel fisheries	\$104,633	portside bycatch survey herring and mackerel catch sampling	herring and mackerel portside bycatch at 5% level and catch sampling
2007	Portside bycatch sampling and commercial catch sampling of the Atlantic herring and Atlantic mackerel fisheries	\$108,891	portside bycatch survey herring and mackerel catch sampling	herring and mackerel portside bycatch at 5% level
2008	Portside bycatch sampling and commercial catch sampling of the Atlantic herring and Atlantic mackerel fisheries	\$116,300	portside bycatch survey herring and mackerel catch sampling	herring and mackerel portside bycatch at 5% level
2009	Portside bycatch sampling and commercial catch sampling of the Atlantic herring, Atlantic mackerel, and Atlantic menhaden fisheries	\$105,985	portside bycatch survey herring menhaden and mackerel catch sampling	herring and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2010	Portside bycatch sampling and commercial catch sampling of the Atlantic herring, Atlantic mackerel, and Atlantic menhaden fisheries	\$84,451	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2011	Portside bycatch sampling and commercial catch sampling of the Atlantic herring, Atlantic mackerel, and Atlantic menhaden fisheries	\$174,778	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2012	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$0	portside bycatch survey herring menhaden and mackerel catch sampling	Funds were not requested because of previous cost-saving measures; allowing for the continuation of the previous work with no added costs.
2013	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$113,774	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2014	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$130,599	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2015	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$136,306	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.

<b>2016</b>	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$23,606	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.
<b>2017</b>	Portside commercial catch sampling and bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$24,975	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.
<b>2018</b>	Portside commercial catch sampling and bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$25,974	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.
<b>2019</b>	Portside commercial catch sampling and bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$25,974	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level. Final analysis Ongoing
<b>2020</b>	Portside commercial catch sampling and bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$26,116	portside bycatch survey herring menhaden and mackerel catch sampling	ongoing
<b>2021</b>	Portside commercial catch sampling and bycatch sampling for Atlantic herring ( <i>Clupea harengus</i> ), Atlantic mackerel ( <i>Scomber scombrus</i> ), and Atlantic Menhaden ( <i>Brevoortia tyrannus</i> ) fisheries	\$25,896	portside bycatch survey herring menhaden and mackerel catch sampling	Not yet started



## **Proposed ACCSP Ranking**

**Proposal Type:** Maintenance

### **Primary Program Priority and Percentage of Effort to ACCSP modules:**

*Biological Sampling (8 Points):* Although Atlantic herring is missing from the top quartile of the Biological Matrix, a correct scoring would certainly adjust it to that level. The score would rise to the top of the matrix with the elimination of biological sampling. Additionally, River herring and shad, caught as bycatch in the Atlantic herring and menhaden fisheries are near the top of the Biological Matrix.

*Bycatch/Species Interaction (6 Points):* Mid-Water trawl gear targeting Atlantic herring and mackerel is currently the most scrutinized for bycatch of river herring and groundfish. Amendment 7 of the Atlantic herring FMP is calling for an added increase in bycatch monitoring via portside sampling for the Mid-water trawl fleet. It is ranked 9<sup>th</sup> out of 18 on the “Quartile of Bycatch Matrix”.

*Metadata (2 Points):* will be created with ESRI ArcCatalog 10 to conform to the FGDC standards and specifications. Created metadata will be submitted to ACCSP in text and XML formats.

### **Project Quality Factors:**

*Regional Impact (5 Points):* all partners will benefit, as all data collected will be uploaded to ACCSP. Regional management organizations, such as ASMFC, will benefit from the biological and bycatch information from the proposed project.

*Funding transition plan (4 Points):* MEDMR will continue to seek alternative sources of funding to further transition from ACCSP grant money.

*In-kind Contribution (4 Points):* the partner contribution is listed below the budget.

*Improvement in Data Quality/Timeliness (4 Points):* Data collected through this study are regularly entered into the MARVIN biological database housed at MEDMR. Data are first entered into MARVIN and run through QA/QC routines to ensure accurate reporting. The biological sampling data is uploaded to the ACCSP data warehouse regularly.

*Potential secondary model (4 Points)* Data collected through this proposed project is used in the assessment and management of river herring, Atlantic herring, Mackerel, and menhaden as outlined to the expected benefits section

*Impact on Stock Assessment (3 Points):* Regional management organizations that carry out stock assessments would benefit from the detailed biological sampling and bycatch data. This information could be used in stock assessments for many species that are managed by regional agencies.

*Properly Prepared (5 Points):* MEDMR followed ACCSP guidelines and pertinent documents when preparing this proposal.

### Attachment 3: FY2020 semi Report



## DEPARTMENT OF COMMERCE RESEARCH PERFORMANCE PROGRESS REPORT (RPPR)

*For instructions, please visit*

[http://www.osc.doc.gov/oam/grants\\_management/policy/documents/RPPR%20Instructions%20and%20Privacy%20State  
ment.pdf](http://www.osc.doc.gov/oam/grants_management/policy/documents/RPPR%20Instructions%20and%20Privacy%20Statement.pdf)

AWARD INFORMATION	
1. Federal Agency: Department of Commerce / NOAA	2. Federal Award Number: NA19NMF4740097
3. Project Title: Portside Commercial catch sampling and comparative bycatch sampling for Atlantic herring (Clupea haren	
4. Award Period of Performance Start Date: 07/01/2019	5. Award Period of Performance End Date: 06/30/2021
PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR	
6. Last Name and Suffix: Uranek , null	7. First and Middle Name: Christopher ,
8. Title: Marine Resource Scientist I	
9. Email: chris.b.uranek@maine.gov	10. Phone Number: 207-350-6040
AUTHORIZING OFFICIAL	
11. Last Name and Suffix: Nutting , null	12. First and Middle Name: Rochelle ,
13. Title: Resource Administrator	
14. Email: rochelle.nutting@maine.gov	15. Phone Number: 207-624-6556
REPORTING INFORMATION	
Signature of Submitting Official: N/A	
16. Submission Date and Time Stamp:	17. Reporting Period End Date: 12/31/2020
18. Reporting Frequency:  Annual  Semi-Annual  Quarterly	19. Report Type:  Not Final  Final
RECIPIENT ORGANIZATION	
20. Recipient Name: MARINE RESOURCES, MAINE DEPARTMENT OF	

21. Recipient Address: 32 BLOSSOM LN, AUGUSTA, ME 04330-5780 USA	
22. Recipient DUNS: 809045826	23. Recipient EIN: 016000001

ACCOMPLISHMENTS
<p>24. What were the major goals and objectives of this project?</p> <ol style="list-style-type: none"> <li>Continuation of the portside bycatch survey               <ol style="list-style-type: none"> <li>Expand the coverage of landed herring and menhaden monitored for bycatch.</li> <li>Increase the percentage of unobserved at-sea sampling offloads.</li> </ol> </li> <li>Continuation of commercial catch sampling and species collection upon request.</li> </ol>
<p>25. What was accomplished under these goals?</p> <p>Due to COVID-19 and changes in staff only one bycatch sampling event was performed. Since March staff have been unable to leave the state as part of ongoing efforts to prevent the spread of COVID-19 and protect the health of staff. Some sampling and landings do occur in NH, MA and RI during this reporting period.</p> <p>Additionally, James Becker moved to another position on March 9th at DMR and has been replaced on the team with Chris Ura-neck. Chris started June 1st with the herring and menhaden group but only worked part-time on the project until a replacement could be found for his previous job in Recreational fisheries. This did not happen in full until November 1.</p> <p>Despite these issues, the project was still able to secure 17 herring, 0 mackerel, and 37 menhaden samples. One portside bycatch trip was also sampled shore-side. Additionally, while the data have been collected and uploaded, analysis has been slowed for the reasons mentioned above.</p> <p>It is anticipated that both sampling and analysis will be caught up to usual levels, once the new staff member is fully trained, and more normal operations are resumed in the wake of COVID-19 restrictions.</p>

ACCOMPLISHMENTS (cont'd)
<p>26. What opportunities for training and professional development has the project provided?</p> <p>N/A</p>
<p>27. How were the results disseminated to communities of interest?</p> <p>In general, the herring spawn data gathered from the commercial catch samples are shared with the Atlantic States Marine Fishery Commission (ASMFC) for spawn monitoring for Maine, NH, and MA <a href="http://www.massmarinesfisheries.net/herring/">http://www.massmarinesfisheries.net/herring/</a>. The herring and menhaden data are used for each of their stock assessments <a href="http://www.asmfc.org/species/atlantic-herring">http://www.asmfc.org/species/atlantic-herring</a>. The herring bycatch data are used for bycatch quota monitoring for ASMFC and NMFS <a href="https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/reports_frame.htm">https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/reports_frame.htm</a>. Data from the one portside bycatch study was uploaded to our federal partners, but biological sample data is not due to ASMFC or NOAA until during the next reporting period.</p>

ACCOMPLISHMENTS (cont'd)
<p>28. What do you plan to do during the next reporting period to accomplish the goals and objectives?</p> <p>N/A</p>
PRODUCTS
<p>29. Publications, conference papers, and presentations</p> <p>Nothing to Report</p>

<b>PRODUCTS (cont'd)</b>
30. Technologies or techniques Nothing to Report
31. Inventions, patent applications, and/or licenses Nothing to Report

<b>PRODUCTS (cont'd)</b>
32. Other products Nothing to Report
<b>PARTICIPANTS &amp; OTHER COLLABORATING ORGANIZATIONS</b>
33. What individuals have worked on this project?  Name: Chris Urameck Total Number of Months: (6) Project Role: Marine Resource Scientist I Contribution to Project: Collects and coordinates collection of samples in Maine and other states where the fisheries occur. Conducts portside bycatch studies and writes reports.  Name: Lisa Pinkham Total Number of Months: No change Project Role: Marine Resource Specialist I Contribution to Project: Conducts all lab analysis of herring samples. Processes menhaden samples and sends scale samples to the NOAA lab for ageing.  Name: Matt Cieri Total Number of Months: No Change Project Role: Contribution to Project: No Change Name: Erin Summers Total Number of Months: No Change Project Role: Contribution to Project: Name: Carl Wilson Total Number of Months: No Change Project Role: Contribution to Project: Name: Amy Dumeny Total Number of Months: No Change Project Role:

**PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS (cont'd)**

34. Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

Nothing to Report

35. What other organizations have been involved as partners?

The state agencies in New Hampshire, Massachusetts and Rhode Island have assisted in collecting and storing portside biological samples of herring when there has been landings in those states. These samples will be collected and then processed at the ME DMR lab when COVID travel restrictions are lifted.

NMFS combines our portside bycatch data with their at-sea observer program to estimate bycatch and discards for both the herring and mackerel quota monitoring systems. Data are also used for herring, mackerel and menhaden stock assessments.

The Atlantic Coastal Cooperative Statistics Program (ACCSP) use our herring spawn data, gathered from the commercial catch samples to overlook, monitor and administer the spawn forecast model used for the corresponding closures within the GoM.

**PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS (cont'd)**

36. Have other collaborators or contacts been involved?

Herring sample data are shared with the Gulf of Maine Research Institute (GMRI) to be applied for spawn monitoring and future regulation.

**IMPACT**

37. What was the impact on the development of the principal discipline(s) of the project?

The bycatch program for herring and mackerel plays a significant role in not only establishing a monitoring system to protect bycatch and incidental species but influences herring and mackerel fishing landings throughout the year. For example, when a certain amount of river herring (Alewife and Blueback herring) are landed and a set quota for these is surpassed, portions of these directed fisheries are closed until the quota resets in the following year. This protects these nontargeted species from overharvesting but impacts the revenues generated for these directed fisheries.

Also, the biological data collected via the commercial catch sampling program of herring, mackerel, and menhaden are directly used for their stock assessments and catch-at-age matrices. These data are used to estimate the size and age structure, 2020-2023 fishing quotas, recruitment, and ultimately the health of their population.

<b>IMPACT (<i>cont'd</i>)</b>
38. What was the impact on other disciplines?  Nothing to Report
39. What was the impact on the development of human resources?  Nothing to Report

<b>IMPACT (<i>cont'd</i>)</b>
40. What was the impact on teaching and educational experiences?  Nothing to Report
41. What was the impact on physical, institutional, and information resources that form infrastructure?  Nothing to Report

<b>IMPACT (<i>cont'd</i>)</b>
42. What was the impact on technology transfer?  Nothing to Report
43. What was the impact on society beyond science and technology?  Bycatch data collection and biological sampling have influenced fishing behaviors. With catch cap monitoring of river herring, shad and haddock in two directed fisheries, implemented partly by our sampling program, fishing locations can be chosen accordingly. To prevent closing areas of these fisheries due to choke species, the fishing spatial activity can shift to areas where the cumulative bycatch is lower and less likely to shut down landings. For example, if it is known that portside sampling is to occur on a certain herring or mackerel offload, the captain may decide to fish an area that typically contains less haddock, to prevent closing the fishery.  A similar spatial shift occurs during the rolling spawn closures within the GoM. As that herring typically spawn from north to south, harvesters move out of the areas that are approaching peak spawning as to not land significant amounts of ripening females, to halt samples that may trigger a closure. Harvesters may also fish a certain spawn closure, providing DMR with spawn samples and a real-time look at the status of the ovaries in an effort to close the area as soon as possible.  Bycatch quotas and spawn closures can reduce harvest and directly impact revenue as well as income for captain and crew. This can have indirect effects on dealers and other businesses.

<b>IMPACT (cont'd)</b>
44. What percentage of the award's budget was spent in foreign country(ies)?  0 , null
<b>CHANGES/PROBLEMS</b>
45. Changes in approach and reasons for change  Due to COVID related travel and health restrictions we relied on other state agencies collecting and storing samples this year when herring were landed out of state.

<b>CHANGES/PROBLEMS (cont'd)</b>
46. Actual or anticipated problems or delays and actions or plans to resolve them  Due to COVID related travel and health restrictions there has been a delay in getting some herring samples back to the ME DMR lab for processing. We plan to pick up the samples and process them as soon as we are able.
47. Changes that had a significant impact on expenditures  In a normal year there is a lot of out-of-state travel associated with this project to collect biological samples and conduct bycatch studies. There has been a significant decline in this activity due to the COVID travel and health restrictions. This directly effects expenditures.

<b>CHANGES/PROBLEMS (cont'd)</b>
48. Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents  Nothing to Report
49. Change of primary performance site location from that originally proposed  Nothing to Report

## PROJECT OUTCOMES

## 50. What were the outcomes of the award?

All objectives and goals were met for this report period. The portside bycatch survey has continued to prove very successful since its inception in August of 2003. The results of this survey have revealed extremely small levels of bycatch in the directed herring fishery, and minor levels of bycatch in the mackerel and menhaden fisheries for all gear types sampled. The results of this project are useful in quantifying and understanding the extent of retained bycatch in the herring, mackerel, and menhaden fisheries. However, the species encountered as bycatch varied spatially by NMFS Statistical Area, and conclusions drawn regarding the spatial nature of the bycatch encountered should be interpreted cautiously due to the small sample sizes. It is important to remember that bycatch in these fisheries can be episodic and can be isolated to one fishing event in one specific spatial location during only handful of trips.

Herring, mackerel, and menhaden are harvested as large volume fisheries, which results in mass handling techniques like pumping the catch from the nets into the vessel holds and again into the processing facilities. Because of the nature of these fisheries, there are limited opportunities to observe and/or sample bycatch at-sea. However, vessels can discard some or all of the catch at-sea and there are some methods of sorting out large bycatch i.e. mammals before or during the pumping process. For these reasons the portside component is not designed to quantify all bycatch in these fisheries, but only retained and landed bycatch.

Since the spring of 2011, the portside bycatch sampling protocol shifted towards analyzing entire boatloads only and eliminating partial boat or lotsampling. This change in approach and the results of the co-occurring trip analyses have revealed that aligning portside data between DMR, MA DMF, and the NEFOP at-sea program offer more statistically sound estimates of bycatch and allows for the increase of sampling coverage across these fisheries. These efforts will complement and supplement, but not replace the NEFOP at-sea observer program. This bycatch survey represents a unique opportunity to collect data in an inexpensive but efficient and accurate way.

The data collected from both the Portside Bycatch Program and Commercial Catch Sampling Program were useful for the herring stock assessment update in 2020. In-particular the herring samples used for the catch-at-age matrix helped to determine spawning stock biomass, the 2019 - 2021 area fishing quotas and specifications, and spawn closure regulations. Data from Commercial Catch Sampling is also used in menhaden stock assessments to calculate the catch-at-age matrix. This is used to determine spawning stock biomass and develop fishing quotas. In addition, portside bycatch data from this project was used in conjunction with the at-sea data to calculate the river herring and haddock bycatch quotas for the 2019/2020 herring and mackerel fisheries.

## DEMOGRAPHIC INFORMATION FOR SIGNIFICANT CONTRIBUTORS (VOLUNTARY)

Gender:

Male

Female

Do not wish to provide

Ethnicity:

☐

Hispanic or Latina/o Not

☐

Hispanic or Latina/o Do not

☐

wish to provide



<p>Race:</p> <p>American Indian or Alaska Native Asian</p> <p>Black or African American</p> <p>Native Hawaiian or other Pacific Islander</p> <p>White</p> <p>Do not wish to provide</p>	<p>Disability Status:</p> <p><input type="radio"/> Yes</p> <p>[ ] Deaf or serious difficulty hearing</p> <p>[ ] Blind or serious difficulty seeing even when wearing glasses</p> <p>[ ] Serious difficulty walking or climbing stairs</p> <p>[ ] Other serious disability related to a physical, mental, or emotional condition</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Do not wish to provide</p>
---	---

## Attachment 4

### Instructions for Sampling Atlantic Menhaden from the Maine Bait Fisheries

#### Acquiring the 'Sample'

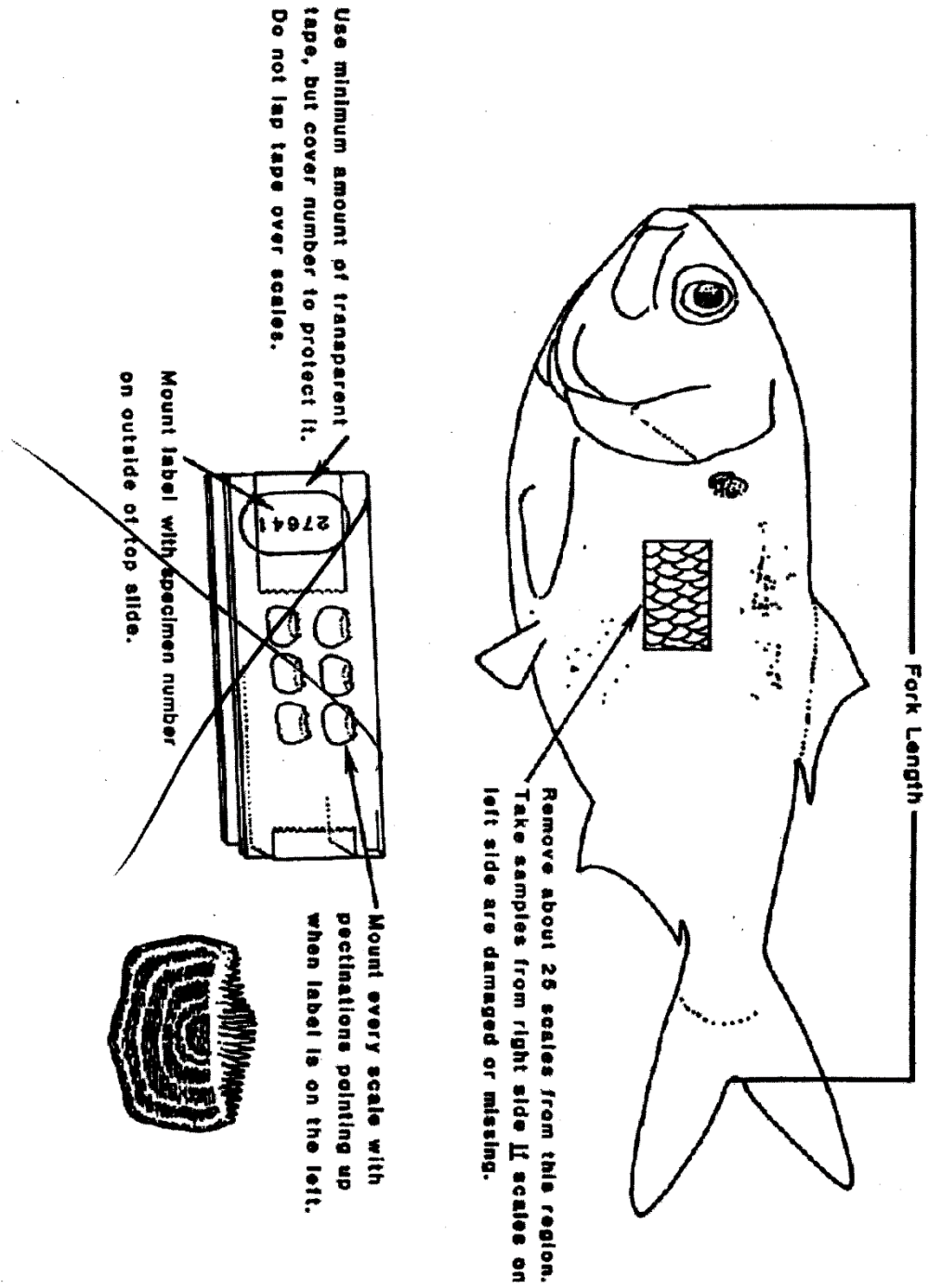
- Ideally, scoop a bucket of menhaden at random from the top of the fish hold.
- If the menhaden have already been packed out in flats or fish boxes, take 15-20 fish at random from the container.
- If available, record date of capture, location of capture, and vessel name. Usually we write this info on a waterproof tag and toss it in with the bagged menhaden sample.

#### Processing the 'Sample'

- Select a data sheet from the top of the pile. Write-in pertinent sample info on left half of data sheet:
  - Year Caught - last two digits
  - Vessel Name - just a name; we'll assign a vessel number at Beaufort
  - Location Caught - write location above the boxes; we'll assign a location code at Beaufort
  - Month and Day
  - LEAVE BLANK - Species and Scale Reader
  - Initial the data sheet (bottom right), and write any miscellaneous comments in the 'Remarks' box of the data sheet, eg, gear type, port of landing.
- Before you begin to handle the fish for lengths and weights, lay out ten coin envelopes on the counter-top and label each on the back with the unique 5-digit 'Specimen Number' found on the right side of the data sheet.
- From the plastic bag, bucket, etc. holding the menhaden sample, randomly draw out 10 fish. Process each of these 10 fish for fork length (in mm), weight (to the nearest whole gram), and remove a scale patch. Write fork lengths and weights for each of the 10 sample fish in the appropriate boxes on the right side of the data sheet.
- Scale patches are removed from mid-body, just below the start of the dorsal fin. See illustration in sampling manual.
  - Place scale patches in the appropriately labeled coin envelope, ie, scale patch from the first fish in the sample goes in the coin envelope labeled with the specimen number ending in '1'; scales from second fish go in coin envelope ending with specimen number ending in '2', etc.
- Re-bind ten coin envelopes with a rubber band. Paper-clip the coin envelopes to the top of the data sheet.
- Mail data sheets and coin envelopes to Beaufort via Dr. Matt Cieri.

Questions?? - Call Joseph W. Smith, NMFS Beaufort, 252-728-8765

FIGURE 2



Attachment 5

**COMMERCIAL  
PORTSIDE BYCATCH  
SURVEY PROTOCOL**



## **EXPLANATION:**

The bycatch survey represents a unique opportunity to collect data in an inexpensive but efficient and accurate way. The program takes advantage of normal processing plant operations by quantifying bycatch that enters the facilities. Processing plants have to manually remove other species from the production line before the fish are sorted and cut or frozen. In normal operations, bycatch removed from the product is segregated into xactix bins or totes and removed from the processing floor at the end of each lot. Plants process one lot (fish caught by one vessel on a particular trip, delivered by truck or boat) at a time and then reset the plant in preparation for the next lot. Therefore, the bycatch removed from each lot can be documented and assigned to a catch location, gear type, date and a total lot amount. Additionally, the plants generally buy herring from vessels throughout the fishery and therefore cover multiple gear types, vessel sizes and individual fishing practices.

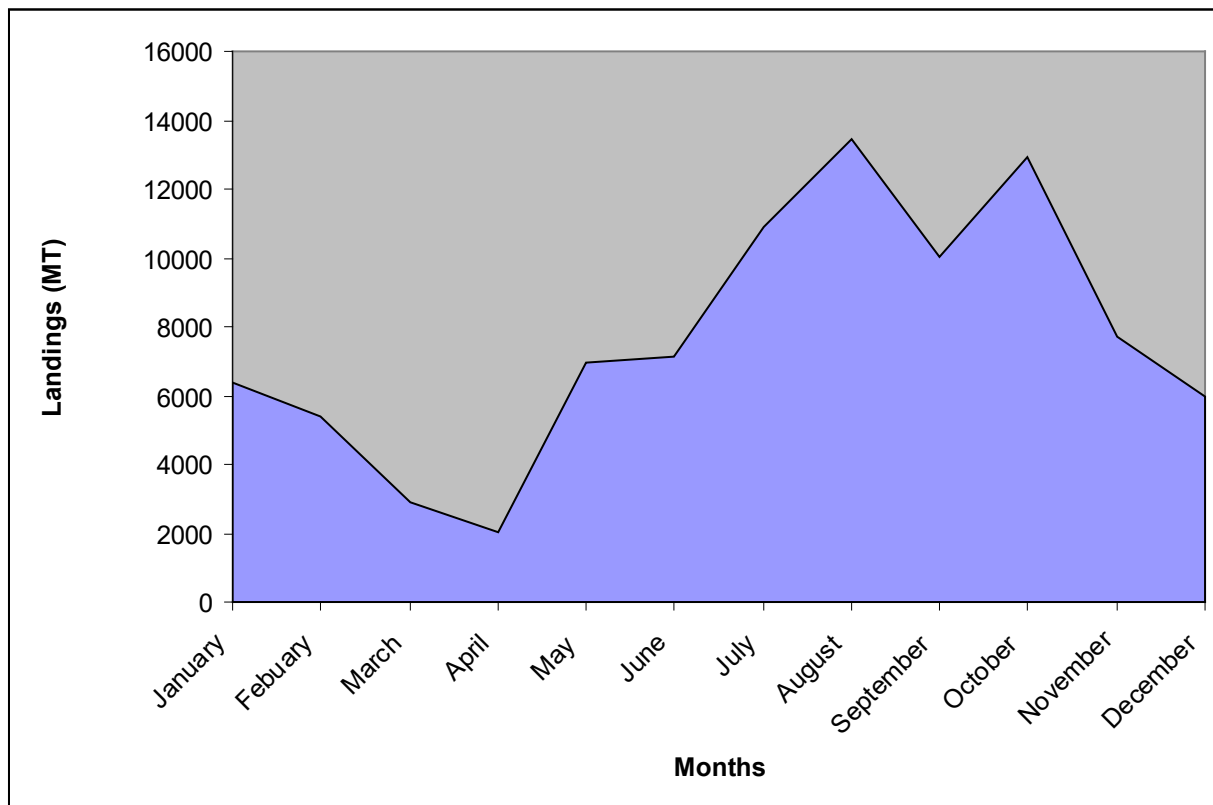
The bait industry has changed tremendously in the last five years resulting in a much more centralized distribution structure. Generally the herring used for bait goes through a large wholesale dealer to smaller dealers and lobster wharfs along the coast. The wholesale dealers generally have facilities where they sort, barrel, freeze and store bait for redistribution. It is at these sites where effective bycatch surveys can also be done, thereby including the bait sector in this study.

The sampling takes place at processing plants and bait dealers in Maine, New Hampshire, Massachusetts, Rhode Island and New Jersey. Sampling sites are selected by targeting Tier 1 locations first and then relying on Tier 2 locations to meet weekly goals. A sampling level of five percent of the entire herring fishery is targeted (Table 1). The mackerel fishery will be sampled if the target levels for the herring fishery are being reached or when herring samples are not available. This scenario is most likely to occur in the winter months when many of the herring vessels switch to the mackerel fishery. The samplers quantify bycatch from individual lots that enter the processing and bait plants according to a NMFS specified protocol. The total weight of any observed bycatch are recorded along with species identification, total species weight, individual lengths and weights of all fish or a representative sub-sample.

From 2004 thru 2008 the average annual herring landings were 91,803 metric tons. Over this five year period, April averaged the lowest landings of 2,033 metric tons, yielding about 2% of the annual landings (Figure 1). August averaged the highest landings of 13,438 metric tons, and yielded about 15% of the annual landings.

**Table 1: Target sampling levels for herring**

Month	5% Herring landings
January	319.82
February	270.91
March	144.92
April	101.63
May	346.8
June	355.3
July	544.18
August	671.9
September	502.18
October	646.28
November	386.65
December	299.61
Totals MT	4590.18



**Figure 1: Five year average (2004-2008) of monthly herring landings**

## **COMPLETE SAMPLING PROTOCOL:**

The samplers collect and quantify all bycatch from individual lots of fish (transported by trucks or vessels) that enter the processing facilities. Samplers position themselves at the point of entry into the facility along an assembly line or at the base of the hoppers where the fish are unloaded. Sampling is conducted before grading or sorting of the catch occurs. All bycatch is removed from the assembly line or hopper and placed in bushel baskets or buckets specific to each species. Species identification is accomplished by examination and the use of identification keys when appropriate as outlined in NMFS and NEFOP protocols. The total weight of any observed bycatch is recorded along with species identification, total species weight, individual lengths and weights of all fish according to a NMFS and ACCSP specified protocol. If there is a large amount of one species, the total weight is recorded and then length frequencies and weight are gathered from a sub sample of  $n=50$ . The information collected for each bycatch study is recorded on the data sheets (see “Data Sheets” section of packet) and entered into the MEDMR biological database.

## **SUB-SAMPLING PROTOCOL:**

A sub-sampling protocol is utilized when sampling a large volume of catch, determined as greater than 80,000 lbs. (~40 mt). Instances where this is likely to occur include sampling sites where vessels land an entire catch (as much as one million pounds) to a single facility. Sub-sampling is also appropriate in instances when there is an overwhelming amount of bycatch and/or non-targeted species mixed in with the lot of fish. In these cases it can be impossible to use the complete sampling protocol regardless of the amount inspected (< 80,000 lbs.). These situations are likely to occur when vessels are fishing mixed groups of herring and mackerel, some of which have a 50-50 composition.

Sub-samples are to be collected using bushel baskets at timed intervals during the pumping or unloading process following the NMFS at-sea observer sampling protocol. To accomplish this type of sub-sampling one needs to know the total lot weight and the duration of time it will take to unload the catch. After sampling the bushel basket of fish should be sorted by species, and total weight of each species and length frequencies should be recorded (sub sample  $n=50$ , for length frequencies if more than fifty of any species occurs).

**Example:**

Lot size = 120,000 lbs. (3 Trucks)

Pumping or unloading time = 3 hours (180 minutes)

If a sample basket is to be collected for every 10,000 lbs. of fish, then **12 sample baskets** need to be collected over the entire pumping or unloading process.

$$120,000 \text{ lbs.} / 10,000 \text{ lbs.} = 12$$

If the entire pumping or unloading process takes an estimated 180 minutes, than **a basket sample needs to be taken every 15 mins.**

If the catch composition from the bushel baskets is 99% Atlantic herring, than one can extrapolate that out of the 120,000 lbs. unloaded, then 118,800lbs is Atlantic herring.

$$99\% \text{ Atlantic herring} = 120,000 \text{ lbs.} \times 0.99 = 118,800 \text{ lbs of Atlantic herring}$$

If the remaining 1% of the catch composition is Atlantic mackerel, then one can extrapolate that out of the 120,000 lbs. unloaded, 1,200lbs is Atlantic mackerel

$$1\% \text{ Atlantic mackerel} = 120,000 \text{ lbs} \times 0.01 = 1,200 \text{ lbs of Atlantic mackerel}$$



**Attachment 6: Negotiated Indirect Cost Agreement**



**Department of Marine Resources**

**INTEROFFICE MEMORANDUM**

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**TO:** FILE  
**FROM:** PATRICK KELIHER, COMMISSIONER  
**SUBJECT:** RATE USED FOR COST ALLOCATION  
**DATE:** 6/3/2021

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In accordance with OMB Circular A-87, the Department of Marine Resources has submitted to the U.S. Department of Commerce a departmental cost allocation plan for use during state fiscal year 2019 ending June 30, 2019. The indirect cost rate proposal is 34.30%. I am authorizing the use of the lesser rate of 30% to be used during this period.

**ACCSP**

**"Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries"**

(July 1, 2022 – June 30, 2023)

A handwritten signature in black ink, appearing to read "P. Keliher", is written over a horizontal line.

Patrick Keliher, Commissioner 6/4/21

**MATTHEW D. CIERI**  
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McKown Point Rd.  
West Boothbay Harbor, ME 04575  
(207) 215-3709  
(207) 380-5016 (cell)  
Matthew.cieri@maine.gov

## **EDUCATIONAL EXPERIENCE**

B.S.	Marine Science, Stockton College of New Jersey	1993
M.S.	Biology (Marine Ecology), Rutgers University	1995
Ph.D.	Oceanography, University of Maine	1999

## **PROFESSIONAL EXPERIENCE**

<b>Marine Resource Scientist</b> , Maine Department of Marine Resources	2/01-present
<b>Post-Doctoral Scientist</b> , The Ecosystem Center, Marine Biological Laboratory	9/99-2/01
<b>Graduate Research Assistant</b> , School of Marine Science, University of Maine	5/95-9/99
<b>Research Technician</b> , Cranberry/Blueberry Research Laboratory, Rutgers /USDA	5/95-9/95
<b>Graduate Teaching Assistant</b> , Department of Biology, Rutgers University	9/93-9/95
<b>Graduate Research Assistant</b> , Institute of Marine Sciences, Rutgers University	10/93-4/94
<b>Animal Laboratory Technician</b> , Department of Natural Sciences, Stockton College	10/92-9/93

## **CURRENT DUTIES**

### **Atlantic Herring: New England Fishery Management Council (NEFMC) and Atlantic States Marine Fisheries Commission (ASMFC)**

- Oversee catch and landings reporting. Use of VTR (Vessel Trip Reports), Dealer Reports, & IVR (Interactive Voice Reports) to analyze and report landings and catch data to NMFS (National Marine Fisheries Service) regional office, NEFMC, and ASMFC
- Monitor IVR system: Query IVR database and report landing weekly to interested parties. Design and execution of a catch and effort model to predict appropriate "Days Out" needed to extend the fishery in some areas
- Commercial and Bycatch Sampling: Oversee the collection, inventorying, processing, and ageing of herring samples, also verify data entry. Make data available to interested parties. Supervise two full-time and one part-time technician. Produce compliance reports for ASMFC
- Monitor Herring spawning condition: Analyze biological sample data to determine spawning activity status. Indicate when areas should be closed to fishing to protect spawning herring
- Herring PDT (Plan Development Team) & Stock Assessment Subcommittee member (NEFMC & ASMFC): Participate in Stock assessments and analysis of catch and landings statistics for the Herring SAFE report. Develop the catch at age matrix for use in Virtual Population Analysis (VPA) and Age Structure Assessment Program (ASAP) models. Provide technical advice to management; Current Technical Committee Chair (ASMFC)

**Whiting and Small mesh Multispecies (NEFMC):**

- PDT & Stock Assessment Subcommittee member (NEFMC): Participated in stock assessment activities; Revision of overfishing and biomass reference points; Analysis of catch and landings statistics; Provide technical advice to management.

**Spiny Dogfish (ASMFC):**

- Participated in stock assessment activities and management analysis; Revision of overfishing and biomass reference points; Analysis of catch and landings statistics; Provide technical advice to management.

**Assessment Science Committee (ASMFC):**

- Provide stock assessment and technical advice to ASMFC Policy board including; Sampling targets for fishery independent and dependent sampling; Workload and scheduling for ASMFC stock assessment and participating scientists; coordinate Advanced Stock assessment training workshops

**Multispecies Technical Committee Chair (ASMFC):**

- Provide stock assessment and technical advice to ASMFC Policy on predator/prey relationships; Update and Expand MS-VPA (Multispecies Virtual Population Analysis) model as appropriate; Assist in incorporating Predator/prey and natural mortality estimates in the Atlantic Menhaden Assessment. Current Chair

**Atlantic Menhaden (ASMFC)**

- **Stock Assessment Subcommittee:** Provide estimates of natural mortality and participate in general assessment activities.

**Biological Review Panel (ACCSP):**

- Provide recommendations of priority and scope of fishery dependent and independent sampling for East Coast Fisheries

**PREVIOUS DUTIES**

**Monkfish**

- **PDT & Stock Assessment Subcommittee member (NEFMC):** Participated in stock assessment activities; Revision of overfishing and biomass reference points; Analysis of catch and landings statistics; Provide technical advice to management.

**Atlantic Menhaden (ASMFC)**

- **Technical Committee Chair:** Writing consensus documentation from technical meetings; Provide analysis of catch and landings data; Analyze current assessment methods; Present findings to the Menhaden Management Board. Produced compliance reports for the state of Maine
- **Multispecies Subcommittee Chair:** Provide technical guidance on conceptualization and implementation of the Menhaden Multispecies ecosystem model; Report progress to the Menhaden Management Board.

**American Eel (ASMFC)**

- **Stock Assessment Subcommittee Chair:** Organized and lead meetings with both scientific and stakeholder participants. Writing consensus documentation from technical meetings. Provided analysis of catch and landings data. Analyzed assessment methods for use in the stock assessment. Presented results during ASMFC external peer review and Eel Management Board.

**Erin L. Summers**  
**Maine Department of Marine Resources**  
**(207) 633-9556**  
**[erin.l.summers@maine.gov](mailto:erin.l.summers@maine.gov)**

**Profile:**

- Work collaboratively with state, federal, academic, conservation, and industry partners to reduce whale entanglements and mortality in marine mammals and sea turtles through bodies such as the Atlantic Large Whale Take Reduction team and Atlantic Large Whale Disentanglement Network.
- Build research programs to provide baseline data on large whale life history, ecology, and habitat use in Maine's coastal rocky bottom habitats. Design new and emerging methodologies to inform management decisions.
- Oversee research and monitoring programs within the Division of Biological Monitoring at DMR, including the lobster programs, surveys for scallops, sea urchin, shrimp, and herring, recreational fisheries program, inshore trawl survey, and the landings and reporting group.
- Represent the Department of Marine Resources in stakeholder meetings, including those for wind energy permitting, Natural Resource Damage Assessments, department wide research and priority setting, etc.
- Member of the Atlantic Scientific Review Group advising NOAA Fisheries on marine mammal stock assessments

**Education:**

MA Biology: Boston University Marine Program	Woods Hole, Ma. 5/02
BA Biology, Spanish minor: Truman State University	Kirksville, Mo. 5/00

**Employment:**

**Jan 2017 – present: Marine Resource Scientist IV**  
**Maine Department of Marine Resources**  
**West Boothbay Harbor, Me**

- Oversee Division of Biological Monitoring, including Commercial Landings Program, Benthic group (lobster, scallops, urchins), and Pelagics group (herring, groundfish, shrimp, and recreational fishing)
- Lead Scientist for DMR's Large Whale Conservation Program
- Member of the Atlantic Large Whale Take Reduction Team

**Feb 2006 – Jan 2017: Marine Resource Scientist II**  
**Maine Department of Marine Resources**

- Lead scientist for DMR's Large Whale Conservation Program
- Secured grant funding, wrote reports, tracked budgets to support research projects
- Completed projects to support management decisions for the Atlantic Large Whale Take Reduction Plan, including tagging humpback whales, right whale habitat surveys, passive acoustic surveys, gear density surveys, testing alternative fishing gear, characterizing fishing practices, etc.
- Oil Spill Response Coordinator
- Assist with GIS coordination

**Jan 2010 – May 2010:           Adjunct Faculty**  
**Unity College**  
**Unity, Me**

- Taught upper level course in the biology of Marine Mammals

**Feb 2004 – Feb 2006: Marine Mammal Research Specialist**  
**University of New England**  
**Biddeford, Me**

- Lead Research technician on project to track and predict right whale habitat use and distribution
- Analysis of remotely sensed data and right whale sightings in the Bay of Fundy Critical Habitat
- Assisted with report writing and budget tracking
- Completed project and published paper analyzing right baleen using stable isotope analysis
- Completed project and published papers satellite tagging and tracking baskings sharks off the coast of New England

**Sept 2002 – Feb 2004:           Research Technician**  
**Cetacean and Sea Turtle Team, NOAA Fisheries Service**  
**Beaufort, NC**

- Lead technician tracking and analyzing movements of satellite tagged dolphins
- Perform field work including fishing gear and dolphin aerial surveys, boat based dolphin biopsy and photo-identification surveys, satellite tagging dolphins, responding to strandings, etc.
- Participate in necropsies as needed

**Oct 2000 – June 2002:           Laboratory Technician**  
**Marine Biological Laboratories**  
**Woods Hole, Ma**

- Manage daily operations of the laboratory of marine veterinarian, Roxanna Smolowitz
- Run experiments and document methodologies and results
- Prepare media, samples, histology slides, and other lab bench work