STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
MARINE RESOURCES LABORATORY
P.O. BOX 8, 194 MCKOWN POINT RD
W. BOOTHBAY HARBOR, MAINE
04575-0008

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

July 25, 2024

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland St. Ste. 200 A-N
Arlington, VA 22201

Dear ACCSP:

We are pleased to submit the proposal titled "Expanding the Commercial Fisheries Research Foundation's Black Sea Bass Research Fleet into the Gulf of Maine" for your consideration. This new project proposal will provide funding to support adding Maine fishing vessels using lobster gear and/or hook and line gear to the Commercial Fisheries Research Foundation's (CFRF) Black Sea Bass Research Fleet. The data collected from this project will expand the biological sampling for black sea bass into Maine state waters. Black sea bass has been identified as the highest priority species for additional biological sampling according to the ACCSP Biological Review Panel and this project will provide data on the spatial and temporal distribution of black sea bass in Maine as well as provide data on sizes of black sea bass that are being seen in the Gulf of Maine.

The Maine Department of Marine Resources does not currently have the funding to support this type of data collection for black sea bass. Current fishery-independent surveys encounter black sea bass; however, they use gear that may not effectively capture black sea bass and occur at times of the year when black sea bass may not be migrating or in high abundance in the Gulf of Maine. The expansion of CFRF's research fleet would pilot a fishery-dependent sampling program for black sea bass. CFRF's research fleet is a proven, efficient, and cost-effective way to collect biological information on black sea bass. This proposal addresses the following 2025 ranking criteria: biological sampling, data delivery plan, regional impact, funding transition plan, in kind contribution, improvement in data quality and timeliness, potential secondary module as by-product in catch and effort, impact on stock assessment, innovative, properly prepared, and merit.

For a summary of the proposal for ranking purposes please see page 14. Thank you for your consideration of this proposal.

Sincerely,

Rebecca Peters
Marine Resource Scientist IV
Rebecca.j.peters@maine.gov
(207) 557-5276

Proposal for Funding made to:
Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

Expanding the Commercial Fisheries Research Foundation's Black Sea Bass Research Fleet into the Gulf of Maine

Submitted By:

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Maine Department of Marine Resources
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Applicant Name: Maine Department of Marine Resources, Bureau of Marine Science and the Commercial Fisheries Research Foundation

Project Title: Expanding the Commercial Fisheries Research Foundation's Black Sea Bass Research Fleet into the Gulf of Maine

Project Type: New Project

Requested Award Amount: $61,275.50

Requested Award Period: March 1, 2025 – February 28, 2026

Primary Program Priority: Biological Sampling

Date Submitted: 7/25/2024

Principal Investigators: Rebecca Peters, Marine Resource Scientist IV, Maine Department of Marine Resources

Jesica Waller, Marine Resource Scientist IV, Maine Department of Marine Resources

Corrin Flora, Marine Resource Management Coordinator, Maine Department of Marine Resources

Hannah Verkamp, Senior Research Associate, Commercial Fisheries Research Foundation

N. David Bethoney, Executive Director, Commercial Fisheries Research Foundation

Objective:

The goal of this proposed project is to pilot the expansion of the Commercial Fisheries Research Foundation's (CFRF) Black Sea Bass Research Fleet into the Gulf of Maine by adding five vessels from the lobster fleet and hook and line industry in Maine State waters through a partnership with Maine Department of Marine Resources (ME DMR). This project aims to cover the biological (100%) module.

The species distribution of black sea bass has expanded northward; however, little is known about the leading edge of this black sea bass biomass in the Gulf of Maine. To enhance biological data collection in an under-sampled region and support sustainable management of the stock, ME DMR requests funds to support a pilot project in which Gulf of Maine vessels are added to the CFRF Black Sea Bass Research Fleet. Sampling through CFRF is possible year-round; however, ME DMR anticipates the greatest sampling effort will take place in the summer, corresponding to when fishermen are participating in other fisheries.

Specific objectives of the project include:

- Expand the CFRF Black Sea Bass Research Fleet into the Gulf of Maine, an under-sampled area, with the addition of five vessels.
- **Improve the quantity of biological data collected on black sea bass in the Gulf of Maine, thereby supporting the stock assessment and sustainable management of the stock.**
- Better characterize the black sea bass biomass off Maine's coast, including understanding the northern extent of black sea bass, their size distribution, and seasonal patterns.
- **Establish a fishery-dependent sampling program that will lay the foundation for improved management of black sea bass in Maine as the species biomass is expected to increase.**
- **Transmit black sea bass biological data to ACCSP and communicate results with partners**.

Need:

Black sea bass is a species that has become synonymous with the impacts of environmental change on spatial distribution. The 2023 Research Track Assessment for black sea bass found that the range of black sea bass has shifted poleward, with relative increases in biomass in the northern region and stable biomass levels in the southern region[1]. Further, spatiotemporal modeling of trawl survey data found that the effective area occupied by black sea bass in the northern region has increased, indicating black sea bass have experienced "a general northeastward shift in center of gravity with a range expansion in the Gulf of Maine" [2]. Given the expanding black sea biomass in the northern region; the shift to higher landings by states such as New York, Rhode Island, and Massachusetts over the last 15 years[3]; and the fact that

[1] Report of the Black Sea Bass *(Centropristis striata)* Research Track Stock Assessment Working Group. 2023. Page 12.

[2] Report of the Black Sea Bass *(Centropristis striata)* Research Track Stock Assessment Working Group. 2023. Page 39.

[3] Report of the Black Sea Bass *(Centropristis striata)* Research Track Stock Assessment Working Group. 2023. Page 57.

New Hampshire recently declared an interest in black sea bass via the Atlantic States Marine Fisheries Commission, it is highly likely that black sea bass are off of Maine's coast and will be increasing in biomass.

Black sea bass have been identified as the highest priority species for additional biological sampling according to the ACCSP Biological Review Panel. This is in part driven by the limited data on black sea bass at their northern extent. ME DMR has very little information on the black sea bass resources in its waters, including how far east black sea bass can be found in the Gulf of Maine, the size distribution of black sea bass off Maine's coast, and their seasonality. This type of information will be critical to effectively manage a fishery in the future. The Research Track Assessment made significant advancements to incorporate spatial patterns into the assessment model, including developing regionally specific age-length keys. However, the Assessment Report noted that while there were efforts to determine whether growth in the Gulf of Maine differed from the broader northern region, there was insufficient age and length data from the Gulf of Maine to support this analysis.[4]

As the range of black sea bass expands, sampling efforts must be initiated at the leading edge of the range. Existing fishery-independent trawl surveys can serve as a starting point; however, the timing of these surveys in the spring and fall are often mis-aligned with the presence of black sea bass in the Gulf of Maine, which are thought to be most prominent in the summer. Ventless trap surveys are another source of potential data and were recently explored in the Research Track Assessment; however, it was determined that a longer time-series is needed before this data can be incorporated as indices of abundance.

Fishery-dependent data represents another avenue to collect data on the leading end of a species' range expansion. While Maine has no substantial directed fishery for black sea bass, there is significant commercial fishing effort throughout state waters. The extensive footprint of Maine's fisheries in both time and space provides a unique opportunity to broadly conduct sampling. Some lobstermen, such as those in Maine's western lobster zones, anecdotally report black sea bass bycatch in their traps, indicating that the species is present in portions of the state.

This proposal seeks to pilot a fishery-dependent sampling program for black sea bass by expanding the CFRF Black Sea Bass Research Fleet into the Gulf of Maine. The CFRF Research Fleet approach is a proven, efficient, and cost-effective way to collect biological information. It leverages fishermen participation to effectively collect information on landings and discards. Data collected through the CFRF Research Fleet was considered in the recent Research Track Assessment, and size information on discarded fish as well as age-length data were incorporated to support expanded discard-at-lengths and the development of age-length keys. There is currently no participation from the Gulf of Maine in the CFRF Black Sea Bass Research Fleet. As a result, this proposal would support enhanced sampling of black sea bass in an under-sampled region, while also collecting baseline data that will be essential to support future management in Maine. **Further, the proposal will directly address a high priority research recommendation in the Research Track Assessment to**

[4] Report of the Black Sea Bass *(Centropristis striata)* Research Track Stock Assessment Working Group. 2023. Page 28.

enhance sampling to support estimation of fishery length and age compositions, with an emphasis on spatial coverage.[5]

Results and Benefits:

The results of this proposed project are:

- Improved quantity of biological data for black sea bass in the Gulf of Maine.
- Expanded data collection via a proven method that allows for sampling outside of the spring and fall trawl surveys.
- Increased biological data being sent to ACCSP via an established process for data transmission with CFRF.

The benefits of this proposed project are:

- **Address ACCSP's highest priority species for biological sampling, black sea bass, to support assessment and management efforts.**
- Fill data gaps on the leading edge of the black sea bass spatial distribution.
- Involve fishermen in the collection of biological data and support strong partnerships between fishermen, scientists, and managers.
- **Support partner collaboration between ME DMR and CFRF by expanding regional extent of an existing fishery-dependent data fleet to which many jurisdictions contribute.**
- **Support future improvements to the black sea bass stock assessment model by collecting biological data from an under sampled region.**
- Support sustainable management of black sea bass at various levels, including ME DMR and via the interstate fishery management plan at ASMFC and MAFMC.

Data Delivery Plan:

This project includes a data delivery plan through which CFRF will regularly share data with ACCSP, ME DMR, fishing industry participants, stock assessment scientists, and managers. CFRF already has an established data sharing process for data collected via the Black Sea Bass Research Fleet and this pilot project will follow the same process.

Vessels participating in the pilot Gulf of Maine Black Sea Bass Research Fleet will utilize the CFRF's custom fishery dependent data collection application On Deck Data. Data collected via the application will be uploaded and integrated into the existing CFRF SQL database like all existing Research Fleet participants. CFRF staff will audit data regularly and perform quality control checks. Project staff from ME DMR will be granted database credentials to view and export data collected by the five Gulf of Maine vessels supported by this project. **CFRF will include the data collected by this project in their ongoing biannual data submissions to ACCSP, which occur in January and July**. A vessel ID system will be used to maintain the confidentiality of participant fishing vessels. The CFRF will maintain open communication with the ACCSP data coordinator and will remain available to provide any necessary metadata along with data submissions. The data submission format and process were established in consultation with ACCSP staff, and all data collected by the existing Black Sea Bass Research Fleet has been

[5] Report of the Black Sea Bass *(Centropristis striata)* Research Track Stock Assessment Working Group. 2023. Page 120.

successfully transmitted and accepted into the ACCSP bio samples database. In addition, fishing industry participants will retain joint ownership of the data they collect. CFRF will send participants quarterly data reports in the same manner as existing Research Fleet participants receive. The quarterly reports contain summaries of the data collected by each participant, and participants can request all of the raw data they have collected at any time. Finally, **data collected via this pilot program will be made available to fishery scientists at the NEFSC in support of future stock assessment work**.

Approach:

The proposed project seeks to collect, communicate, and analyze critically needed biological, catch, and bycatch data on northern Atlantic black sea bass. Project components include: 1) Leveraging the project approach established by the CFRF Black Sea Bass Research Fleet 2) Collection of fishery-dependent biological (sex and length) black sea bass data and fishery characteristics for up to 12 months in the Gulf of Maine region; 3) Internal data analysis to address research questions about spatiotemporal patterns in the black sea bass population and fishery; 4) Compilation and communication of project data and results to ACCSP, stock assessment scientists, and fisheries managers; and 5) Outreach and education activities to share findings. Methodological details are outlined below.

Participant Selection:

Project staff will distribute a call for applications to participate in this pilot project from commercial fishing vessels in their networks. For the purposes of this one-year pilot project, applications will be solicited only from fishermen who operate in Maine state waters, ranging from the New Hampshire border to the western end of Penobscot Bay, and utilize lobster pots (lobster fishery) or hook and line gear. Interested fishermen will submit an application (developed by the CFRF) that will be reviewed by the project PIs. This initial pilot project will select five vessels to participate in data collection based on areas fished, months fished, familiarity with the species of focus, and experience with biological data collection and collaborative research, with final approval by project PIs. We are aiming to start with five vessels for data collection to pilot this project in year one with hopes of adding more vessels to the Research Fleet in following years. We are starting with only a small number of vessels to provide initial data on black sea bass and hope this initial start will then also recruit interested fishermen in the future to participate if data shows that fishery-dependent sampling in Maine provides data on black sea bass catch and distribution.

Participant Training

To ensure project participants have access to local project staff for support, CFRF project staff will initially train ME DMR project staff on Research Fleet sampling protocols and data collection using the CFRF's custom data collection application, One Deck Data. CFRF will also provide ME DMR with all necessary sampling supplies for participants. ME DMR will then be primarily responsible for the day-to-day tasks associated with training and supporting Research Fleet participants. Prior to data collection, ME DMR staff will meet with selected participants in person for a training session, which will include an overview of the project, use of the tablet and data collection application, sampling requirements, and invoicing procedures, and to provide them with sampling supplies. Participants will be compensated with a one-time training stipend upon completion of training. This stipend will serve as an incentive to attend the training and

will provide funds to the vessels in the instance that no black sea bass are caught during fishing efforts in the pilot year.

Data Collection

Project staff will apply for a Special License from ME DMR to allow participant vessels to sample black sea bass from Maine state waters. Once participants have received training, they can sample black sea bass during commercial fishing activities on an opportunistic basis. The black sea bass data collection application, On Deck Data, was developed in the first year of the CFRF's Black Sea Bass Research Fleet project to enable participants to collect standardized black sea bass data. On Deck Data will be leveraged by this pilot project to streamline and standardize data collection within the existing database. Participating fishermen will use Samsung Galaxy tablets pre-programmed with the On Deck Data application to efficiently and accurately record and transmit data. As such, the proposed project will also continue to advance the use of electronic technology in at-sea biological data collection, management, and analysis efforts.

When participants choose to sample black sea bass from their catch, they will initialize On Deck Data and begin a sampling session, which is defined as one fishing gear haul in one location. The sampling date, time, and location will be automatically recorded by the internal tablet GPS and calendar. The app will then prompt participant fishermen to record the NOAA statistical area, depth, habitat type, target species, gear type, effort deployed (Table 1), and the total number/pounds of black sea bass retained and discarded. Participants will then record the length, sex, and disposition (kept or discarded) of individual black sea bass. Standardized fish measuring boards will be used to ensure a consistent measure of fish total length to the nearest centimeter. Upon completion of the sampling session, the data will be stored in the tablet's internal storage. Once connected to WI-FI, participants will then wirelessly upload the data to a MySQL database owned and managed by CFRF. Data uploads will be continually monitored by the project team. This data communication, review, management, and storage process was established and vetted during the first year of the CFRF's Black Sea Bass Research Fleet.

Table 1. Summary of fishing effort data collected by the Black Sea Bass Research Fleet.

Commercial Hook & Line	**Lobster/ Crab Traps**
Time Spent Fishing (hours)	Soak Time (days)
Number of Rods Fished	Number of Traps
Humber of Hooks Used	Escape Vent Size (inches)
	Escape Vent Shape

The goal for current Black Sea Bass Research Fleet participants in Southern New England and the Mid-Atlantic region is to conduct three at-sea sampling sessions per month, with a target of 50 individual black sea bass sampled per sampling session (resulting in a target of 150 black sea bass sampled per month). The realized sampling frequency, however, varies widely as it depends on a variety of factors, including weather, seasonal black sea bass distribution and catch, and fishery status. For this pilot project, we will maintain this sampling target for the Gulf of Maine

vessels. At the conclusion of the pilot year, PIs will evaluate if this goal is feasible based on project results and participant feedback. Participants will be compensated with a sampling stipend each month they catch and sample black sea bass. Stipend amounts will remain the same as current Black Sea Bass Research Fleet stipends. Participants will receive $600 each month they sample at least half of the targeted number of black sea bass (75 fish). Stipends will be prorated to $300 if the number of sampled fish is at least one but less than 75 fish. Participants will submit invoices to CFRF each month they sample, and CFRF will distribute stipends directly to participants.

Internal Data Analysis:

The data collected during this pilot project will be used to better characterize the biology, catch, bycatch, and fishery characteristics of black sea bass in the GOM region. After the pilot year of the project, PIs will conduct exploratory analyses on the gear-specific and spatiotemporal patterns in catch composition and determine which further analyses may be warranted. As described in the Data Delivery Plan, data will also be regularly shared with ACCSP, participant fishermen, stock assessment scientists, and fisheries managers for further analysis and application.

Outreach:

Education, outreach, and ongoing communication are an integral part of the overall work plan for the proposed project. These components support the goal of fostering collaborative working partnerships among scientists, managers, and members of the fishing industry through all phases of research, as well as the goal of ensuring the project is as impactful as possible.

As described previously, project staff will share project information and data with a variety of interest groups, including the commercial fishing industry, stock assessment scientists, fisheries managers, state and federal agencies, and outside researchers who are interested in using the Research Fleet data or learning more about its methods. To ensure the project is widely accessible and impactful, the CFRF will integrate information about this pilot project on their existing Black Sea Bass Research Fleet webpage (https://www.cfrfoundation.org/black-sea-bass-fleet), which contains an overview of the project's background, objectives, and outcomes. Additionally, the CFRF will prepare a project summary document to be displayed online, at the Commercial Fisheries Center of Rhode Island, and at industry events attended by the CFRF or ME DMR. Project updates will be shared across the CFRF's social media platforms, which have a combined audience of over 2,300, as well as in at least two posts in the CFRF's monthly newsletter, which is sent to over 1,800 subscribers. Further, the project methods and results may be shared at a relevant scientific or management conference. Finally, project staff will host a meeting with members of the research, management, and fishing industries upon completion of the pilot project to share project results, discuss participant experiences, and highlight priorities for moving forward.

This pilot project is within the following program priority module: Biological sampling.

Geographic Location:

This proposed project would take place in Maine state waters, ranging from the New Hampshire border to the western end of Penobscot Bay. The focus of sampling in the western half of Maine

reflects where ME DMR believes black sea bass are more likely within the State and is informed by anecdotal information from fishermen. Should the pilot project indicate the presence of sea bass throughout the study region, future work could include sampling in the eastern half of the State.

Milestone Schedule:

Month	1	2	3	4	5	6	7	8	9	10	11	12
Submit permit to MEDMR	x											
Purchase supplies, recruit, and train industry members for GOM BSB fleet sampling	x	x	x									
BSB fleet data collection			x	x	x	x	x	x				
Data QA/QC and analysis			x	x	x	x	x	x	x	x		
Write and submit progress report							x					
Submit data to ACCSP					x						x	
Report writing										x	x	x

Project Accomplishments Measurement Metrics:

Project Goal	Metrics
Expand CFRF Black Sea Bass Research Fleet into the Gulf of Maine	• Number of vessels engaged in research fleet • Number of months data is collected
Improve quantity of black sea bass biological data collected in the Gulf of Maine in support of future stock assessments	• Numbers of biological data collected (e.g. length, sex)
Better characterize black sea bass biomass off Maine's coast	• Assess spatial and seasonal extent of black sea bass sampled in Maine research fleet • Assess size distribution of black sea bass sampled by Maine research fleet • Compare catches and lengths from CFRF's research fleet to MEDMR fishery independent surveys
Transmit black sea bass biological data to ACCSP	• Successful transmission of biological data from CFRF to ACCSP

Cost Summary (Budget and Budget Narrative):

		ACCSP	DMR-In kind
Personnel:			
	Marine Resource Scientist I - TBD		$12,551.00
	Marine Resource Scientist IV – Rebecca Peters		$4,732.00
	Marine Resource Scientist IV – Jesica Waller		$5,719.00
	Subtotal		*$23,002.00*
Fringe:			
	Marine Resource Scientist I - TBD		$8,357.00
	Marine Resource Scientist IV – Rebecca Peters		$3,678.00
	Marine Resource Scientist IV – Jesica Waller		$3,310.86
	Subtotal		*$15,345.86*
Contracts:			
	subaward/contract to CFRF	$45,835	
	Subtotal	*$45,835*	
Travel:			
	Training travel	$1300	
	Subtotal	*$1300*	
	Total Subtotal	$47,135.00	$38,347.86
	30% Indirect	$14,140.50	
	Total Costs (including indirect)	$61,275.50	

The budget justification for the proposed budget is below:

A. Personnel and fringe: $38,347.86 In-kind (MEDMR). ME DMR staff will play an advisory and support role in the proposed project by recruiting and training the vessels for the project. Staff will be trained by CFRF staff on data sampling procedures and will in turn train the vessel captains and crew on sampling protocols for the survey. They will also coordinate and set up each volunteer vessel with sampling equipment and be available to answer questions. ME DMR staff (Marine Resource Scientist I) will analyze the data produced from this project to evaluate spatial and seasonal trends in the black sea bass catch and will present this data to industry and appropriate management and technical working groups. Fourteen days a year of time will be spent by the Marine

Resource Scientist IVs overseeing and supporting this project by assisting in coordinating training and supervising the Marine Resource Scientist I with data analysis. The Marine Resource Scientist I will spend a week of their time a month within the year analyzing data and writing reports, coordinating and assisting with trainings for the vessels that are sampling, and coordinating with CFRF staff for data sharing.

B. Contracts: $45,835.00 ME DMR will provide a subaward to the Commercial Fisheries Research Foundation for this project so they can provide ME DMR the training, supplies, and support necessary for this sampling. Data collected from this project is automatically uploaded to CFRF's database and staff will also assist in sharing the data back to ME DMR for additional analysis. CFRF staff will also be responsible for submitting data to ACCSP following their current protocol for data submission with their Black Sea Bass Research Fleet.
C. Travel - $1,300.00 Travel to CFRF offices for an incoming Marine Resource Scientist I and a supervisor from ME DMR for two days of training on the sampling protocols, data collection application, database structure, and related considerations.
D. Indirect: $14,140.50 The Department of Marine Resources has an indirect cost rate of 34.3%; however, our Commissioner has authorized this proposal to use the lower rate of 30% (see attachment 1). These indirect funds are a necessity to help defray and offset the administrative costs associated with this project and the associated contracts.

Attachment 1: Negotiated Indirect Cost Agreement

Department of Marine Resources

INTEROFFICE MEMORANDUM

TO: FILE

FROM: PATRICK KELIHER, COMMISSIONER

SUBJECT: RATE USED FOR COST ALLOCATION

DATE: 6/6/2024

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 2024 ending June 30, 2024. The indirect cost rate proposal is 33.70%. I am authorizing the use of the lesser rate of **30%** to be used during this period.

ACCSP Annual RFP
"Expanding the Commercial Fisheries Research Foundation's Black Sea Bass Research Fleet into the Gulf of Maine"
(March 1, 2025 – February 28, 2026

6/10/24

Patrick C. Keliher — Date
Commissioner

The budget and justification for the contract/subaward with CFRF is below:

	Object Class Category	Proposal Cost
a	Personnel	
	- Executive Director (1% of time)	$ 1,600
	- Research Scientists (15% of time)	$ 10,635
	- Business Manager (1% of time)	$ 604
	Total CFRF Personnel Costs	$ 12,839
b	Fringe Benefits Proposed at 10% of Personnel Costs	$ 1,284
c	Travel	$ 1,500
d	Equipment	$ -
e	Supplies	
	- Research Supplies Tablets, waterproof cases, stylus, fish measuring boards (5 sets @$500 each)	$ 2,500
	- Office Supplies Database storage, meeting expenses, etc.	$ 250
	Total Supplies	$ 2,750
f	Contractual	
	- Programmer for On-Deck Data database	$ 500
	Total Contractual	$ 500
g	Construction	$ -
h	Fishing Vessels -5 vessels in fleet for 12 months	
	- Monthly sampling stipends - $600/month @50% sampling rate	$ 18,000
	- Training stipends - $250/vessel one time	$ 1,250
	Total F/V Stipends	$ 19,250
i	Total Direct Charges	$ 38,123
j	Indirect Charges Proposed at 20.23% of CFRF Direct Charges	$ 7,712
k	Total Proposal Costs	$ 45,835

CFRF subaward budget justification*:*

The total proposed budget requested by the Commercial Fisheries Research Foundation (CFRF) for all components of the work is $45,835 for 12 months. The proposed timeframe is March 1, 2025 to February 28, 2026. The proposed budget justification for all cost items includes the following:

a. Personnel: $12,839. This includes the wages for the following CFRF personnel for time spent working directly on the project:
   1. Executive Director – $1,600. D. Bethoney, CFRF Executive Director, will oversee the project's administration, team communication/coordination, field research, and

outreach aspects. He will also directly assist with reports, outreach material development, and communication of project progress and results to the team and fishing industry.
Proposed at 1.0% of time = $160,000 x 1% = $1,600

2. Research Scientists – $10,635. The CFRF Research Scientists will be the primary individuals responsible for the fleet organization, maintenance, and support, as well as data management, communication, and analysis. They will also support the Executive Director in project oversight tasks.
Proposed at 15% of time = $70,900 x 15% = $10,635.
3. Business Manager – $604. T. Winneg, CFRF Business Manager, will carry out all the finance-related aspects of the project, including research budget tracking, invoice processing, administrative support tasks, and purchasing supplies.
Proposed at 1.0% of time = $60,400 x 1.0% = $604

b. Fringe Benefits: $1,284. This includes a percentage of Personnel Costs for payroll taxes and worker's compensation insurance prorated in accordance with the percentage of salary paid from the program. Benefits are proposed at 10% of personnel costs based on 2023 benefits and historical analysis.

c. Travel: $1,500. Travel costs for two project staff to travel to Boothbay Harbor, Maine, to train and share results with industry and other project participants as needed. Costs include mileage (265 miles x $0.67 x 2 = $355), lodging ($325/night x 2 = $650), per diem ($59 x 2 days x 2 = $236) and incidentals ($259).

d. Equipment: $0.

e. Supplies: $2,750. This includes costs for project materials for field work, fleets, project meetings, outreach events, and other miscellaneous supplies.

1. Project Office Supplies $250. Costs to cover supplies for meetings and outreach materials, including mailings, binders, and posters. Proposed at $250.
2. Research Supplies $2,500. Costs of at-sea research supplies, including tablets, tablet cases, and fish measuring boards. Proposed total of 5 sets at $500 per set.

f. Contractual: $500. This includes the following costs:
1. Don Coxe Consulting $500. Costs to maintain or modify the On-Deck Data App.

g. Construction. $0. Not applicable.

h. Other Costs: $19,250. This includes the following costs:

1. Fishing Vessel Stipends $18,000. A fleet of 5 vessels will be utilized each month to obtain the proposed biological samples. The total stipend is computed at 50% due to fluctuations in vessel sampling associated with weather, vessel maintenance, and seasonal black sea bass distribution. The costs are proposed for 5 vessels for 12 months at $600 per month at a sampling rate of 50%. (5 vessels x 12 months x $600 x 50% = $18,000)

2. Fishing Vessel Training Stipends $1,250. Each vessel will receive a training stipend of $250.

i. Total Direct Charges: $38,123. This is the total direct charges for cost items a-h.

j. Indirect Charges: $7,712. Indirect general and administrative costs are calculated as 20.23% of the requested Total Direct Charges. Indirect general and administrative costs are used to cover costs associated with the general operations of the CFRF, including accounting services, legal services, maintenance of office space, liability insurance, payroll fees, phone/fax lines, internet service, board member participation, etc. The CFRF Indirect Cost Rate Agreement for FY2025 is 20.23% dated 5/6/24 based on FY2023 actuals.

k. Total Proposal Costs: $45,835.

Funding Transition Plan:

This proposal is for a one-year pilot study to pilot the commercial fishing industry-based Black Sea Bass Research Fleet approach to collect biological and fishery data on black sea bass in the Gulf of Maine. If successful, the project team will apply for additional funding to continue and expand data collection beyond the first year (pilot phase). Project staff from the Commercial Fisheries Research Foundation have previously been successful at piloting the Black Sea Bass Research Fleet in Southern New England and the Mid-Atlantic through ACCSP and securing maintenance funding through ACCSP to continue Black Sea Bass Research Fleet data collection for an additional six years (the maximum allowed through ACCSP). Since then, project staff have secured Congressionally Directed Spending funding to maintain the Black Sea Bass Research Fleet's data collection in Southern New England and the Mid-Atlantic for an additional five years.

Summary of Proposal For Ranking Purposes

Project Type: New

Primary Program Priority *(10 pts)**:*** Biological Sampling

Data delivery plan (2 pts): This project includes a data delivery plan through which CFRF will regularly share data with ACCSP, ME DMR, fishing industry participants, stock assessment scientists, and managers.

Project Quality Factors

Multi-Partner/Regional Impact (3 pts):

This proposal includes a partnership between the Maine Department of Marine Resources, the Rhode Island based Commercial Fisheries Research Foundation, and the Gulf of Maine pot/trap and hook and line fisheries. The results of the proposed project have regional impacts and broad applications, as black sea bass are expanding to inhabit and potentially be harvested from the majority of the US east coast. This project will test the benefit of expanding CFRF's Black Sea Bass Research Fleet to the Gulf of Maine as a way to gain a better understanding in the distributional shift in black sea bass populations. Current fishery-independent surveys that occur in Maine state waters have encountered black sea bass in low numbers, potentially due to the fact these surveys do not cover the habitats black sea bass prefer an/or do not overlap with the timing black sea bass are in coastal Maine waters. Furthermore, the social and economic implications of this work could be extensive, as project data will contribute to the improvement of the northern Atlantic black sea bass stock assessment and management.

Contains Funding Transition Plan (4 pts):

This proposal contains a funding transition plan to evaluate the success of the pilot project and, if deemed appropriate, apply for long-term funding to continue data collection.

In-Kind Contribution (2 pts):

This proposal includes 38% in kind contribution which equates to points.

Improvement in Data Quality/Quantity/Timeliness (4 pts):

This project will fill data gaps for black sea bass, which are ranked as a high-priority species with inadequate biological sampling by ACCSP. The project will increase fishery-dependent data for the northern stock of black sea bass as a whole as well as specifically increase data in the Gulf of Maine which is currently under sampled for black sea bass. Data will be available for stock assessment and management efforts in near real-time.

Potential Secondary Module as a By-Product (3 pts):

Catch and Effort: This project will start collecting black sea bass catch data in the Gulf of Maine by two industries: lobster pot and hook-and-line. This project will provide insight into the potential availability and catch of legal sized black sea bass by these industries.

Impact on Stock Assessment (3 pts):

Biological data from the Commercial Fisheries Research Foundation's Black Sea Bass Research Fleet was included in the 2023 Research Track Stock Assessment and is currently being included in the 2024 Management Track Stock Assessment for northern black sea bass (NEFSC 2023). The data is used in the assessment model to inform discards-at-length and catch-at-age estimates. As the Research Fleet is now a vetted input for the stock assessment, all biological data collected in this pilot project will be shared with stock assessment scientists moving forward to be directly included in the stock assessment. Research Fleet data is also being evaluated to contribute to a fishery-dependent index of abundance for northern black sea bass, which could be included in future assessments.

Other factors

Innovative (3 pts):

This project will utilize the innovative fishing-industry based Research Fleet approach, which is a demonstrated cost and time-efficient method to collect large amounts of fishery-dependent data for under sampled species and species undergoing rapid changes, such as black sea bass (Heimann *et al.,* 2023). The data from this project will help determine if current fishery-independent surveys are accurately representative of the presence of black sea bass in the Gulf of Maine through comparison of catches from this project to the current surveys ongoing in Maine.

Properly Prepared (1 pt):

This proposal follows the guidelines provided in the ACCSP Funding Decision Document.

Merit (3 pts): The pilot project we propose here would fill a high priority data gap using the already established CFRF Black Sea Bass Research Fleet. This collaboration between CFRF and ME DMR would promote sustainable management of this key indicator species and provide baseline data and framework for potential expansion of this program. ME DMR is always looking to efficiently fill data gaps in support of robust fisheries management.

References

Heimann, T., Verkamp, H., McNamee, J. and Bethoney, N.D. 2023. Mobilizing the fishing industry to address data gaps created by shifting species distribution. Frontiers in Marine Science, 10, p.1043676.

Northeast Fisheries Science Center (NEFSC). 2023. Report of the Black Sea Bass (*Centropristis striata*) Research Track Stock Assessment Working Group. https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php

Rebecca Peters
Maine Department of Marine Resources
rebecca.j.peters@maine.gov

Related Experience

Marine Resource Scientist IV October 2023
Maine Department of Marine Resources, West Boothbay Harbor, ME

- Director for the Division of Ecology and the Environment within the Bureau of Marine Science that oversees research programs surrounding offshore wind, highly migratory species, the ME-NH Inshore Trawl Survey, Maine Coastal Mapping Initiative, halibut, and technology advancements for programs within DMR.

Marine Resource Scientist II March 2018-October 2023
Maine Department of Marine Resources, West Boothbay Harbor, ME

- Groundfish Biologist and lead scientist of the Maine-New Hampshire Inshore Trawl Survey

NOAA Sea Grant Knauss Fellow February 2017–January 2018
NOAA Fisheries Office of Science and Technology

- Served as the habitat and ecosystem science coordinator for NOAA Fisheries Office of Science and Technology's Habitat Science program as a NOAA Sea Grant Knauss Fellow
- Updated NOAA Fisheries' Habitat Assessment Improvement Plan to align goals with Ecosystem Based Management, supported the Ecosystem Science and Management Working Group of the NOAA Science Advisory Board, and coordinated a workshop and report to develop recommendations to improve NOAA Fisheries' ability to conduct benthic habitat mapping on fishery survey vessels
- Managed the FY18 Habitat Information for Stock Assessments call for proposals

Research Assistant June 2014 – January 2017
University of Maryland Eastern Shore

- Developed and conducted a research project to assess habitat preference and potential site fidelity of juvenile black sea bass in the Maryland Coastal Bays for completion of a master's degree Thesis titled: "Investigations into the ecology of juvenile black sea bass, *Centropristis striata,* in the Maryland coastal bays"
- Examined spatial and temporal distribution in abundance of black sea bass in the Maryland juvenile finfish trawl survey from 1989-2013
- Supervised two interns during completion of research projects

Education

M.S. Marine, Estuarine, and Environmental Science December 2016
University of Maryland Eastern Shore, Princess Anne, MD

- Thesis title: "Investigations into the ecology of juvenile black sea bass, *Centropristis striata,* in the Maryland coastal bays"

B.S. Biology December 2012
Old Dominion University, Norfolk, VA

Selected Publications and Technical Memos

- Waller, J., Bartlett, J., Bates, E., Bray, H., Brown, M. , Cieri, M., Clark, C., DeVoe,, W. Donahue, B., Frechette, D., Glon, H., Hunter, M., Huntsberger, C., Kanwit, K., Ledwin, S., Lewis, B., **Peters, R**, Reardon, K., Russell, R., Smith, M., Uraneck, C., Watts, R., Wilson, C. 2023. Reflecting on the recent history of coastal Maine fisheries and marine resource monitoring: the

value of collaborative research, changing ecosystems, and thoughts on preparing for the future. ICES Journal of Marine Science. https://doi.org/10.1093/icesjms/fsad134

- LaFreniere, B.R., **Peters, R.,** Donahue, B., McBride, R., Mohan, J.A. 2023. What the Hake? Correlating Environmental Factors with Hake Abundance in the Gulf of Maine. Journal of Northwest Fishery Science. In review.
- Chapman, E.J., Byron, C.J., Lasley-Rasher, R., Lipsky, C., Stevens, J.R., **Peters, R**. 2020. Effects of climate change on coastal ecosystem food webs: implications for aquaculture. Marine Environmental Research. 162. https://doi.org/10.1016/j.marenvres.2020.105103.
- **Peters, R.**, A.R. Marshak, M.M. Brady, S.K. Brown, K. Osgood, C. Greene, V. Guida, M. Johnson, T. Kellison, R. McConnaughey, T. Noji, M. Parke, C. Rooper, W. Wakefield, and M. Yoklavich. 2018. Habitat Science is a Fundamental in an Ecosystem-Based Fisheries Management Framework: An Update to the Marine Fisheries Habitat Assessment Improvement Plan. U.S. Dept. of Commerce, NOAA. NOAA Technical Memorandum NMFS-F/SPO-181, 29p.
- **Peters, R.** and P. Chigbu. 2017. Spatial and Temporal Patterns of Abundance of Juvenile Black Sea Bass (*Centropristis striata*) in the Maryland Coastal Bays. Fishery Bulletin. 115(4): 504-516. Doi: 10.7755/FB.115.4.7

Selected Presentations

- **Peters, R**. E. Bates, J. Waller, and C. Guenther (2023, August). "Who's eating juvenile lobsters?": An evaluation of lobster predation in the Gulf of Maine using stomach content analysis. 153rd American Fisheries Society Annual Meeting, Grand Rapids, MI.
- Marshak, A.M., S.K. Brown, and **R. Peters.** (2017, August). Habitat Science is an Essential Element of Ecosystem-Based Fisheries Management. 147th American Fisheries Society Annual Meeting, Tampa, FL.
- **Peters, R.** and P. Chigbu (2016, February). Temporal Variation in Juvenile and Young-of-the-Year Black Sea Bass Abundance in the Maryland Coastal Bays. Ocean Sciences Meeting, New Orleans, LA.

Boards and Committees

- NERACOOS Board – December 2023-present
- Maine Climate Council Coastal and Marine Working Group Staff, 2019-present
- ASMFC NEAMAP Operations Committee, Vice chair, April 2018-present
- ASMFC NEAMAP Survey Technical Committee, April 2018-present
- NEFMC Groundfish PDT, March 2019-present

Awards and Fellowships

- 2017 NOAA Sea Grant John A. Knauss Marine Policy Fellowship
- American Fisheries Society Tidewater Chapter Eileen Setzler-Hamilton Memorial Scholarship (April 2016)
- NSF CREST-CISCEP Graduate Research Assistantship (2014-2016)

Jesica Waller
Maine Department of Marine Resources
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Jesica.d.waller@maine.gov

PROFILE:

- Knowledge and oversight of the State of Maine's programs to research, monitor, and compile data from commercial and recreational coastal marine fisheries. This includes coordination of research plans across programs and with external research partners.
- Knowledgeable of Maine's fishing industries and how they operate.
- Knowledgeable about state and federal funding structures to support this work.

EDUCATION:

B.S. Marine and Freshwater Biology, University of New Hampshire, Durham, NH 2009
M.S. Marine Biology, University of Maine, Orono, ME 2016

EMPLOYMENT EXPERIENCE:

July 2022 – Present **Marine Resource Scientist IV**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Division Director for the Division of Biological Monitoring and Assessment
- Oversee fishery monitoring and research for commercially important marine species
- Lead research around emerging fisheries and climate related topics
- Supervise a staff of 35 MEDMR researchers and maintain external collaborations
- Hire, train, and supervise research staff and students supported by MEDMR programs
- Write research proposals to federal agencies to obtain funding for MEDMR programs
- Coordinate the drafting and submission of all federal grant reporting requirements
- Conduct research and analyses, and write and review reports on timely research questions
- Work with diverse stakeholders to coordinate research in support of MEDMR priorities
- Represent MEDMR on state, regional, and federal research panels
- Advise senior staff on issues ranging from new research findings to funding opportunities

March 2018 – July 2022 **Marine Resource Scientist III**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Lead question-based lobster research to support the management of the Maine lobster fishery
- Build research collaborations, submit proposals for funding and author research publications
- Co-develop the MEDMR wet lab and serve as the point person for biosecurity
- Represent MEDMR at regional meetings, research conferences, and the Maine Climate Council
- Coordinated the MEDMR Lobster Research Collaborative and organized quarterly meetings

Jan. 2017 – March 2018 **Research Technician**
Bigelow Laboratory for Ocean Sciences
East Boothbay Harbor, ME

- Designed and performed laboratory and field experiments for grant funded projects
- Contributed to authorship of peer-reviewed publications and federal/state grant proposals
- Led field and lab-based data collection for multiple projects with no supervision
- Supervised and developed research projects for summer undergraduate interns

Sept. 2014 – Dec. 2016 Graduate Student and Canadian American Center Fellow
University of Maine (UMaine), Darling Marine Center
Walpole, ME

- Thesis title: Linking Rising pCO_2 and Temperature to the Larval Development, Physiology and Gene Expression of the American Lobster (*Homarus americanus*)
- Completed all thesis research and coursework and secured fellowship funding annually

Selected Publications

1. **Waller, J.,** Bartlett, J., Bates, E., Bray, H., Brown, M., Cieri, M., ... & Wilson, C. (2023). Reflecting on the recent history of coastal Maine fisheries and marine resource monitoring: the value of collaborative research, changing ecosystems, and thoughts on preparing for the future. *ICES Journal of Marine Science*, *80*(8), 2074-2086.
2. Ellertson, A. A., **Waller, J. D.,** Pugh, T. L., & Bethoney, N. D. (2022). Differences in the size at maturity of female American lobsters (*Homarus americanus*) from offshore Southern New England and eastern Georges Bank, USA. *Fisheries Research*, *250*, 106276.
3. McClenachan, L., Record, N. R., & **Waller, J. D**. (2022). How do human actions affect fisheries? Differences in perceptions between fishers and scientists in the Maine lobster fishery. *FACETS, 7*(1), 174-193.
4. **Waller, J. D**., Reardon, K. M., Caron, S. E., Jenner, B. P., Summers, E. L., & Wilson, C. J. (2021). A comparison of the size at maturity of female American lobsters (*Homarus americanus*) over three decades and across coastal areas of the Gulf of Maine using ovarian staging. *ICES Journal of Marine Science*, *78*(4), 1267-1277.
5. **Waller, J.D**., Reardon, K.M., Caron, S.E., Masters, H.M., Summers, E.L. & Wilson, C.J. (2019). Decrease in size at maturity of female American lobsters *Homarus americanus* (H. Milne Edwards, 1837) (Decapoda: Nephropidae) over a 50-year period in Maine, USA. *Journal of Crustacean Biology*, *39*(4), 509-519.
6. **Waller, J. D.,** Wahle, R. A., McVeigh, H., & Fields, D. M. (2017). Linking rising pCO_2 and temperature to the larval development and physiology of the American lobster (*Homarus americanus*). *ICES Journal of Marine Science*, *74*(4), 1210-1219.

Synergistic Activities

2021-present *Steering Committee Member,* Maine Ocean and Coastal Acidification Partnership
2021-present *Advisory Committee Member*, Dalhousie University (PhD student, M. Rampual)
2021-present *Reviewer*, *Journal of Crustacean Biology*
2019-present *Agency support,* Maine Climate Council, Coastal and Marine Working Group
2019-present *Reviewer*, *Canadian Journal of Fisheries and Aquatic Sciences*
2018-2022 *Coordinator*, Maine Department of Marine Resources Lobster Research Collaborative
2017-present *Reviewer*, *ICES Journal of Marine Science*

Corrin Flora
Maine Department of Marine Resources
corrin.flora@maine.gov

RELATED EXPERIENCE

Marine Resources Management Coordinator – *Maine Department of Marine Resources, Augusta, ME* **February 2024 – Present**

- Provide policy guidance to department staff, plan and facilitate meetings, public outreach, creating documents, communicating with a wide range of stakeholders and division management.
- Attend and participate in Atlantic States Marine Fisheries Commission and federal council interjurisdictional management meetings, work groups, committees, and teams as needed. Write reports, compliance, plans, and comments. Review and comment on management and rule documents.
- Manage state ground fish permit bank through cooperation with Maine sectors and NOAA fisheries.

Fisheries Management Plan Coordinator - *North Carolina Division of Marine Fisheries, Morehead City, NC* **June 2020 – February 2024**

- Provide leadership and policy guidance throughout the division fishery management plan (FMP) process; including planning and facilitating meetings, public outreach, creating documents, communicating with a wide range of stakeholders and division management, and decision making.
- Develop and ensure FMP schedules and timelines are maintained following internal FMP guidelines. Communicate with staff to facilitate tasks, anticipate problems, and recommend solutions. This includes providing alternative suggestions to how to meet deadlines.
- Hold a monthly virtual meeting to keep DMF staff informed on the status of FMPs.
- Coordinate and participate in Director's Review Team, advisory committees, cross-sectional programs, FMP schedule, strategic planning, meetings, public engagement, and biologist training.
- Serve on committees and workgroups in absence or support of Section Chief.

Biologist I - *North Carolina Division of Marine Fisheries, Elizabeth City, NC* **JUNE 2015 - JUNE 2020**

- Lead biologist for Atlantic Menhaden, Blue Crab, and Invasive Species.
- Member of The Gulf and South Atlantic Regional Panel on Aquatic Invasive Species, Atlantic State Marine Fisheries Commission technical committees, the NC Aquatic Nuisance Species Plan Development Team, and Plan Development Teams.
- Program lead for fisheries-independent and fisheries-dependent surveys
- Member of several division biological review teams; including gear, life history, and commercial fisheries.
- Field work conducting fish/crab house sampling; onboard sampling using water quality monitoring equipment, acoustic monitoring and water quality sondes, trawls, and gillnets; trailering and operating small vessels; and tagging fish. Support fishery data collection.
- Analyze and summarize data for reports, stock assessments, and FMPs using SAS, SQL, Microsoft Excel, PowerPoint, and Word. Using multivariate analysis and modeling to assist in data analysis.

Biological Science Laboratory Technician - *USDA ARS, Stoneville, MS* **JUNE 2013 - JUNE 2015**

- Prepare and maintain fish culture tanks used in research projects through all catfish life stages. This includes light plumbing, biological security, proper cleaning, feeding, monitoring fish health, anesthetizing fish, euthanizing fish, and proper animal handling.
- Coordinate and implement experimental setup, breakdown, and data collection/maintenance.

- Assist in necropsies, biopsies, tissue sampling, sample preparations, and morphological, biochemical, histological, and physiological measurements or analysis.
- Calibrate, perform maintenance, and properly operate laboratory equipment; including spectrophotometers, ion analyzers, osmometers, centrifuges, freezers, and incubators.

Biologist: Vessel Call-in Coordinator - *Integrated Statistics, Falmouth, MA* **JUNE 2006 - JUNE 2011**

- NOAA Fisheries Northeast Fisheries Science Center Industry Funded Scallop Observer Program Vessel Call-In Coordinator. Review, catalog, and select coverage of declared scallop trips through randomized selection process for fair, equitable, and representative coverage. Monitor coverage and compliance across various areas and permit types. Communicate with service providers and the office of law enforcement as needed.
- Prepare outreach materials
- Attend New England Fisheries Management Council, Scallop Committee, and Scallop Plan Development Team meetings as needed. Provide guidance on sea scallop management plans.
- Participate in at sea surveys and commercial scallop trips.

Commercial Fisheries Observer - *AIS inc, New Bedford, MA* **MARCH 2004 - MARCH 2005**

- Accompany commercial fishing operations on 1 to 14 day trips. Record information on vessel, gear, catch/discard information, species identification, measurements, and biological samples.
- Record incidental takes of marine mammals, sea turtles, and sea birds.

EDUCATION

M.S. Wildlife, Fisheries, and Aquaculture, Mississippi State University, Mississippi State, MS - *2013*
B.S. Marine Science, Southampton College Long Island University, Southampton, NY - 2003

SELECTED PAPERS

- Anstead, KA, K Drew, D Chagaris, A Schueller, JE McNamee, A Buchheister, G Nesslage, JH Uphoff Jr, MJ Wilberg, A Sharov, MJ Dean, J Brust, M Celestino, S Madsen, S Murray, M Appelman, JC Ballenger, J Brito, E Cosby, C Craig, C Flora, K Gottschall, RJ Latour, E Leonard, R Mroch, J Newhard, D Orner, C Swanson, J Tinsman, E Houde, TJ Miller, H Townsend. The Path to an ecosystem approach for forage fish management: A case study of Atlantic menhaden. Frontiers in Marine Science, 8 (2021):491.
- Peterson, BC, C Flora, M Wood, BG Bosworth, S Quiniou, TE Greenway, TS Byars, DJ Wise. Vaccination of full-sib channel catfish families against enteric septicemia of catfish with an oral live attenuated Edwardsiella ictalurid vaccine. Journal of the World Aquaculture Society. 47(2). (2016)
- Baker, BH, R Kröger, JD Prevost, T Pierce, JJ Ramirez Avila, JM Prince Czarnecki, D Faust, C Flora. A field scale investigation of nutrient and sediment reduction efficiencies of a low-technology best management practice: low-grade weirs. Ecological Engineering, 91 (2016):240-248.
- Flora C., Kröger K. Use of vegetated drainage ditches and low-grade weirs for aquaculture effluent mitigation: I. Nutrients Aquaculture Engineering 60 (2014) 56-62
- Flora C., Kröger K. Use of vegetated drainage ditches and low-grade weirs for aquaculture effluent mitigation: II. Suspended Sediment Aquaculture Engineering 60 (2014) 68-72
- Kröger R., Prevost D., Littlejohn T., Henderson J., Pierce S., Flora C., Poganski B. Evidence towards sediment accumulation characteristics of slotted pipes as best management practices on agricultural landscapes. Ecological Engineering 51 (2013) 249-255

Hannah J. Verkamp

Commercial Fisheries Research Foundation
hverkamp@cfrfoundation.org
(401) 515-4892

Education

Master of Science, Marine Science. University of New England, Biddeford, ME

Bachelor of Science, Biological Sciences, *summa cum laude*. University of Arkansas, Fayetteville, AR.

Relevant Work Experience

Senior Research Associate February 22, 2024 – Present
Commercial Fisheries Research Foundation
61B East Farm Rd Kingston, RI 02881

- Leading the foundation's research on black sea bass and supervising research biologists
- Developing, managing, and evolving all phases of fisheries research projects
- Managing outreach activities for all of the organization's research projects, including tracking deliverables and reporting to funding agencies
- Expanding and improving the organization's outreach program to reach broader audiences and include new Diversity, Equity, and Inclusion initiatives
- Continuing duties described for the Research Biologist position below

Research Biologist February 21, 2021 – February 21, 2024
Commercial Fisheries Research Foundation
61B East Farm Rd Kingston, RI 02881

- Collaborated with internal and external stakeholders, including scientists, fishing industry members, and fisheries management professionals, to develop and lead research projects
- Collected fishery, biological, and environmental data at-sea and on-land
- Reviewed data and performed quality control/quality assurance checks
- Used statistical programs such as R, SQL, and Excel to manage and analyze data and produce publication-quality figures and tables
- Led meetings and workshops with fishery stakeholders, including fishermen, state and federal agencies, fishery managers, and other academic and nonprofit institutions
- Reported findings and managing deliverables for research projects
- Wrote grant proposals, reports, and scientific publications
- Communicated audience-appropriate scientific, technical, and programmatic information orally and in written format to a variety of audiences

Selected Publications

Verkamp HJ, Heimann T, McNamee J, Jones A, and Bethoney ND. (2023). An Overview of the Commercial Fisheries Research Foundation and Rhode Island Department of Environmental Management Black Sea Bass Research Fleet: A Working Paper for the 2022 Black Sea Bass Research Track Stock Assessment. Report of the Black Sea Bass (*Centropristis striata*) Research Track Stock Assessment Working Group.

Heimann T, McNamee J, **Verkamp HJ**, Bethoney ND. (2023). Mobilizing the Fishing Industry to Address Data Gaps Created by Shifting Species Distribution. *Frontiers in Marine Science,* 10, https://doi.org/10.3389/fmars.2023.1043676

Verkamp HJ, Nooij J, Helt W, Ruddock K, Gerber Williams A, McManus MC, Bethoney ND. (2022). Scoping Bay Scallop Restoration in Rhode Island: A Synthesis of Knowledge and Recommendations for Future Efforts. *Journal of Shellfish Research*, 41(2): 153-171, https://doi.org/10.2983/035.041.0201

Verkamp HJ, Hammerschlag N, Quinlan J, Langan JA, and Sulikwoski JA. (2022). Preliminary investigation of reproductive hormone profiles in the blacktip shark (Carcharhinus limbatus), a placental viviparous species, in southern Florida. *Marine and Freshwater Research*, 73(4), 8pp. doi.org/10.1071/MF21235

Verkamp HJ, Skomal G, Winton M, and Sulikowski JA. (2021) Using reproductive hormone concentrations from the muscle of white sharks (*Carcharodon carcharias*) to evaluate life stage and potential habitat use in the coastal waters of Cape Cod, Massachusetts. *Endangered Species Research*, 44: 231-236 doi.org/10.3354/esr01109

Selected Presentations

Verkamp, HJ, McNamee, J, and Bethoney ND. (2024). Empowering fishermen to fill data gaps for a rapidly changing fishery: The Black Sea Bass Research Fleet. World Fisheries Congress. Seattle, WA. Poster.

Verkamp HJ, Huntsberger C, Bethoney ND. (2023). Augmenting an offshore wind farm monitoring survey to incorporate biological condition monitoring. Annual Meeting of the American Fisheries Society. Grand Rapids, MI. Poster.

Verkamp HJ, Heimann T, McNamee J, Bethoney ND. (2021). Using a fishery-dependent research fleet approach to characterize the composition of black sea bass (*Centropristis striata*) discards in the Southern New England and Mid-Atlantic fishery. Annual Meeting of the American Fisheries Society. Baltimore, MD. Oral.

Verkamp HJ, Skomal G, Winton M, Sulikowski JA. (2019) First observations of reproductive hormone concentrations in white shark (*Carcharodon carcharias*) skeletal muscle tissue. Joint Meeting of Ichthyologists and Herpetologists. Snowbird, UT. Oral.

Dr. NAIFF DAVID BETHONEY
Executive Director
Commercial Fisheries Research Foundation
P.O. Box 278
Saunderstown, RI
401-515-4662, dbethoney@cfrfoundation.org

EDUCATION:

University of Massachusetts at Dartmouth School for Marine Science and Technology
PhD Dissertation: Understanding and avoiding River herring and American shad bycatch in the Atlantic herring and mackerel mid-water trawl fisheries.
Cum. GPA: 3.92 PhD Received 2013

MA Thesis: Association between diet and epizootic shell disease in the American lobster (*Homarus americanus*) around Martha's Vineyard
Cum. GPA: 3.93 M.S. Received 2010

Colby College - Waterville, ME
Major: Biology with Concentration in Environmental Science
Cum. GPA: 3.41, Cum Laude B.A. Received 2008

RECENT WORK EXPERIENCE:

- Commercial Fisheries Research Foundation Spring 2020-Presesent

Executive Director: Responsible for overseeing foundation business manager, scientific staff, interns, and consultants to carry out all tasks associated with ongoing projects and general administration. In addition, responsible for pursuing new partnerships and projects, including proposal development and submission, under the advisement of the foundation Board of Directors. Served on New England Fishery Management Council's Sea Scallop Survey Working Group and serves as a Responsible Offshore Science Alliance research advisor and on the Rhode Island Marine Fisheries Council.

- UMASS-Dartmouth School for Marine Science and Technology Fall 2008-Spring 2020

Research Assistant Professor, Fall 2014-Spring 2020: All responsibilities of research associate position related to drop camera and herring work with the ability to be lead principal investigator on research proposals and serve on student committees.

Research Associate, Summer 2013-Summer 2014: All responsibilities of research assistant position described below with management and development responsibilities for scallop drop camera and groundfish video surveys. Management responsibilities include equipment purchasing and maintenance and oversight of all technical operations and student involvement.

Research Assistant, Summer 2010- Spring 2013: Major responsibilities included coordinating River Herring bycatch avoidance program, assisting the Massachusetts Division of Marine Fisheries port side sampling program, and scallop drop camera survey at-sea data collection and analysis.

Graduate Research Assistant, Fall 2008-2010: Assisted with American lobster research including lobster husbandry, measuring and photographing lobsters, collecting larvae, and setting up housing apparatuses.

SCIENTIFIC JOURNAL PUBLICATIONS (LAST 3 YEARS):

1. Huntsberger CJ, Shank B, McManus MC, Ellertson AE, Bethoney ND. 2024. Industry reported biological data informs population demographics and commercial fleet heterogeneity for American lobster (Homarus americanus). Fisheries Research. 273. DOI: 10.1016/j.fishres.2024.10695

2. Arnott SA, Long MP, Ellertson AE, Bethoney ND. 2023. American lobster and Jonah crab populations inside and outside the Northeast Canyons and Seamounts Marine National Monument, USA. Marine and Coastal Fisheries 15(5). DOI: 10.1002/mcf2.10266.

3. Olsen NA, Bahr F, Bethoney ND, Mercer AM, Gawarkiewicz G. 2023. Integrating fishers' knowledge with oceanographic observations to understand changing ocean conditions in the Northeast United States. Frontiers in Marine Science. 10:1144178.

4. Heimann T, Verkamp HJ, McNamee J, Bethoney ND. 2023 Mobilizing the fishing industry to address data gaps created by shifting species distribution. Frontiers in Marine Science. 10:1043676.

5. Verkamp HJ, Nooj J, Helt W, Ruddick K, Gerber-Williams A, McManus MC, Bethoney ND. 2022. Scoping bay scallop restoration in Rhode Island: a synthesis of knowledge and recommendations for future efforts. Journal of Shellfish Research 41(2):153–171

6. Ellertson AE, Waller JD, Pugh TL, Bethoney ND. Differences in the size at maturity of female American lobsters (Homarus americanus) from offshore Southern New England and eastern Georges Bank, USA. 2022. Fisheries Research. DOI: 106276

GRANTS RECEIVED AS A PRINCIPAL INVESTIGATOR (LAST YEAR):

1. "Exploring the creation of a new seafood market segment that would enhance the resiliency of small-scale commercial fishing industry in Rhode Island — March 2024
   Awarded from: University of Rhode Island
   Value: $28,387
2. "Mechanical jigs for resilience of sustainable fishing to wind farm development" — January 2024
   Awarded from: New York State Energy Research and Development Authority
   Value: $354,337
3. "Research Agreement" (Squid jigging research) — January 2024
   Awarded from: Park City Wind LLC
   Value: $50,000
4. "Research Agreement" (Squid jigging research) — January 2024
   Awarded from: Commonwealth Wind LLC
   Value: $50,000
5. "FY 2024: Advancing Fishery Dependent Data Collection for Black Sea Bass (Centropristis striata) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach" — January 2024
   Awarded from: Rhode Island Department of Environmental Management
   Value: $43,635
6. "Monitoring Technologies for Ghost Gear and Ecosystem Biodiversity" — December 2023
   Awarded from: University of Rhode Island
   Value: $515,000
7. "Determining the dose- and range-dependent impacts of windfarm noise on stress in the American lobster" — September 2023
   Awarded from: Woods Hole Oceanographic Institution
   Value: $19,820
8. "Fishermen on the frontlines of addressing modern ocean problems" — September 2023
   Awarded from: National Oceanic and Atmospheric Administration
   Value: $500,000
9. "Fostering the development of automatic squid jigging" — September 2023
   Awarded from: University of Rhode Island
   Value: $29,621
10. "Reducing small scallop and sand dollar catch through dredge bag modifications" — June 2023
    Awarded from: National Oceanic and Atmospheric Administration
    Value: $171,493
11. "Establishing the Research Fleet approach in the Atlantic sea scallop fishery" — June 2023
    Awarded from: National Oceanic and Atmospheric Administration
    Value: $204,666
12. "SRW01 – Trawl Survey" — June 2023
    Awarded from: Sunrise Wind LLC
    Value: $508,110
13. "REV01 – Trawl Survey" — June 2023
    Awarded from: Revolution Wind LLC
    Value: $508,110
14. "REV01 – Ventless Trap Fisheries Monitoring" — June 2023
    Awarded from: Revolution Wind LLC
    Value: $831,993
15. "Exploring the feasibility of a Common Spider Crab (*Libinia emarginata*) fishery" — May 2023
    Awarded from: Rhode Island Sea Grant
    Value: $5,000