

From: [Jeff Kaelin](#)
To: [Beaty, Julia](#); [Moore, Christopher](#)
Cc: [RUJIA Bi](#); [Jensen, Olaf P.](#)
Subject: FW: May 15, 2-4 pm EOP AP meeting on EFP process for forage amendment species
Date: Tuesday, May 9, 2023 6:41:51 AM

Good morning Julia – I am attaching our email to Mike Pentony, from last week, with this message and attachments:

Last week, (April 26) at our biannual meeting in Pensacola, the Science Center for Marine Fisheries Industry Advisory Board (SCMFIS IAB see: <https://scemfis.org/>) approved the attached proposal, by consensus, and, today, I am following up on your offer for our researchers to have access to and guidance from your Protected Resources staff as we work to create the documentation for GARFO to prepare a biological opinion and incidental take statement, which may allow the exempted fishery to be on the water a year from now. I am listed as the IAB project liaison and Greg has been involved in the development of this research project over the last few weeks.

Olaf needs no introduction, I am sure, but with this note, I'm happy to introduce to you our PI, Dr. Rujia Bi, who works with Olaf at the Center for Limnology at the University of Wisconsin-Madison.

Please feel free to make this information available to the EOP AP, when we meet next Monday.

Thank you.

Best regards,

Jeff

Jeff Kaelin
Director of Sustainability
and Government Relations
Lund's Fisheries, Inc.
997 Ocean Drive
Cape May, NJ 08204
C-207-266-0440



SQUID-SCALLOPS-FINFISH
www.lundsfish.com

From: [Jeff Kaelin](#)
To: [Pentony, Mike](#); [Gilbert, Emily](#)
Cc: [RUJIA BI](#); [Jensen, Olaf P.](#); [Greg DiDomenico](#)
Subject: RE: Evaluation of Thread Herring EFP

Hello Mike and Emily – It was good to see you at the Council meeting in Durham, Mike & we missed seeing you there, Emily.

As I mentioned when we talked at that time, we had solicited two proposals to respond to your February email (below), which included the attached, additional questions for resolution, a background document making certain assumptions around purse seining in the Mid-Atlantic and the potential for interactions with sea turtles and sturgeon, and a list of potential measures to mitigate take during the operation of the exempted fishery.

Last week, at our biannual meeting in Pensacola, the Science Center for Marine Fisheries Industry Advisory Board (SCEMFIS IAB see: <https://scemfis.org/>) approved the attached proposal, by consensus, and, today, I am following up on your offer for our researchers to have access to and guidance from your Protected Resources staff as we work to create the documentation for GARFO to prepare a biological opinion and incidental take statement, which may allow the exempted fishery to be on the water a year from now. I am listed as the IAB project liaison and Greg has been involved in the development of this research project over the last few weeks.

Olaf needs no introduction, I am sure, but with this note, I'm happy to introduce to you our PI, Dr. Rujia Bi, who works with Olaf at the Center for Limnology at the University of Wisconsin-Madison.

My hope in writing today is that we could all find time for a remote meeting in the near future, to discuss how best to move ahead and address any immediate questions as we prepare to do so.

We look forward to hearing back from you at your earliest convenience.

Thank you.

With best regards,
Jeff

Jeff Kaelin
Director of Sustainability
and Government Relations
Lund's Fisheries, Inc.
997 Ocean Drive
Cape May, NJ 08204
C-207-266-0440



SQUID-SCALLOPS-FINFISH

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From: Michael Pentony - NOAA Federal <michael.pentony@noaa.gov>

Sent: Friday, February 3, 2023 6:14 PM

To: Jeff Kaelin <jKaelin@lundsfish.com>

Cc: Emily Gilbert <emily.gilbert@noaa.gov>

Subject: Evaluation of Thread Herring EFP

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Jeff,

As I mentioned at the Council meeting last week, we've completed our review of your revised application for an Atlantic Thread Herring Exempted Fishing Permit (EFP). When we discussed the original EFP application that you submitted in 2021, we explained we had significant concerns about the scope of the proposed project and the extent of its potential impacts. We appreciate all the effort you invested in addressing our feedback. However, after reviewing your revised application, many issues of concern still apply. As a result, we are not able to move forward with your EFP application at this time. But, I hope that you and I can discuss this next week at the Mid-Atlantic Council meeting, and see if we can find a path forward.

Right now, our biggest concerns are as follows:

1. Protected resources: As described in your application, this project would introduce a new gear (purse seine) and increased fishing effort to the study area where the gear is not currently being fished. This could result in new and/or elevated interaction risks with protected species. Because vessels fishing under this EFP would not be declared into a federal fishery, a new Endangered Species Act (ESA) consultation is required to cover this project to ensure that any incidental takes are covered through an incidental take statement. This is necessary so that the operator of the vessel is not held liable for the take under the ESA. I've attached some specific issues and questions that we need to resolve in order to move forward with a formal consultation under the ESA that would provide the necessary coverage for the EFP. We can discuss these in more detail next week.
2. National Environmental Policy Act (NEPA) compliance: Because information about thread herring biology or the use of purse seine gear in the Mid-Atlantic is very limited, there are many

unknowns associated with this project's potential environmental impacts. Because of this, it is difficult to determine what level of NEPA analysis would be required. As currently drafted, this project would require, at minimum, an Environmental Assessment (EA) in order to document any conclusion that the fishing activity would not have a significant impact. It would be good to discuss what resources may be available, at the Council or elsewhere, to help prepare the necessary NEPA document in support of the EFP.

3. Council intent: As we discussed, we understand your intent with this EFP proposal is to determine whether it can be economically feasible to develop a thread herring fishery. This, of course, would require Council action at some point to authorize a fishery that can operate without the need for temporary EFPs. However, it is unclear whether this expectation is consistent with the Council's intent. Before we're able to commit any staff resources to further develop the EFP and attempt to address the concerns summarized above, I want to ensure that the Council fully intends to act on the data and information that would result from the EFP in order to develop and promote a thread herring fishery. Thus, I hope that we can engage Chris Moore in our discussion next week.

4. Staff resources: Completing a new ESA consultation and drafting an EA (or an EIS) would require a significant investment of staff resources. At this time, all our staff are fully engaged working on high priority fisheries and protected species issues, dictated by both the Mid-Atlantic Fishery Management Council and NOAA, and we do not have adequate capacity to dedicate to this project at this time. If we are able to engage with Chris and discuss Council intent, that also provides an opportunity to determine whether Council staff resources may be available to supplement GARFO staff to work on this effort.

I understand you are disappointed that we are unable to move forward with your project as described, but we do remain committed to working with you to determine the next steps for exploring a potential thread herring fishery. Should the Council want to consider adjusting their 2023 priorities to address this particular large-scale forage species EFP request, as currently outlined, we are ready to discuss. I'm looking forward to a discussion next week and hope we can make some progress.

Mike

--

Michael Pentony

Regional Administrator

[Greater Atlantic Regional Fisheries Office](#)

55 Great Republic Drive

Gloucester, MA 01930

Phone: 978-281-9283

Overview of Thread Herring EFP and Questions for Resolution

Purse seine fisheries in the U.S. Atlantic are known to capture sea turtles. This project is proposed to occur in the same areas and times of year when sea turtles are present. Therefore, we expect that interactions between the gear proposed for the EFP and sea turtles may occur. Atlantic sturgeon may also overlap with the proposed fishery, depending on when and where it is prosecuted.

In order to ensure the project has coverage under the Endangered Species Act, we need to prepare a formal consultation, which results in a biological opinion and an incidental take statement (ITS). The ITS provides coverage for any take of endangered species, up to the level authorized in the ITS. If the ITS is exceeded, we would reinitiate consultation to evaluate the circumstances that led to the exceedance and, if necessary, revise conservation measures and issue a new ITS.

To complete a formal consultation, we need to prepare a biological assessment that describes the project and provides the information we need to analyze the likely impacts to endangered species and generate the ITS. The biological assessment (BA) would document details about the project, including:

- Vessels
 - Number of purse vessels used per haul
 - Number of carrier or steamer vessels per haul
- Fishing Behavior and Effort
 - Area
 - What are the specific fishery statistical areas where experimental fishing will occur?
 - How is the area to be fished determined? Will a spotter plane be used (similar to the Gulf of Mexico menhaden purse seine fishery)?
 - Tow duration
 - Time to deploy and circle net
 - Time to purse net
 - Time to pump out net
 - Seasonality
 - How will the area fished vary by season?
 - How will the depth fished vary by season?
 - How will the number of trips vary by month?
 - The proposal states that per trip, one 1 to 5 sets will be taken; how will this vary by month? Do you expect more sets in one month over another?
 - Will Fish Aggregating Devices be used?
- Pumping Gear
 - Is a grate used on the pump? If yes, what are the dimensions of the grate?
 - What is the suction velocity of the pump?

Background

The determination that we need a formal consultation under the ESA is primarily related to the expectation that the incidental take of sea turtles (and possibly Atlantic sturgeon) is likely. GARFO has previously listed the Mid-Atlantic menhaden purse seine fishery under the Sea Turtle Annual Determination given concerns of sea turtle interactions with this fishery. The fishery was eligible to carry observers through 2019. We have considered relisting the fishery but have not done so as we do not anticipate having funds to observe the fishery. The Gulf of Mexico menhaden purse seine fishery is currently listed on the 2023 Sea Turtle Annual Determination given similar concerns.

In combination with an ITS, a formal biological opinion would include measures to recommended to mitigate take, including such things as:

- Post and maintain a lookout to watch for protected species in the fishing area for at least 30 minutes prior to commencing operations. If protected species are sighted, do not deploy the gear until the species has left the area or “move-on” to a different fishing area.
- Area fished. Can we restrict experimental fishing to Federal waters in depths greater than the 50-meter depth contour? This would help mitigate potential interactions with Atlantic sturgeon.
- If a sea turtle is observed enclosed in a purse seine but not entangled, it should be released immediately (e.g., by dropping the cork line) from the purse seine.
- If a sea turtle is observed entangled, fishing operations should be stopped and not start again until the turtle has been disentangled and released.
- The vessel would be expected to carry a copy of the sea turtle handling and resuscitation placard (provided by NMFS) on board and follow the requirements. In the event that a sea turtle is observed to be non-responsive, it must be brought onboard and resuscitation must be attempted.
- Potential monitoring. The project should propose to use human observers on 100% of trips, and/or to use electronic monitoring (cameras), such that cameras are mounted in a location that clearly observes the pumping operations, with a secondary camera placed in view of the dewatering grate; this is similar to the pilot observer projects being used in the southeast to monitor sea turtle bycatch in the Gulf of Mexico menhaden purse seine fishery. The EM cameras would be hydraulically triggered, and therefore turn on/off based on activation of the pump.

I/UCRC Executive Summary - Project Synopsis: Assessing the Impacts of an Atlantic Thread Herring Purse Seine Fishery on Endangered Species in the Mid-Atlantic Region		Date: April 12, 2023
Center/Site: Science Center for Marine Fisheries (SCeMFis)		
Tracking No.:	Phone: (410) 812-4842	E-mail: ojensen@wisc.edu
Center/Site Director: Eric Powell		Type: New
Project Leaders: Olaf Jensen, Rujia Bi (UW Madison)		Proposed Budget: \$52,017
<p>Project Description: Atlantic thread herring (<i>Opisthonema oglinum</i>) are believed to expand their range northward due to increasing water temperature. Lund's Fisheries, Inc. and Axelsson Seiner, Inc. are proposing to establish a purse seine fishery for this species in the mid-Atlantic region under an exempted fishing permit (EFP) that was initially submitted in October 2021 and resubmitted in December 2022. The proposed fishery has raised concerns at the Greater Atlantic Regional Fisheries Office (GARFO) about potential impacts on endangered sea turtles and Atlantic sturgeon, which may be captured as bycatch during purse seine operations. GARFO is now requiring the company to provide an environmental assessment to evaluate these potential impacts, as required by the Endangered Species Act (ESA) and National Environmental Policy Act (NEPA), before a biological opinion (BiOp) can be issued by the National Marine Fisheries Service (NMFS) to allow for the exempted fishery to operate in federal waters. The objectives of this project are to 1) assess potential impacts of the fishery on endangered sea turtles and sturgeon, as required by ESA and NEPA; and 2) produce a comprehensive environmental assessment report satisfying both ESA and NEPA requirements, along with any relevant technical reports, data, and analyses, to be submitted to GARFO to aid in the completion of the BiOp.</p>		
<p>Experimental plan: The project will utilize the best available scientific information to conduct a thorough analysis of the potential impacts of the Atlantic thread herring purse seine fishery. The assessment methodology comprises the following steps: 1) Review of relevant literature and data on environmental impacts of purse seine fishing activities, and the biology and ecology of thread herring, sea turtles and sturgeon. Available data include observer data from NMFS' Northeast Fisheries Observer Program and ASMFC. Bycatch data collected on sea turtles and sturgeon in the Atlantic menhaden purse seine fishery will serve as an analogy for analyzing potential bycatch impacts of the proposed thread herring fishery on these endangered species, given that both fisheries will operate in the same areas and seasons with similar fishing effort. 2) Assessment of potential impacts of the fishery on endangered sea turtles and sturgeon. A Bayesian spatiotemporal model will be developed to analyze the impacts of fishing activity on bycatch. This model will investigate the spatiotemporal patterns of bycatch and estimate the total bycatch in the fishery. The insights from this model will guide the development of mitigation strategies to reduce bycatch. Additionally, simulation experiments will be conducted to further explore bycatch mitigation measures based on forecasts of hotspot locations during the fishing season, May 1 through November 1. Hurdle model will be used to address the excessive number of zeroes in the data, as sea turtles or sturgeon bycatch may be infrequent in purse seine fisheries (personal communication with fishing industry). Analyses will also take the status of the bycaught animal after release (alive or dead) into account. 3) Development of a comprehensive environmental assessment report that meets the requirements of both ESA and NEPA.</p>		
Related work elsewhere: N/A	How this project is different: This project aims to support the application for the thread herring EFP and the requirements of GARFO.	
Milestones for the current proposed year: Literature review, data search and inquiry (1.5 month); Data arrangement, analyses, and model development (2 month); Assessment of potential impacts of the fishery on endangered species (1 month); Comprehensive environmental assessment report (1.5 month).		
Deliverables for the current proposed year: A comprehensive environmental assessment report satisfying both ESA and NEPA requirements, together with any relevant technical reports, data, and analyses.		
How the project may be transformative and/or benefit society: This project aims to support the application for the thread herring EFP. This fishery would provide a valuable recreational bait source, improve the resilience of the fishery in the Port of Cape May, and decrease the US' reliance on imported thread herring. This fishery would provide an alternative for Cape May menhaden fishermen and vessels during the New Jersey menhaden fishing season and take advantage of an emerging species which could be resulting from climate change.		
Research areas of expertise needed for project success: Fisheries sciences, fish biology, ecology, statistics.		
Potential Member Company Benefits: Provide environmental assessment to support the application for the thread herring EFP and provide NMFS with scientific information requested to complete the application.		
Progress to Date: The literature review is currently in progress.		
Estimated Start Date: 5/1/2023	Estimated Knowledge Transfer Date: 10/31/2023	
Project Cost: See attached budget	Vessel Requirement: N/A	



Assessing the Impacts of an Atlantic Thread Herring Purse Seine Fishery on Endangered Species in the Mid-Atlantic Region

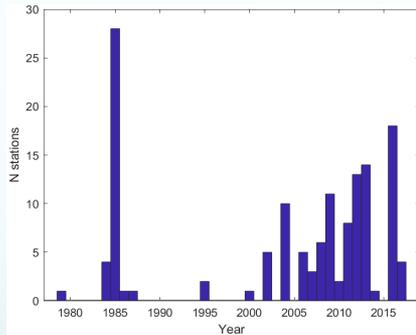
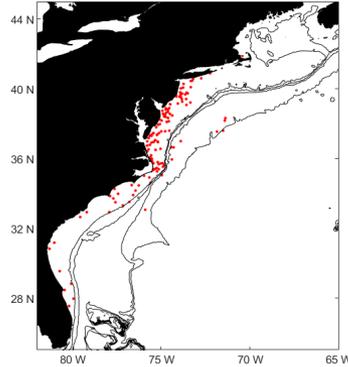
Olaf Jensen & Rujia Bi
Center for Limnology, University of Wisconsin–Madison

- IAB April 2023



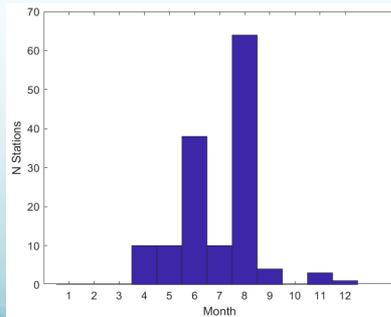
Background

Plot of tows that caught Atlantic thread herring from the NEFSC ECOMON larval fish survey.
*Data provided by NEFSC.



Number of stations by year that contained Atlantic thread herring larvae from the ECOMON survey.
*Data provided by NEFSC.

Number of stations by month that contained Atlantic thread herring larvae from the ECOMON survey.
*Data provided by NEFSC.



- Atlantic thread herring are believed to expand their range northward due to increasing water temperature
- As Mid-Atlantic Ocean waters warm, more Atlantic thread herring will migrate in the spring into these waters and migrate south in the late fall
- These herring are a valuable recreational bait source



Project Description

- **Proposal Fishery**

- Lund's Fisheries, Inc. and Axelsson Seiner, Inc. seek to establish a purse seine fishery for thread herring in the mid-Atlantic region under an exempted fishing permit (EFP) that was initially submitted in 2021/10 and resubmitted in 2022/12

- **Environmental Concerns**

- Greater Atlantic Regional Fisheries Office (GARFO) has raised concerns about the potential impacts of the proposed fishery on endangered sea turtles and Atlantic sturgeon

- **Environmental Assessment Required**

- GARFO requires an environmental assessment to evaluate potential impacts, as required by the Endangered Species Act (ESA) and National Environmental Policy Act (NEPA), which is necessary before a biological opinion (BiOp) can be issued by the NMFS, allowing for the exempted fishery to operate in federal waters



Project Objectives

- Assess potential impacts of the fishery on endangered sea turtles and sturgeon, as required by ESA and NEPA
- Produce a comprehensive environmental assessment report satisfying both ESA and NEPA requirements, along with any relevant technical reports, data, and analyses, to be submitted to GARFO to aid in the completion of the BiOp



Research Plan

- **Literature & Data Review**
 - Relevant literature and data on environmental impacts of purse seine fishing activities, and the biology and ecology of thread herring, sea turtles and sturgeon
- **Bycatch Assessment**
 - A Bayesian spatiotemporal model will be developed to analyze the impacts of fishing activity on bycatch
- **Environmental Assessment**
 - A report satisfying both ESA and NEPA requirements, along with any relevant technical reports, data, and analyses, will be prepared and submitted to GARFO to aid in the completion of the BiOp

Data Availability

- Limited available data include observer data from NMFS' Northeast Fisheries Observer Program and ASMFC
- Bycatch data collected on sea turtles and sturgeon in the Atlantic menhaden purse seine fishery will serve as an analogy
- The Gulf reduction fishery is required to take observers for sea turtle bycatch, whereas the Atlantic fishery is not (2023 Sea Turtle Annual Determination). We will be following the implementation of the observer program and any emerging data



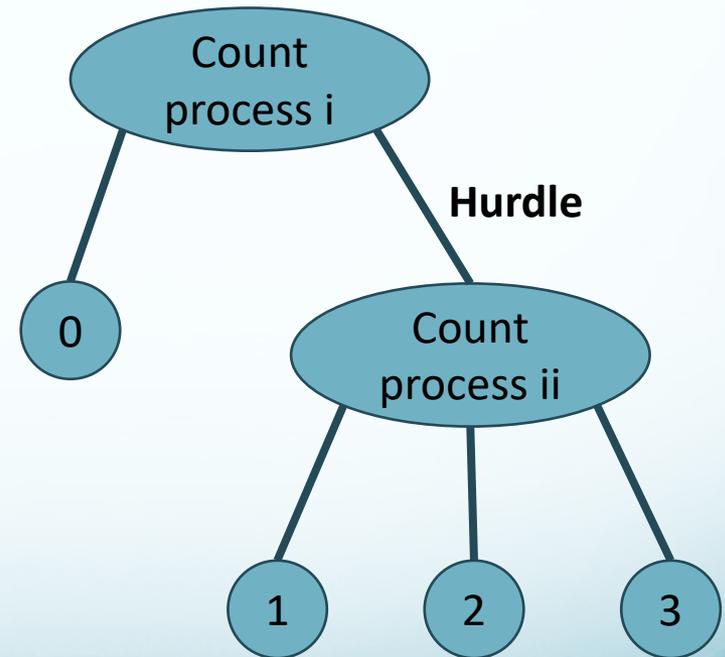
Hurdle Model Framework

- Probability sub-model \sim Bernoulli (p)

$$\text{logit}(p) = \text{intercept} + f(\text{vessel}) + f(\text{year}) + f(\text{month}) + f(\text{set time}) + f(\text{haul time}) + f(\text{set duration}) + f(\text{soak duration}) + f(\text{haul duration}) + f(\text{net length}) + f(\text{net depth}) + f(\text{pump grate}) + f(\text{pump suction velocity}) + f(\text{aggregating device}) + \text{Spatial effect}_p + \varepsilon_p$$

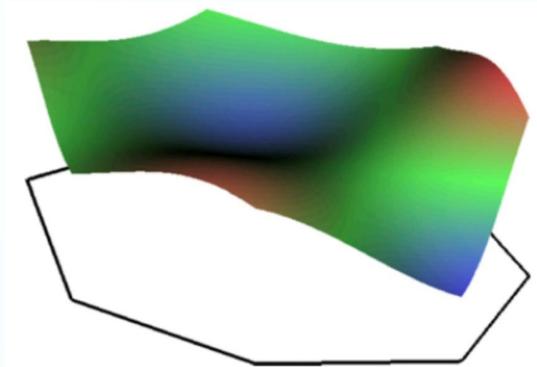
- Positive bycatch sub-model \sim zero-truncated Poisson (λ)

$$\log(\lambda) = \text{intercept} + \sum f(x_i) + \text{Spatial effect}_\lambda + \varepsilon_\lambda$$

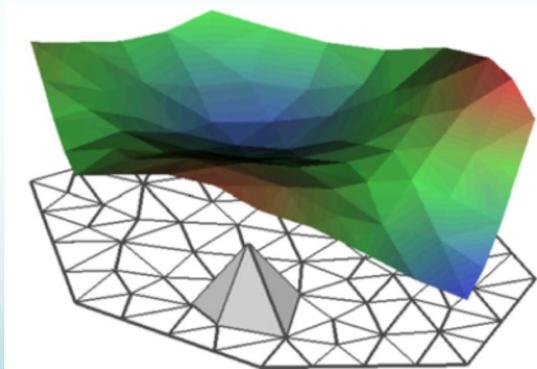


Bayesian Approach

- Incorporate prior with data
- Quantify uncertainty
- Hierarchical model
- Integrated nested Laplace approximation (INLA)
- Stochastic partial differential equation (SPDE)



(a) A continuous function.



(b) A piecewise linear approximation.

A Related & Successful Bycatch Project



ICES Journal of Marine Science
ICES Journal of Marine Science (2020), 77(2), 668–679. doi:10.1093/icesjms/fsz255

ICES
CIEM
International Council for the Exploration of the Sea
Central International office
Fédération de la Pêche

Original Article
Long-term climate ocean oscillations inform seabird bycatch from pelagic longline fishery
Rujia Bi^{1*}, Yan Jiao², Haakon Bakka², and Joan A. Browder³
¹Department of Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, USA
²Statistics Program, CEMSE Division, King Abdullah University of Science and Technology, Thuwal 23955, Saudi Arabia
³NOAA National Marine Fisheries Service, Southeast Fisheries Science Center, Miami, FL 33149, USA
*Corresponding author; tel: + 1 (409) 692 1794; e-mail: rbi@vt.edu.
Bi, R., Jiao, Y., Bakka, H., and Browder, J. A. Long-term climate ocean oscillations inform seabird bycatch from pelagic longline fishery. – ICES Journal of Marine Science, 77: 668–679.
Received 21 May 2019; revised 27 November 2019; accepted 5 December 2019; advance access published 12 February 2020

scientific reports

OPEN **Climate driven spatiotemporal variations in seabird bycatch hotspots and implications for seabird bycatch mitigation**
Rujia Bi^{1,2*}, Yan Jiao² & Joan A. Browder²

Credit to Andreas Trepte



- Understand spatiotemporal pattern of seabird bycatch in US Atlantic pelagic longline fishery based on observer data from NMFS Pelagic Observer Program
- Adopted by NOAA NMFS Southeast Fisheries Science Center to assess seabird bycatch in US West Atlantic pelagic longline fishery



Benefits

- This project aims to support the application for the thread herring EFP
- This fishery would provide a valuable recreational bait source, improve the resilience of the fishery in the Port of Cape May, and decrease the US' reliance on imported thread herring
- This fishery would provide an alternative for Cape May menhaden fishermen and vessels during the New Jersey menhaden fishing season and take advantage of an emerging species which could be resulting from climate change
- This project would provide a template for evaluating other emerging fisheries



Budget

Start Date: 5/1/2023
End Date: 10/31/2023

SALARY	Monthly Pay Rate	# of Mos	Total
Jensen	14,740	0.5	7,370
Bi	4675.00	6	28,050
	Sub		35,420
FRINGE	Fringe Rate		
Jensen	36.60%		2,697
Bi	22.00%		6,171
	Sub		8,868
TOTAL PERSONNEL			44,288
TRAVEL			
Travel to Pensacola, FL (3 nights)			1,500
Travel for next IAB meeting			1,500
	Sub		3,000
TOTAL DIRECT COSTS			47,288
MTDC			47,288
F&A (INDIRT) MTDC	Rate* =	10%	4,729
	*Adjust % as needed		
TOTAL PROJECTS COSTS			52,017



Thank you!

contact: ojensen@wisc.edu or
rbi24@wisc.edu

PI:	Olaf Jensen			
Co-PI:	Rujia Bi			
Proposal Title:	Assessing the Impacts of an Atlantic Thread Herring Purse Seine Fishery on Endangered Species in the Mid-Atlantic Region			
Start Date:	5/1/2023			
End Date:	10/31/2023			
		UW-Madison Year 1		
SALARY	Monthly Pay Rate	# of Mos		
Jensen	14,740	0.5	7,370	
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FRINGE	Fringe Rate			
Jensen	36.60%		2,697	
Bi	22.00%		6,171	
	Sub		8,868	
TOTAL PERSONNEL			44,288	
TRAVEL				Travel to Pensacola, FL (4days/3 nights)
Travel to Pensacola, FL (3 nights)			1,500	Airfare: \$602
Travel for next IAB meeting			1,500	Lodging: \$152/night + tax Per diem: \$75/day
	Sub		3,000	
TOTAL DIRECT COSTS			47,288	
MTDC			47,288	
F&A (INDIRT) MTDC	Rate* =	10%	4,729	
	*Adjust % as needed			
TOTAL PROJECTS COSTS			52,017	