

Atlantic States Marine Fisheries Commission

ISFMP Policy Board

*August 3, 2023
9:15 -10:45 a.m.
Hybrid Meeting*

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

- | | |
|---|------------|
| 1. Welcome/Call to Order (<i>S. Woodward</i>) | 9:15 a.m. |
| 2. Board Consent (<i>S. Woodward</i>) | 9:15 a.m. |
| • Approval of Agenda | |
| • Approval of Proceedings from May 2023 | |
| 3. Public Comment | 9:20 a.m. |
| 4. Executive Committee Report (<i>S. Woodward</i>) | 9:30 a.m. |
| 5. Review and Consider Changes to Conservation Equivalency: Policy and Technical Guidance Document (<i>T. Kerns</i>) Possible Action | 9:40 a.m. |
| 6. Update on the Risk and Uncertainty Policy Development (<i>J. Patel</i>) | 10:15 a.m. |
| 7. Report from the Atlantic Coast Fish Habitat Partnership (<i>S. Kaalstad</i>) | 10:25 a.m. |
| 8. Review Noncompliance Findings, if necessary Action | 10:35 a.m. |
| 9. Other Business | 10:40 a.m. |
| 10. Adjourn | 10:45 a.m. |

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

MEETING OVERVIEW

ISFMP Policy Board
Thursday August 3, 2023
9:15-10:45 a.m.
Hybrid Meeting

Chair: Spud Woodward (GA) Assumed Chairmanship: 10/21	Vice Chair: Joe Cimino (NJ)	Previous Board Meetings: May 3, 2023
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 3, 2023

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Executive Committee Report (9:30- 9:40 a.m.)

Background

- The Executive Committee will meet on August 2, 2023

Presentations

- S. Woodward will provide an update of the Executive Committee's work

Board action for consideration at this meeting

- none

5. Review and Consider Changes to Conservation Equivalency: Policy and Technical Guidance Document (9:40-10:20 a.m.) Possible Action

Background

- The Executive Committee (EC) tasked the Management and Science Committee (MSC) to review the *Conservation Equivalency: Policy and Technical Guidance Document*. The Executive Committee requested a series of question regarding conservation equivalency. A sub group of the MSC members and others addressed the EC's *questions*. Based on these questions and guidance from the EC staff has revised the

guidance document (supplemental materials). The changes provide more structure and details to the document.

Presentations

- T. Kerns will review changes to the *Conservation Equivalency: Policy and Technical Guidance Document*.

Board action for consideration at this meeting

- Approve changes to the *Conservation Equivalency: Policy and Technical Guidance Document*.

6. Update on the Risk and Uncertainty Policy Development (10:15-10:25 a.m.)

Background

- The Policy Board has supported the development of the Risk and Uncertainty Policy Decision Tool. The Risk and Uncertainty Policy Workgroup refined the criteria for the Risk and Uncertainty Decision Tool by testing it with both striped bass and tautog as examples.
- The was Board was not ready to approve a draft Risk and Uncertainty Policy and asked for an additional a test run. At the time, it was determined cobia would be the best species candidate. After review of the red drum stock assessment progress, the WG has found red drum could be a species candidate to test run the decision tool. The red drum assessment will be completed at least a year a head of cobia.

Presentations

- J. Patel will present an update on the policy development

Board action for consideration at this meeting

- None

7. Committee Reports (10:25-10:35 a.m.)

Background

- The Atlantic Coast Fish Habitat Partnership will meet the week of July 24, 2023.

Presentations

- S. Kaalstad will provide an update of the ACFHP's work

Board action for consideration at this meeting

- None

8. Review Non-Compliance Findings, if necessary Action

9. Other Business

10. Adjourn

Atlantic States Marine Fisheries Commission

**DRAFT CONSERVATION EQUIVALENCY:
Policy and Technical Guidance Document**



First Edition Approved May 2004
Revised and Approved October 2016
Draft Revisions for Review August 2023

Introduction

The purpose of this document is to provide policy and technical guidance on the application of conservation equivalency in interstate fisheries management programs developed by the Atlantic States Marine Fisheries Commission. The document provides specific guidance on development, submission, review and approval of conservation equivalency proposals.

Background

The Atlantic States Marine Fisheries Commission (Commission) employs the concept of conservation equivalency in a number of interstate fishery management programs. Conservation equivalency allows states/jurisdictions (hereafter states) flexibility to develop alternative regulations that address specific state or regional differences while still achieving the goals and objectives of Interstate Fishery Management Plans (FMPs). Allowing states to tailor their management programs in this way avoids the difficult task of developing one-size-fits-all management measures while still achieving equivalent conservation benefits to the resource.

Conservation equivalency is currently defined in the Interstate Fisheries Management Program (ISFMP) Charter as:

“Actions taken by a state which differ from the specific requirements of the FMP, but which achieve the same quantified level of conservation for the resource under management. One example can be, various combinations of size limits, gear restrictions, and season length can be demonstrated to achieve the same targeted level of fishing mortality. The appropriate Management Board/Section will determine conservation equivalency.” The application of conservation equivalency is described in the document Conservation Equivalency Policy and Technical Guidance Document

In practice, the Commission frequently uses the term “conservation equivalency” in different ways depending on the language included in the plan. Due to concerns over the lack of guidance on the use of conservation equivalency and the lack of consistency between fishery management programs, the ISFMP Policy Board approved a policy guidance document on conservation equivalency in 2004. In 2016, the Policy Board recognized some of the practices of the Commission regarding conservation equivalency had changed and revised the guidance. The Policy Board is again considering revision to the guidance to include requirements in how conservation equivalency is used.

General Policy Guidance

The use of conservation equivalency is an integral part of the Commission management process. ~~Conservation equivalency is used in 2 ways: (1) in the development of the FMP~~

Commented [TK1]: While this path was used in the past it is not something that has been used in the last 10 years or more because of the additional time it adds to the process (needs time for states to develop measures that would be equivalent to the coastwide options in the document)

~~(including implementation plans) and (2)~~ as alternative management programs outside of the FMP process.

During the development of a management document the Plan Development Team (PDT) should recommend if conservation equivalency should be permitted for that species. The board ~~should will~~ provide a specific determination if conservation equivalency is an approved option for the ~~fishery management plan~~FMP, since conservation equivalency may not be appropriate or necessary for all management programs. The PDT should consider stock status, stock structure, data availability, range of the species, socio-economic information, and the potential for more conservative management when stocks are overfished or overfishing is occurring when making a recommendation on conservation equivalency. During the approval of a management document the Board will make the final decision on the inclusion of conservation equivalency.

Commented [TK2]: If this is a requirement will need to change

If conservation equivalency is determined to be appropriate, the conservation equivalency process ~~should will~~ be clearly defined and specific guidance ~~should will~~ be supplied in the fishery management documents. Each of the new fishery management plans, amendments, or addenda ~~should will~~ include the details of the conservation equivalency program, if applicable. The guidance ~~should will~~ include, at a minimum, a list of management measures that can be modified through conservation equivalency, evaluation criteria, review process, and monitoring requirements. ~~If possible, tables including the alternative management measures should be developed and included in the management documents. The development of the specific guidance is critical to the public understanding and the consistency of conservation equivalency implementation.~~

Commented [TK3]: If we modify #1 above, I recommend this section is deleted.

Conservation equivalency proposals and Board approval are not required when states adopt a single more restrictive measures than those required in the FMP (e.g., higher minimum size, lower bag limit, lower quota, lower trip limit, closed or shorter seasons). These changes to the management program ~~should will~~ be included in a state's annual compliance report or state implementation plan. If states intend to change more than one regulation where one is more restrictive but the other is less restrictive, even if the combined impact is more restrictive, states must submit a conservation equivalency proposal for Board approval due to unexpected consequences that may arise (e.g., a larger minimum size limit could increase discards).

States have the responsibility of developing conservation equivalency proposals for submission to the Plan Review Team (see standards detailed below). Upon receiving a conservation equivalency proposal, the PRT will initiate a formal review process as detailed in this guidance document. The state submitting the proposal has the obligation to ensure proposed measures are enforceable. If the PRT has a concern regarding the enforceability of a proposed measure it can task the Law Enforcement Committee with reviewing the proposal. Upon approval of a conservation equivalency proposal, the implementation of the program becomes a compliance requirement for the state. Each of the approved programs ~~should will~~ be described and evaluated in the

annual compliance review and included in annual FMP Reviews, unless different timing is approved by the board.

The management programs ~~should~~will place a limit on the length of time that a conservation equivalency program can remain in place without re-approval by the Board. Some approved management programs may require additional data to evaluate effects of the management measures. The burden of collecting the data falls on the state that has implemented such a conservation equivalency program. Approval of a conservation equivalency program may be terminated if the state is not completing the necessary monitoring to evaluate the effects of the program.

The Plan Review Team (PRT) will serve as the “clearing house” for ~~approval~~review of conservation equivalency proposals. All proposals will be submitted to the PRT for review. The PRT will collect all necessary input from the appropriate committee (e.g. the technical committee, Law Enforcement Committee, Committee on Economics and Social Sciences and the Advisory Panel). The PRT will compile input and forward a recommendation to the management board.

When Conservation Equivalency will not be Permitted

Stock Status Conditions

Option 1. Conservation Equivalency is not permitted if the stock is overfished

Option 2. Conservation Equivalency is not permitted if overfishing is occurring

Option 3. Conservation Equivalency is not permitted if overfishing is occurring and the stock is overfished

Option 4 Board Discretion: Each species Board will consider which, if any, of the stock status CE options above are appropriate. If a species Board implements a stock status restriction for CE, it may choose to apply that restriction to the entire fishery or to some parts of the fishery (e.g., specific sector). If a species Board decides not to implement a stock status restriction for CE, the Board will provide rationale (via meeting proceedings) as to why such a CE restriction is not needed for that species.

Measures that cannot be Quantified

Measures that cannot be quantified are not be permitted under CE if their sole purpose is for credit in the reduction. The state submitting a proposed measure for credit must be able to demonstrate, to the satisfaction of the TC, a measurable reduction in harvest. Measures that are non-quantifiable can be encouraged and considered as a buffer but not used as direct credit for a reduction in harvest. The TC will determine if a measure is quantifiable or non-quantifiable. Non-quantifiable measures could include circle hooks, non-targeting zones/period, no gaffing, outreach promoting best practices for release, and other measures expected to reduce release mortality or overall discards.

Combining Coastwide and Conservation Equivalency

If there is a target coastwide reduction needed it cannot be achieved through a combination of some states implementing the coastwide measure and some states implementing the coastwide percent reduction at the state level. If a state proposes CE, that CE proposal must demonstrate equivalency with the state-specific reduction that would have been achieved if the coastwide measure were implemented. For example, a coastwide measure may be projected to achieve a 10% coastwide reduction. In a particular state, that coastwide measure may be projected to achieve a 15% reduction in that state alone. If that state wants to propose a CE program, that CE program must demonstrate a 15% reduction, not a 10% reduction.

Standards for state conservation equivalency proposals

Each state seeking to implement a conservation equivalency program must submit a proposal for review and approval. Proposals will keep the number of options to a reasonable limit, those proposals that include an excessive number of options may delay timely review by the PRT and other groups and may ultimately delay the report to the Board. Boards may set a cap on the number of options submitted.

State conservation equivalency proposals should will contain the following information:

1. Rationale: Why or how an alternate management program is needed in the state. Rationale may include, but are not limited to, socio-economic grounds, fish distribution considerations, size of fish in state waters, interactions with other fisheries, protected resource issues and enforcement efficiency.
2. Description of how the alternative management program meets all relevant FMP objectives and management measures (FMP standards, targets, and reference points). States are responsible for supplying adequate detail and analysis to confirm conservation equivalency based on the most recent stock assessment.
3. A description of:
 - Available datasets used in the analysis and data collection method, including sample size and coefficient of variation, explicitly state any assumptions used for each data set.
 - Limitations of data and any data aggregation or pooling.
 - If data allows, the TC should establish minimum standards for the types and quality of data that can be used in a proposal. Examples include, but should not be limited to: minimum sample size, amount of imputed/borrowed data points, limit on PSE, types of data allowed and minimum number of years, survey design, data caveats and analytical assumptions, and consider previous CE proposals and

build on their strengths (e.g., length of closed season). Some states may not be able to participate in CE because their data will not meet the standards established by the TC. The TC could consider alternative criteria, or states could consider alternatives, such as submitting a joint proposal with neighboring states.

- When evaluating closed periods, availability will be considered. Even within a month, availability can be very different, particularly when comparing the beginning and end. Any closed period must come from a period of high availability and include at least two consecutive weekend periods (Friday, Saturday and Sunday). Pooling of several years' worth of data should be encouraged for evaluation.

- The length of time the state is requesting conservation equivalency and a review schedule for the length of the program. Proposals should-will identify the length of time measures are intended to be in place and the timing of the review of the specific measures which is required annually, it is encouraged to review the measures in conjunction with the FMP Review.- If an approved CE program consistently meets program objectives, achieves the proposed measures with the management actions implemented, and if stock conditions remain favorable, a request for an extension should be made to the species management board at the end of the project period. Extensions for successful conservation equivalency programs should not exceed the next scheduled benchmark stock assessment.

4. Each proposal must justify any deviations from the conservation equivalency procedures detailed in the FMP of this document. The state should conduct analyses to compare new procedures to procedures included in the plan, as appropriate, including corroborative information where available.
5. Include a plan describing the monitoring schedule, reporting requirements and documentation process of evaluating the impacts of the conservation equivalency measures.

Review Process

Implementation of new amendments/FMPs should-will include timelines and a review process for conservation equivalency proposals. However, the review process and timeline needs to be established for all conservation equivalency proposals that are submitted outside of the implementation of a new management document.

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The following is a list of the steps and timelines for review and approval of conservation equivalency proposals. Any deviations from the following process ~~should~~must be included in the FMP.

1. Conservation equivalency ~~should~~will be approved by the Management Board and where possible implemented at the beginning of the fishing year.
2. If a state is submitting a proposal outside of an implementation plan process, it ~~must~~will provide the proposal ~~at least~~two months in advance of the next board meeting to allow committees sufficient time to review the proposal and to allow states to respond to any requests for additional data or analyses. States may submit conservation equivalency proposals less than two months in advance of the next board meeting, but the review and approval at the upcoming board meeting is at the discretion of the Species Management Board Chair. Proposals submitted less than ~~two~~three weeks before a meeting will not be considered for approval at that meeting. The board chair will submit proposal to the Plan Review Team (PRT) for review.
3. The PRT should notify the state that the proposal is complete.
4. Upon receipt of the proposal, the PRT will determine what additional input will be needed from: the Technical Committee (TC), Law Enforcement Committee (LEC), ~~and~~or Committee on Economic and Social Sciences (CESS). The PRT will distribute the proposal to all necessary committees for comment. The review should include a description of the impacts on or from adjoining jurisdictions or other management entities (Councils and/or NMFS). If possible, this description should include qualitative descriptions addressing enforcement, socio-economic issues and expectations from other states perspective (shifts in effort). The review should highlight efforts to make regulations consistent across waterbodies.
5. The PRT will compile all of the input and forward the proposal and comments to the Advisory Panel when possible. However, when there are time limitations, the AP may be asked for comments on a proposal prior to completion of other committee reviews. The Chair of the Advisory Panel (AP) will compile the AP Comments and provide a report to the Management Board.
6. The PRT will forward to the Board the proposal and all committee reviews, including any minority reports. The PRT will provide comment on whether the proposal is or is not equivalent to the standards within the FMP. If possible, the PRT ~~should~~will identify potential cumulative effects of all conservation equivalency plans under individual FMPs (e.g. impacts on stock parameters).

Commented [TK4]: I am concerned 2 months would not be enough time with some of the additional data requirements

7. The PRT reviews should-will address whether a state's proposal followed the CE standards outlined in this policy, and any additional specifications included in the FMP.
8. The Board will decide whether to approve the conservation equivalency proposal and will set an implementation date, taking into account the requested implementation date in the proposal. Board action should be based on the PRT recommendation as well as other factors such as impacts to adjoining states and federal management programs. When a board cannot meet in a timely manner and at the discretion of the board and Commission Chair, the boards have the option to have the ISFMP Policy Board approve the conservation equivalency plan.

Plan Review Following Approval and Implementation

1. Annually thereafter, states should-will describe and evaluate the approved conservation equivalency programs in their compliance reports submitted for annual FMP Reviews, unless otherwise specified.
2. The PRT is responsible for evaluating all conservation equivalency programs during annual FMP reviews to determine if the conditions and goals of the FMP are maintained, unless a different timeline was established through board approval. If the state is not completing the necessary monitoring to evaluate their approved conservation equivalency program, this may be grounds for termination of the plan. The PRT will report to the Board on the performance of the conservation equivalency program, and can make recommendations to the Board if changes are deemed necessary.

Coordination Guidance

The Commission's interstate management program has a number of joint or complementary management programs with NOAA Fisheries, US Fish and Wildlife Service and the Fishery Management Councils. Conservation equivalency creates additional burden on the Commission to coordinate with our federal fishery management partners. To facilitate cooperation among partners, the Commission should observe the following considerations.

- The Commission's FMPs may include recommendations to NOAA Fisheries for complementary EEZ regulations. Conservation equivalency measures may alter some of the recommendations contained in the FMPs, which would require the Commission notify NOAA Fisheries of any changes. The Commission needs to consider the length of time that it will take for regulations to be implemented in the EEZ and try to minimize the frequency of requests to the federal government.

- The protocol for NOAA fisheries implementing changes varies for the different species managed by the Commission. The varying protocols need to be considered as conservation equivalency proposals are being developed and reviewed.
- When necessary for complementary management of the stock, the Commission Chair will request federal partners to consider changes to federal regulations.

DRAFT

Tina Berger

From: Tom Lilly <foragematters@aol.com>
Sent: Monday, July 24, 2023 12:40 PM
To: Tina Berger; James Boyle
Cc: PHILIP ZALESAK
Subject: [External] Fw: "Fact Checking" Statement of MD DNR Lynn Fegley
Attachments: Fegley mail March28.pdf; Caucus and Bressman .pdf; Sierra-Shore Rivers.pdf; SR02 docs.pdf; TRFC Minutes.pdf

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Tina please place this comment in the supplemental materials and also distribute to the Policy and Menhaden Board. Please advise receipt thanks Tom

To Bob Beal, Mel Bell and Spud Woodward and the Policy Board

I expect the statement Lynn Fegley, director of MD DNR fisheries, (see below) made to you opposing a meeting was seriously considered in your final decision to not have a menhaden board meeting. She said:

" Once again, Mr. Zalesak's comments do not represent the position on the State of Maryland at this time and are not representative of the input we receive from a diverse array of constituents across the state."

I have done some fact checking and I find:

(1) Maryland DNR has a Tidal and Coastal Recreational Fisheries Committee whose members are chosen by her department to represent the " diverse array" she spoke of. On June 29, 2023, Phil Zalesak, a member of the committee, spoke to them about menhaden and the DNR Committee passed the following motion: " The Maryland Delegation to the ASMFC Atlantic Menhaden Management Board needs to put forth a motion that states "The Atlantic Menhaden reduction fishery shall be limited to federal waters east of the westerly boundary of the Exclusive Economic Zone..." and the motion passes with no objection. (scan). Dr Fegley did not mention this in her mail. (minutes on scan)

(2) In March 2022 and 2023, as Dr Fegley knows, 30 Maryland State Legislators of the MD Legislative Sportsmen's Caucus supported a Senate Resolution asking that this Commission determine whether factory fishing should continue in Chesapeake Bay. These legislators represent the interests of over a million Marylanders. On March 28, 2022, Lynn Fegley received a summary of the organizations and groups of Marylanders supporting the Resolution and their comments. (scan) These groups included,

Maryland Sierra Club with 73,000 members. Shore Rivers with 3,000 members, ten state wide fishing clubs that represent at least 300,000 Maryland recreational fishermen, all of the Charter Captains operating from Solomons and Deal Island MD who, represent the 32,000 charter clients a year that have quit fishing with them because the fishing is so poor. There are also well over 30,000 Marylanders whose jobs in recreational fishing, boating and marinas depend on fishing success. These are just some of the Marylanders that support what Mr Zalesak supports.

We suggest the Commission's decision not to hold an August Menhaden Board meeting may have been influenced by the inaccuracy of Dr Fegley's statement about the level of support and

opposition to moving the factory fishing from Virginia actually received by Dr Fegley. It would seem incumbent on her to respond to this in detail naming names and providing the written evidence as we have of " the input we receive from a diverse array of constituents across the state " (opposed to moving the factory fishing) " as she put it. Then the Commission can consider this matter further. Depending on that timely review justice may require the Commission reverse its decision and hold the hearing.

We might add that calling Mr. Zalesak's statement that he was considering his legal options a "threat" was out of line and prejudicial. Mr. Zalesak, as every American, is protected by the judicial system and due process of law. He had every right to advise the Chairman he was considering exercising that right in a lawsuit without being abused verbally by Dr Fegley.

Respectfully Tom Lilly

Sent: Friday, July 21, 2023 7:39 AM

To: Robert Beal; Spud Woodward; Mel Bell

Cc: Josh Kurtz -DNR-; David Goshorn -DNR-; Allison Colden; DAVID SIKORSKI; rr; flypax; Michael Luisi -DNR-; Russel Dize

Subject: email RE menhaden and threat of legal action

Good Evening Bob, Spud and Mel,

I am hoping that you can distribute this to the menhaden board, I would appreciate it.

Dear Menhaden Management Board

This is in response to an email sent on the afternoon of 12/20 by Phil Zalesak. Once again, Mr. Zalesak's comments do not represent the position of the State of Maryland at this time and are not representative of the input we receive from a diverse array of constituents across the state. Further, while we welcome and value public comment around all of the complex issues we manage, we feel it is important to stress that we do not condone the use of threats against Commissioners who volunteer their time and expertise to maintain the critical function of the Atlantic States Marine Fisheries Commission. We have noted the inappropriate tone of Mr. Zalesak's correspondence.

Sincerely,

Lynn F.

Lynn Waller Fegley
Director, Fishing and Boating Services
Maryland Department of Natural Resources
410-260-8285 (office)
443-223-9279 (cell)
lynn.fegley@maryland.gov



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-----Original Message-----

From: Tom Lilly <foragematters@aol.com>

To: lynn.fegley@maryland.gov <lynn.fegley@maryland.gov>

Sent: Mon, Mar 28, 2022 9:30 am

Subject: Fwd: Senate Resolution 06 Testimony

Lynn

I thought you might be interested in looking over the written testimony and public comments on State Senate Resolution 06 from the EHE hearing March 2nd. This was an effort to bring to your attention the importance of asking the ASMFC whether to continue the factory fishing in Virginia and then to urge that board to base their menhaden allocations to Virginia on the ecologic, social and economic impact/benefits of the factory fishing on the Maryland Bay and Maryland public. (as required by Charter section 6. scan allocation law). The current state reallocation process that is based entirely on historic landings is not following the law and is ignoring what is in the best interest of the ecology of Chesapeake Bay and the social and economic interests of many millions of Marylanders. There was no public opposition to this Resolution but the Chair of the EHE committee Sen Paul Pinsky, did not allow it to come to a committee vote. If there was opposition to this Resolution it was behind closed doors so the proponents were not given an opportunity to rebut what was said.

Lynn, please review the endorsements of Maryland Sierra Club and Shore Rivers that represent 73,000 Marylanders concerned with the environment and conservation. Also the information letter from DNRThe Legislative Sportsmen's Caucus adopted the opinions of Dr Noah Bressman which supported spatial changes in the factory fishing. (that is requiring the factory fishing be in the US Atlantic zone only as every state but Virginia does) The Caucus members are the legislators concerned with protecting our Maryland hunting and fishing traditions..they represent over a million constituents. Ten state wide fishing club leaders endorsed the Resolution. We believe they represent at least 300,000 Maryland anglers and 100,000 children who would love to see fishing improve, While all Charter captains were not polled the Solomons Charter Captains and all the Charter Captains fishing out of Wenona (Deal Island) endorsed this. We think these captains represent the charter clients that would be fishing more if fishing improved. From 2009 to 2019 charter trips decreased from 17,000 to 10,000*. With the usual 6 customers a trip this is at least 42,000* absent fishermen a year who I am quite sure would want to see better fishing. There are only half the charter

businesses in Deal Island and Crisfield that there were 10 years ago. The anglers, conservationists, the Sierra Club, Shore Rivers, the charter captains and the Legislator's constituents that add up to over one and a half million Marylanders, by representation, that want the ASMFC to do its job and decide the merits of the Virginia factory fishing controversy after allowing all parties be heard. I would be glad to discuss this further or listen to your comments.

Thanks for your attention Tom Lilly menhadenproject.org 443 235
4465

Senate Chair
JACK BAILEY
Legislative District 29
Calvert & St. Mary's Counties

Maryland Legislative Sportsmen's Caucus
James Senate Office Building, Room 402
410-841-3673 or 301-858-3673
1-800-492-7122 Ext. 3673

Senate Co-Chair
KATIE FRY HESTER
Legislative District 9



House Chair
NED CAREY
Legislative District 31A
Anne Arundel County

Maryland Legislative Sportsmen's Caucus
Lowe House Office Building, Room 161
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1-800-492-7122 Ext. 3047

House Co-Chair
WENDELL BEITZEL
Legislative District 1A

The Maryland Legislative Sportsmen's Caucus

The Sportsmen's Best Friend in Annapolis

October 21, 2021

Steven G. Bowman
VMRC Chairman
Building 96, 380 Fenwick Road
Ft. Monroe, Virginia 23651

RE: "The Most Important Fish in the Sea" – IMMEDIATE ACTION

Mr. Bowman:

Each year the number of menhaden surviving the Virginia netting gauntlet to successfully reach Maryland's portion of the Chesapeake Bay is declining. This scientifically documented fact is detrimental to both avian and marine species dependent upon the "Most Important Fish in the Sea". This must change.

On October 15, 2021, a fishery biology professor from Salisbury University (Dr. Noah Bressman, PhD) formally addressed the dire menhaden issue in a statement to Maryland's DNR Secretary, et al. For the record, the Maryland's Legislative Sportsmen's Caucus within the Maryland General Assembly fully supports the position taken by Dr. Bressman and urges time-sensitive compliance by the Virginia Marine Resources Commission.

Here's what Dr. Bressman stated:

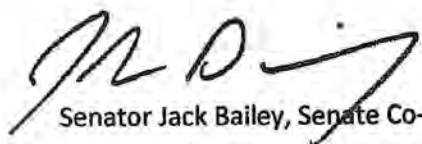
"Currently, the Virginia-based menhaden fishery is overfishing the stock of Atlantic Menhaden in and around the Chesapeake Bay, which is preventing this important forage fish from making its way into the bay and its tributaries. As an important prey item for many important species in the bay, such as Striped Bass and Osprey, the disappearance of most of the menhaden from the bay is contributing to the disappearance of many species that rely on menhaden.

Virginia has been allotted about 75% of the entire Atlantic Coast's quota, which is a drastically disproportionate amount relative to its coastline. Additionally, much of their harvesting occurs as menhaden migrate into the bay, where they enter Maryland's waters. What this essentially means is 75% of the quota for the entire Atlantic Coast is being taken in the bay or just before they enter the bay. While this may not be causing overfishing for the entire Atlantic Coast based on quotas, because all of these fish are being taken from essentially just the bay, it is having locally drastic effects on the ecosystem.

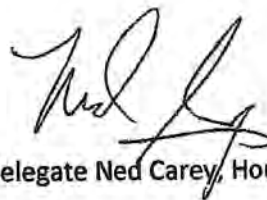
Therefore, I strongly suggest either delaying the start of the menhaden commercial season until after a significant amount of menhaden have migrated north along the Virginia coast into the Chesapeake bay (which occurs in spring/early summer), by pushing these factory fishing efforts at least 3 miles offshore into federal waters instead of along the coastline in state waters (as the fish in the state waters are most likely to migrate along the coast into the bay), pushing the commercial menhaden fishery north of the entrance to the Chesapeake bay during their migration, and/or significantly reducing the quotas of menhaden in and around the mouth of the Chesapeake bay.

These actions are necessary to ensure the long-term health of the Chesapeake Bay ecosystem and the associated fisheries and ecotourism."

What is happening to the "Most Important Fish in the Sea" is intolerable. VMRC must stand up and do what's right.



Senator Jack Bailey, Senate Co-Chair



Delegate Ned Carey, House Co-Chair



Cc:

Members, Virginia Marine Resources Commission

Dr. Noah Bressman, Salisbury University

Senator Emmett Hanger, Senate Co-Chair, Virginia Legislative Sportsmen's Caucus

Delegate James Easily Edmunds II, House Co-Chair, Virginia Legislative Sportsmen's Caucus

Jeff Crane, President, Congressional Sportsmen's Foundation

The Honorable Ann Jennings, Virginia Secretary of Natural Resources

The Honorable Jeannie H. Riccio, Maryland Secretary of Natural Resources

From: Noah Bressman noahbressman@gmail.com
Subject: Support for Action on Menhaden
Date: Oct 15, 2021 at 10:36:49 AM
To: jeannie.riccio@maryland.gov, bill.anderson@maryland.gov,
lynn.fegley@maryland.gov
Cc: foragematters@aol.com

Dear Secretary Riccio and DNR Menhaden Delegates,

As a Fish Biology Professor at Salisbury University with multiple collaborations with the MD DNR, former nominee to the Mid-Atlantic Fisheries Management Council, an avid angler, science communicator, and concerned citizen of Maryland, I write to offer my support for action on menhaden in and around the Chesapeake Bay. Currently, the Virginia-based menhaden fishery is overfishing the stock of Atlantic Menhaden in and around the Chesapeake Bay, which is preventing this important forage fish from making its way into the bay and its tributaries. As an important prey item for many important species in the bay, such as Striped Bass and Osprey, the disappearance of most of the menhaden from the bay is contributing to the disappearance of the many species that rely on menhaden.

Currently, Virginia has been allotted about 75% of the entire Atlantic Coast's quota, which is a drastically disproportionate amount relative to its coastline. Additionally, much of their harvesting occurs as menhaden migrate into the bay, where they enter Maryland's waters. What this essentially means is 75% of the quota for the entire Atlantic coast is being taken in the bay or just before they enter the bay. While this may not be causing overfishing for the entire Atlantic coast based on quotas, because all of these fish are being taken from essentially just the bay, it is having locally drastic effects on the ecosystem.

Therefore, I strongly suggest either delaying the start of the menhaden commercial season until after a significant amount of menhaden have migrated north along the Virginia coast into the Chesapeake bay (which occurs in spring/early summer), pushing these factory fishing efforts at least 3 miles offshore into federal waters instead of along the coastline in state waters (as the fish in the state waters are most likely to migrate along the coast into the bay), pushing the commercial menhaden fishery north of the entrance to the Chesapeake bay during their migration, and/or significantly reducing to quotas of menhaden in and around the mouth for the Chesapeake Bay. These actions are necessary to ensure the long-term health of the Chesapeake Bay ecosystem and the associated fisheries and ecotourism.

Sincerely,

Dr. Noah Bressman, PhD

Assistant Professor of Physiology

Salisbury University

Dr. Noah Bressman, PhD
Assistant Professor of Physiology
Salisbury University
Fish Biology, Biomechanics, Functional Morphology, and Behavior
Noahbressman.wixsite.com/noah
He/him/his

Begin forwarded message:

From: Noah Bressman <noahbressman@gmail.com>
Date: October 18, 2021 at 9:54:57 AM EDT
To: Tina Berger <tberger@asmfc.org>
Subject: Re: FW: Final Supplemental Materials for ASMFC 2021 Fall Meeting

Thanks, Tina! I want to clarify that the most important thing I recommend is that the board take action now to evaluate the options to increase menhaden in Chesapeake Bay. If action was started at Tuesday's board meeting, some or all of the measures could be in effect for the 2022 season. This can be accomplished using qualitative management methods, such as seasonal and area closures without additional research. It can also be accomplished by moving the fishing into the US federal zone as every state except Virginia has seen the necessity for doing. While I am always in support of more research for any topic (because I am a scientist), waiting for additional research on this issue that is already clear will likely lead to menhaden continuing to plummet in the bay, which will further reduce the capacity for striped bass to recover in the bay, especially after the recent report showing their abysmal recruitment over the last 3 years. A delay in action, such as a several years-long stock and recruitment reassessment of the bay before action, will lead to the problem getting worse before it gets better.

Sincerely,
Dr. Noah Bressman, PhD
Assistant Professor of Physiology
Department of Biology
Salisbury University

On Fri, Oct 15, 2021 at 2:47 PM Tina Berger <tberger@asmfc.org> wrote:

Dr. Bressman – Thank you for your public comment on Atlantic menhaden management. It was sent to the Atlantic Menhaden Board today for its consideration. – Tina

Tina Berger



P.O. Box 278
Riverdale, MD 20738

Committee: Education, Health, and Environmental Affairs

Testimony on: SJ6 "Atlantic States Marine Fisheries Commission – Atlantic Menhaden – Prohibition on Commercial Reduction Fishing"

Position: Support

Hearing Date: March 1, 2022

The Maryland Chapter of the Sierra Club urges a favorable report on SJ6. This resolution asks the Atlantic States Marine Fisheries Commission to exercise its authority regarding the management of the menhaden fishery to consider prohibiting commercial reduction fishing of Atlantic menhaden, including the use of purse seines and spotter planes, in the Chesapeake Bay.

Atlantic menhaden are a keystone species for the Chesapeake Bay. As noted by this resolution, Atlantic menhaden form a critical connection between the bottom and the top of the food chain. Menhaden are filter feeders, eating plankton and rotifers and helping clear the water of nutrient-pollution.¹ They are also a vital source of food to predators, including predatory fish, dolphins, whales, osprey, and bald eagles. While this is incredibly important to the ecosystem of the Bay, it is also important to the fishing industry. Many species of fish that we harvest from the Bay rely on the menhaden as a food source, including rockfish (striped bass), bluefish, and weakfish.

The Chesapeake Bay is an important nursery for the menhaden that helps sustain the population along the entire Atlantic coast. It is deeply concerning that the number of menhaden juveniles have decreased significantly since 1976 and has stayed low in the last 20 years.²

In order to protect the natural wonders of the Chesapeake Bay, it is important that action be taken now. We urge the Committee to issue a favorable report.

Marc Imlay
Endangered Species Workgroup Coordinator
marc.imlay@mdsierra.org

Josh Tulkin
Chapter Director
Josh.Tulkin@MDSierra.org

¹ <https://www.vims.edu/research/units/projects/menhaden/research/modeling.php>

² Durrell, E. Q. & Weedon, C. (2019). Striped Bass Seine Survey Juvenile Index Web Page. DNR.Maryland.gov/Fisheries/Pages/Juvenile-Index.ASPX. Maryland Department of Natural Resources, Fisheries Service.

Founded in 1892, the Sierra Club is America's oldest and largest grassroots environmental organization. The Maryland Chapter has over 70,000 members and supporters, and the Sierra Club nationwide has over 800,000 members and nearly four million supporters.

ONE DRIVE

CAYOZZA-MAIL PDF



Testimony in SUPPORT of SJ6 - Atlantic States Marine Fisheries Commission - Atlantic Menhaden - Prohibition on Commercial Reduction Fishing

March 1, 2022

Dear Chairman Pinsky and Members of the Committee,

Thank you for this opportunity to submit testimony in **SUPPORT of SJ6** on behalf of ShoreRivers. ShoreRivers is a river protection group on Maryland's Eastern Shore with 3,500 members. Our mission is to protect and restore our Eastern Shore waterways through science-based advocacy, restoration, and education.

This bill sets forth a resolution by the Maryland General Assembly asking the Atlantic States Marine Fisheries Commission to take further action to prohibit the commercial reduction fishing of Atlantic Menhaden, including the use of purse seines and spotter planes in the Chesapeake Bay in order to maintain a sustainable fishery. This reduction fishery poses a major threat to many Bay species every year, and when these other fisheries suffer it increases the pressure on other fisheries, including crabs and oysters. Thus, it is of critical importance to protect a foundational species like menhaden as much as possible.

Menhaden are incredibly valuable to the Chesapeake Bay and the many other commercial and recreational fisheries that occur in the rivers of the Eastern Shore. As a vital part of the ecosystem, menhaden filter plankton from the water and help to improve water quality, and they are a necessary food source for other aquatic species like striped bass and bluefish, but also for ospreys and bald eagles. The Department of Natural Resources noted in their 2021 Striped Bass survey that while the striped bass young-of-year showed a slight increase in population from 2020, what was of note was the increased numbers of menhaden in the rivers, notable the Choptank River. When the menhaden population thrives, so do our other fisheries. And when our fisheries are healthy, we know that water quality and habitat are at healthy levels to support those populations, which means that our economies and local communities will see a benefit.

For these reasons stated above, ShoreRivers urges the Committee to adopt a **FAVORABLE** report on SJ6.

Sincerely,

Matt Pluta,
Choptank Riverkeeper, on behalf of:

ShoreRivers

Isabel Hardesty, Executive Director

Annie Richards, Chester Riverkeeper | Matt Pluta, Choptank Riverkeeper
Elle Bassett, Miles-Wye Riverkeeper | Zack Kelleher, Sassafras Riverkeeper

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Senate Chair
JACK BAILEY
Legislative District 29
Calvert & St. Mary's Counties

Maryland Legislative Sportsmen's Caucus
James Senate Office Building, Room 401
410-841-3673 or 301-858-3673
1-800-492-7122 Ext. 3673

Senate Co-Chair
KATIE FRY HESTER
Legislative District 9



House Chair
KEVIN HORNBERGER
Legislative District 35B
Cecil County

Maryland Legislative Sportsmen's Caucus
Lowe House Office Building, Room 325
410-841-3284 or 301-858-3284
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House Co-Chair
DANA JONES
Legislative District 30A

The Maryland Legislative Sportsmen's Caucus

The Sportsmen's Best Friend in Annapolis

March 8, 2023

SUPPORT FOR SJ 2 - Atlantic States Marine Fisheries Commission – Atlantic Menhaden – Prohibition on Commercial Reduction Fishing

Dear Chairman Feldman and Members of the EEE Committee,

Each year the number of menhaden surviving the Virginia netting gauntlet to successfully reach Maryland's portion of the Chesapeake Bay is declining. This scientifically documented fact is detrimental to both avian and marine species dependent upon the "Most Important Fish in the Sea". This must change; what is happening to the "Most Important Fish in the Sea" is intolerable. SJ 2 will send a bold, strong statement that Maryland wants ASFMC to take action as reflected therein.

On October 15, 2021, a fishery biology professor from Salisbury University (Dr. Noah Bressman, PhD) formally addressed the dire menhaden issue in a statement to Maryland's DNR Secretary, et al. For the record, the Maryland's Legislative Sportsmen's Caucus within the Maryland General Assembly fully supports the position taken by Dr. Bressman as evidence of the importance of passing SJ 2. Dr. Bressman stated:

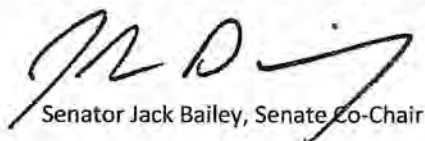
"Currently, the Virginia-based menhaden fishery is [highly likely] overfishing the stock of Atlantic Menhaden in and around the Chesapeake Bay, which is preventing this important forage fish from making its way into the bay and its tributaries. As an important prey item for many important species in the bay, such as Striped Bass and Osprey, the disappearance of most of the menhaden from the bay is contributing to the disappearance of many species that rely on menhaden.

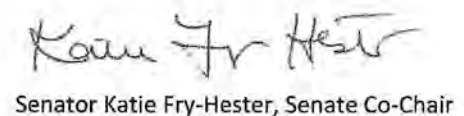
Virginia has been allotted about 75% of the entire Atlantic Coast's quota, which is a drastically disproportionate amount relative to its coastline. Additionally, much of their harvesting occurs as menhaden migrate into the bay, where they enter Maryland's waters. What this essentially means is 75% of the quota for the entire Atlantic Coast is being taken in the bay or just before they enter the bay. While this may not be causing overfishing for the entire Atlantic Coast based on quotas, because all of these fish are being taken from essentially just the bay, it is having locally drastic effects on the ecosystem.

Therefore, I strongly suggest either delaying the start of the menhaden commercial season until after a significant amount of menhaden have migrated north along the Virginia coast into the Chesapeake bay (which occurs in spring/early summer), by pushing these factory fishing efforts at least 3 miles offshore into federal waters instead of along the coastline in state waters (as the fish in the state waters are most likely to migrate along the coast into the bay), pushing the commercial menhaden fishery north of the entrance to the Chesapeake bay during their migration, and/or significantly reducing the quotas of menhaden in and around the mouth of the Chesapeake bay.

These actions are necessary to ensure the long-term health of the Chesapeake Bay ecosystem and the associated fisheries and ecotourism."

We appreciate your consideration and ask for a favorable report on SJ2.


Senator Jack Bailey, Senate Co-Chair


Senator Katie Fry-Hester, Senate Co-Chair

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JACK BAILEY
Legislative District 29
Calvert and St. Mary's Counties

Budget & Taxation Committee



THE SENATE OF MARYLAND
ANNAPOLIS, MARYLAND 21401

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March 8, 2023

Senate Joint Resolution 2 – Atlantic States Marine Fisheries Commission – Atlantic Menhaden – Prohibition on Commercial Reduction Fishing

Dear Chairman Feldman and Members of the Committee,

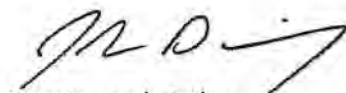
I am writing to introduce Senate Joint Resolution 2 – Atlantic States Marine Fisheries Commission – Atlantic Menhaden – Prohibition on Commercial Reduction Fishing. This Joint Resolution recommends that, in order to maintain a sustainable Atlantic menhaden fishery, the Atlantic States Marine Fisheries Commission consider prohibiting the commercial reduction fishing of Atlantic menhaden, primarily the use of purse seines and spotter planes, in the Chesapeake Bay.

The policy changes requested by this resolution would prohibit the large vessels owned by a foreign country from overharvesting the bait fish that are vital to the future of our fish populations in the Bay as they have done in the past. While this form of fishing is illegal in Maryland, it is still permitted in our neighboring Virginia waters of the Chesapeake Bay. Reduction fishing in the Bay is done by the Omega Fish Oil Company, which used to be a Virginia-based company but was sold to Cooke, Inc., in 2017 for \$500 million. Omega currently has eight fishing boats that work in the Virginia portion of the Chesapeake Bay. The reduction fishery has the ability to take 26% of the total Atlantic Coast menhaden quota from Maine to Florida from the Chesapeake Bay. This poses a substantial threat to the \$6.8 billion dollars in economic impact and the 68,000 jobs that are associated with both commercial and recreational fishing of striped bass. The Chesapeake Bay is the nursery for the Atlantic Coast striped bass and should be recognized as such. The reduction fishery in the Chesapeake Bay threatens the population of fish species like striped bass, trout, drum, shad, and bluefish, all of which have seen alarming trends in their populations.

It is important to be aware that Maryland does not allow this type of reduction fishing, nor the bycatch allowed with reduction fishing in Virginia. Menhaden are principally harvested in this State to use as bait for other fish or crabs. Therefore, this resolution would not impact any of our local Maryland watermen, sport fishermen, or outdoorsmen. It is important that the General Assembly recognizes that the commercial watermen, the charter boat captains, and the sport fishermen are on the same page in supporting this resolution. The detrimental impact of the overharvesting of menhaden by this large corporation has a serious impact on our entire ecosystem and is a grave concern for all Marylanders.

I respectfully request a favorable report on Senate Joint Resolution 2. Thank you for your consideration.

Sincerely,


Senator Jack Bailey

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**SIERRA
CLUB**

P.O. Box 278
Riverdale, MD 20738

Committee: Education, Energy, and the Environment

Testimony on: SJ2 “Atlantic States Marine Fisheries Commission – Atlantic Menhaden – Prohibition on Commercial Reduction Fishing”

Position: Support

Hearing Date: March 8, 2023

The Maryland Chapter of the Sierra Club urges a favorable report on SJ2. This resolution asks the Atlantic States Marine Fisheries Commission to exercise its authority regarding the management of the menhaden fishery to consider prohibiting commercial reduction fishing of Atlantic menhaden, including the use of purse seines and spotter planes, in the Chesapeake Bay.

Atlantic menhaden are a keystone species for the Chesapeake Bay. As noted by this resolution, Atlantic menhaden form a critical connection between the bottom and the top of the food chain. Menhaden are filter feeders, eating plankton and rotifers and helping clear the water of nutrient pollution.¹ They are also a vital source of food to predators, including other fish, dolphins, whales, osprey, and bald eagles. While this is incredibly important to the ecosystem of the Bay, it is also important to the fishing industry. Many species of fish that we harvest from the Bay rely on the menhaden as a food source, including rockfish (striped bass), bluefish, and weakfish.

The Chesapeake Bay is an important nursery for the menhaden that helps sustain the population along the entire Atlantic coast. It is deeply concerning that the number of menhaden juveniles have decreased significantly since 1976 and has stayed low in the last 20 years.²

To protect the natural vitality of the Chesapeake Bay, it is important that action be taken now. We urge the Committee to issue a favorable report.

Marc Imlay
Endangered Species Workgroup Coordinator
marc.imlay@mdsierra.org

Josh Tulkin
Chapter Director
Josh.Tulkin@MDSierra.org

¹ <https://www.vims.edu/research/units/projects/menhaden/research/modeling.php>

² Durrell, E. Q. & Weedon, C. (2019). Striped Bass Seine Survey Juvenile Index Web Page. DNR.Maryland.gov/Fisheries/Pages/Juvenile-Index.ASPX. Maryland Department of Natural Resources, Fisheries Service.

Founded in 1892, the Sierra Club is America's oldest and largest grassroots environmental organization. The Maryland Chapter has over 70,000 members and supporters, and the Sierra Club nationwide has over 800,000 members and nearly four million supporters.

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March 8, 2023

To the Maryland Senate Education, Energy and Environment Committee

Currently, the Virginia-based menhaden fishery is very likely overfishing the stock of Atlantic Menhaden in and around the Chesapeake Bay, which is preventing this important forage fish from making its way into the bay and its tributaries. As the base an important prey item for many important species in the bay, such as Striped Bass and Osprey, the disappearance of most of the menhaden from the bay is contributing to the disappearance of many species that rely on menhaden. Furthermore, Striped Bass have had 4 terrible reproductive years in a row and the lower levels of menhaden (i.e., their favorite, energy-rich and dense prey) in the bay are very likely a contributing factor. Instead of foraging on Menhaden, an absence of these fish means striped bass and predators need to rely more on blue crabs, white perch, and other prey items that are not as easy to consume in large quantities. This means striped bass need to likely spend more energy searching and acquiring prey, so they need even more prey to support them and their reproductive efforts, leading to reduced reproductive output. Therefore, a decline in menhaden is very problematic for many predators in the Chesapeake, including our state fish.

Virginia has been allotted about 75% of the entire Atlantic Coast's quota, which is a drastically disproportionate amount relative to its coastline. Additionally, much of their harvesting occurs as menhaden migrate into the bay, where they enter Maryland's waters. What this essentially means is 75% of the quota for the entire Atlantic Coast is being taken in the bay or just before they enter the bay. While this may not be causing overfishing for the entire Atlantic Coast based on quotas, because all of these fish are being taken from essentially just the bay, it is having locally drastic effects on the ecosystem.

Therefore, I am strongly in favor of Senate Resolution 02 and action by the ASMFC to ensure that enough menhaden persist in the bay to sustain a healthy ecosystem. I also strongly suggest either delaying the start of the menhaden commercial season until after a significant amount of menhaden have migrated north along the Virginia coast into the Chesapeake bay (which occurs in spring/early summer), by pushing these factory fishing efforts out of the Chesapeake Bay at least 3 miles offshore into federal waters instead of along the coastline in state waters (as the fish in the state waters are most likely to migrate along the coast into the bay), pushing the commercial menhaden fishery north of the entrance to the Chesapeake bay during their migration, and/or significantly reducing the quotas of menhaden in and around the mouth of the Chesapeake bay.

These actions are necessary to ensure the long-term health of the Chesapeake Bay ecosystem and the associated fisheries and ecotourism.

Sincerely,

Dr. Noah Bressman, PhD
Assistant Professor of Physiology
Department of Biology
Salisbury University
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The Center for Conservation Biology

William & Mary

20 August 2020

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The Honorable Ralph Northam
Governor, State of Virginia
PO Box 1475
Richmond, VA 23218

Dear Governor Northam,

The menhaden is a keystone fish within the Chesapeake Bay ecosystem. Many of our most iconic species including the bald eagle, osprey, great blue heron and brown pelican depend on menhaden stocks to sustain their breeding populations within the Bay. Other species such as common loons and northern gannets that stage within the Chesapeake also depend on menhaden to fuel their migrations. Approximately 30% of the North Atlantic gannet population comes into the Bay during the spring to feed on menhaden before flying north to breeding grounds in Newfoundland.

Deep withdraws of menhaden stocks for the reduction fishery is having an impact on consumer species. We have conducted fieldwork with osprey throughout the lower Chesapeake Bay for 50 years and data demonstrate ongoing impacts. Through three generations of graduate students (1975-2006) we have observed shifts in diet and an associated reduction in productivity. Fish delivery rates were more than three times higher in 1975 compared to 2006. Menhaden, once the dominant fish in the diet now represents less than 30%. Shifts in diet away from menhaden have been coincident with a 90% reduction in menhaden stocks (Maryland, DNR haul surveys). No other fish species available to consumers provides the energy content of menhaden. Reductions in menhaden stocks have caused osprey productivity to decline to below DDT-era rates. These rates are insufficient to support the osprey population within the main stem of the Bay.

Menhaden provide critical ecosystem services within the Chesapeake Bay. We request that the needs of the broader ecosystem be considered when setting harvest policy and that menhaden stocks be maintained at levels that support a healthy Chesapeake Bay ecosystem.

Sincerely,

Bryan D. Watts, Ph.D.
Mitchell A. Byrd Professor of Conservation Biology
Director, Center for Conservation Biology
College of William and Mary

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FOOD SUPPLEMENTATION INCREASES REPRODUCTIVE PERFORMANCE OF OSPREYS
IN THE LOWER CHESAPEAKE BAY

MICHAEL H. ACADEMIA¹ AND BRYAN D. WATTS

Center for Conservation Biology, College of William & Mary, Williamsburg, VA 23185

ABSTRACT.--The Atlantic States Marine Fisheries Commission (ASMFC), the governing body responsible for managing fisheries on the U.S. East Coast, formally adopted the use of Ecological Reference Points (ERPs) for Atlantic menhaden, *Brevoortia tyrannus*. Scientists and stakeholders have long recognized the importance of menhaden and predators such as ospreys, *Pandion haliaetus*, that support the valuable ecotourism industry and hold cultural significance. Landings in the reduction fishery are at their lowest levels and menhaden is facing potential localized depletion. Mobjack Bay, located within the lower Chesapeake Bay, has been a focus of Osprey research since 1970 and represents a barometer for the relationship between Osprey breeding performance and menhaden availability. Since local levels of menhaden abundance were not available, we conducted a supplemental feeding experiment on osprey pairs during the 2021 breeding season. Our main objective was to determine if the delivery rate of menhaden had an influence on nest success and productivity. Nest success ($\chi^2 = 5.5$, $df = 1$, $P = 0.02$) and productivity ($\beta = 0.88$, $SE = 0.45$, $CI = 0.049, 1.825$, $P = 0.048$) were significantly higher within the treatment group. Reproductive rates within the control group were low and unsustainable suggesting that current menhaden availability is too low to support a demographically stable Osprey population.

Supplemental Information (Definitions & Conclusions):

- ASMFC defined localized depletion in Chesapeake Bay “as a reduction in menhaden population density below the level of abundance that is sufficient to maintain its basic ecological, economic, and social/cultural functions” (Annis et al. 2009).
- Ecosystem Based Fisheries Management evolves when ERPs are consistently monitored (Pikitch et. al. 2004). According to Amendment 3 of the Interstate Fishery Management Plan (FMP) for Atlantic menhaden (Southeast Data Assessment and Review [SEDAR] 2020, Anstead et al. 2021), ERPs are described as “a method to assess the status of menhaden not only with regard to the sustainability of human harvest, but also with the

regard to their interaction with predators and the status of other prey species.” The ERP working group is tasked with developing ERPs that are menhaden-specific that can account for the abundance of menhaden and their species role as a forage fish (Amendment 3 to the FMP, Anstead et al. 2021). Ospreys are a non-fish predator and can serve this role which can allow management to practice informed decisions to develop harvest targets, assess menhaden’s role as prey for upper trophic levels, and advance an ecosystem approach to fisheries management (EAFM) which considers multiple components of the ecosystem than just the target species (Patrick and Link 2015). The menhaden population within Mobjack Bay is not currently adequate to sustain the osprey breeding population.

LITERATURE CITED

- Annis, E., K. Friedland, J. and Uphoff. 2009. Ecosystem-based fisheries management for Chesapeake Bay: Menhaden background and issue briefs. Maryland Sea Grant UMSGTS-2009-08, pp. M/2-9.
- Anstead, K.A., K. Drew, D. Chagaris, A. M. Schueller, J. E. McNamee, A. Buchheister, G. Nessler, J. H. Uphoff Jr, M. J. Wilberg, A. Sharov, and M. J. Dean. 2021. The path to an ecosystem approach for forage fish management: A case study of Atlantic menhaden. *Frontiers in Marine Science*, 8, p.491.
- Patrick, W. S. and J. S. Link, J.S. 2015. Myths that continue to impede progress in ecosystem based fisheries management. *Fisheries*, 40(4), pp.155-160.
- Pikitch, E. K., C. Santora, E. A. Babcock, A. Bakun, R. Bonfil, D. O. Conover, P. Dayton, P. Doukakis, D. Fluharty, B. Heneman and E. D. Houde. 2004. Ecosystem based fishery management. *Science*, 305(5682), pp.346-347.
- Southeast Data Assessment and Review [SEDAR]. 2020. SEDAR 69 – Atlantic Menhaden Benchmark Stock Assessment Report. SEDAR, North Charleston SC.



Delaware-Maryland Synod
Evangelical Lutheran Church in America
God's work. Our hands.

Testimony Prepared for the
Education, Energy, and the Environment Committee
on
Senate Joint Resolution 2
March 8, 2023
Position: **Favorable**

Mr. Chairman and members of the Committee, thank you for the opportunity to speak for a flourishing creation. I am Lee Hudson, assistant to the bishop for public policy in the Delaware-Maryland Synod, Evangelical Lutheran Church in America. We are a faith community with three synods in every part of our State.

Our community expressed concern for a healthy environment to sustain life in "Caring for Creation" (ELCA, 1993). Among its perspectives is stewardship of natural resources and processes. Nature is simply not ours. It is a universal given, not traded goods.

Human activity has consequences; some threaten the abundance of life on earth. We must discern, to be wise; we must respect to flourish. Because communities of faith reverence a Maker, their traditions typically approach providence with gratitude and awe. Through created gifts—provided, not earned or owned—the holiness of life, time and human experience may be glimpsed. We are not merely all in this together; we are all of *this*, together.

Mechanized industrial fishing threatens the naturally occurring scales of habitat, species, and generation that have made the garden of earth plentifully good. Technology-aided trawling collapsed the super-abundant Grand Banks fishery decades ago. The Bay's oyster stock never recovered after about 1905. Horseshoe crabs have been teetering on the brink for years because they are cheap to harvest and saleable at market. With them an entire cadre of long-migrant shorebirds are threatened. Any notion that we know what we're doing, or that some benevolent market force will do the right thing for us is a fantasy. We live in a depleted natural world; we depleted it; the material historical record tells us this truth.

And so, also menhaden, a critical resource in the entire East Coast aquatic food chain. Mechanized fishing is reducing its stock below a population sufficient for sustainability, let alone for commercial demand. To avoid crashing another building-block of life on the planet we will have to stop doing what we are doing. To return to the Grand Banks fishery, a jury-rigged regime of quotas and regulation have made it possible to save some commercial fishing there. It never recovered a thriving stock. We are essentially fish-farming the open ocean to save commerce, but not natural wildlife.

Banning industrial equipment meant to take more fish faster is the only way to save multiple tiers of aquatic life along the East Coast, leave aside any idea of "profit." We support **Senate Joint Resolution 2** to add Maryland's to voices calling for the Atlantic Marine Fisheries Commission to restrict the menhaden harvest. It's necessary, urgent, and calls for your favorable report.

Lee Hudson

5699 Meridale Rd. Baltimore, MD 21228 410-230-2860 800-869-5492 fax 410-230-2871

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Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Gashorn, Deputy Secretary

**Meeting of the Tidal and Coastal Recreational Fisheries Committee
June 29, 2023**

Summary

Committee Members in Attendance: Members on the call included Co-Chair Lenny Rudow, Co-Chair Vince Cannuli; Committee members present included the following (in alphabetical order, by region – **Tidal:** Gregory Allen, Sewell "Toby" Frey, Albert Hoffman, Jr, Jesse Howe, Rudolph Lukacovic, Kevin McMenamin, Eric Packard, Alan Polk, Phil F Zalesak; **Coastal:** Christopher Mack.

Committee Members Not in Attendance (Absent): **Tidal:** Chris Buchleitner, Frank Carver, Patrick A Cazalet, Jeff Cleland, Mark Curl, Lawrence Darlington Burkindine, James E Deriu, Brian Hardman, Donald Johnson, Richard Kuhlman, James McCarter, Cyrus S. Picken, Mustafa Sidik, Felipe Urquilla, Walter N. Vieser II, Damon K Williams; **Coastal:** Scott Lenox, Beverly Fleming, Wesley Muller.

Department of Natural Resources Staff Participating: Erik Zlokovitz, Mike Luisi, Paul Genovese, Jim Uphoff, Alexis Park

Non-committee Members Participating: Tom Lily

Motions - Note: The department does not vote on motions.

- Motion from Phil Zalesak, Second by Lenny Rudow - *The Maryland Delegation to the ASMFC Atlantic Menhaden Management Board needs to put forth a motion which states: The Atlantic menhaden reduction fishery shall be limited to federal waters east of the western boundary of the Exclusive Economic Zone beginning at 3 nautical miles from the Atlantic Coast.* No objections, 1 abstention. Motion passes.
- Motion from Kevin McMenamin, Second by Alan Polk - *The TCRFC moves to end the trophy striped bass season in its current format (one fish per person per day, with a minimum size of 35 inches, May 1-15, is the current trophy season regulation and dates) and implement a 31-inch maximum size for the spring striped bass season starting on May 1 and lasting for the entire season.* No objections, motion passes.
- Motion from Toby Frey, Second by Lenny Rudow - *The second place winners from the votes for co-chairpersons will be vice-chairs.* No objections. Motion passes.
 - Jesse Howe and Chris Mack are now vice-chairs for the tidal and coastal regions respectively. (They won the second place vote in their respective regions).

From: [Robert Beal](#)
To: [Tina Berger](#)
Subject: Fwd: [External] "Public Comments" Before the ISFMP Policy Board Meeting on August 3rd
Date: Tuesday, July 25, 2023 12:54:17 PM
Attachments: [image003.png](#)
[2023-0724 Localized Depletion of Atlantic Menhaden - Position Paper.pdf](#)
[2023-0724 Localized Depletion of Atlantic Menhaden - Power Point.pdf](#)

From: Phil Zalesak <flypax@md.metrocast.net>

Sent: Sunday, July 23, 2023 7:28:02 AM

To: 'Robert Beal' <rbeal@asmfc.org>; 'LYNN FEGLEY' <lynn.fegley@maryland.gov>; 'Spud Woodward' <swoodward1957@gmail.com>; 'Mel Bell' <bellm@dnr.sc.gov>

Cc: 'Josh Kurtz -DNR-' <josh.kurtz@maryland.gov>; 'DAVE GOSHORN' <david.goshorn@maryland.gov>; 'Allison Colden' <acolden@cbf.org>; 'DAVID SIKORSKI' <davidsikorski@ccamd.org>; 'THOMAS LILLY' <foragematters@aol.com>; 'MICHAEL LUISI' <michael.luisi@maryland.gov>; 'Russel Dize' <mjdize@verizon.net>; bdwatt@wm.edu <bdwatt@wm.edu>; 'MICHAEL ACADEMIA' <macademia@email.wm.edu>; 'THOMAS LILLY' <foragematters@aol.com>; 'Steve Atkinson' <steveatkinson52@verizon.net>; playinhookeychartersvb@gmail.com <playinhookeychartersvb@gmail.com>; 'Jon Hurdle' <jonhurdle@gmail.com>; 'David Reed' <david@chesapeakelegal.org>; Leaddog@rockfishing.com <Leaddog@rockfishing.com>; 'Noah Bressman' <noahbressman@gmail.com>; 'Albert Hoffman' <downbackshore@outlook.com>; 'F.A. Antinori' <btf25@aol.com>; 'Brian Hardman' <Leaddog@rockfishing.com>; 'Chris Buchleitner' <CHRIS.BUCHLEITNER@GMAIL.COM>; 'Christopher Mack' <chefchrismack@gmail.com>; 'Cyrus S. Picken Jr' <cspicken@gmail.com>; 'Damon K Williams' <chesapeakebayoutdoors@gmail.com>; 'Donald Johnson' <captdonj@gmail.com>; 'Eric Packard' <ericp669@gmail.com>; 'Frank Carver' <loosenucharters@gmail.com>; 'Gregory Allen' <g.allendds@comcast.net>; 'James E Deriu' <james@deriu.com>; 'James McCarter' <jfm5152@yahoo.com>; 'Jeff Cleland' <jjclelan@syr.edu>; 'Jesse Howe' <jessekhowe@gmail.com>; 'Kevin McMenamin' <kevin_mcmenamin@keysight.com>; 'Lawrence Burkindine' <lburkindine@aol.com>; 'Lenny Rudow' <ultangler@gmail.com>; 'Mark Curt' <markcurl@aol.com>; 'Mustafa Sidik' <mussidik1@gmail.com>; 'Patrick A Cazalet' <patrickcazalet@yahoo.com>; 'Richard Alan Polk' <alanpolk09@gmail.com>; 'Richard Kuhlman' <rtkuhlman@msn.com>; 'Rudolph Lukacovic' <rlukacovic@yahoo.com>; 'SCOTT LENOX' <fishinoc@hotmail.com>; 'Vince Cannul' <cannulia@gmail.com>; 'Walter N. Vieser II' <WALT.VIESER@GMAIL.COM>; 'Wesley Muller' <wesley8808@gmail.com>; 'ATLANTIC MENHADEN BOARD' <atlmen_bd@asmfc.org>

Subject: [External] "Public Comments" Before the ISFMP Policy Board Meeting on August 3rd

Bob,

First, I will be attending ISFMP Policy Board on Thursday, August 3rd at 9:15 for the "Public Comments" portion of the meeting.

Second, my comments will address "Localized Depletion of Atlantic Menhaden in Virginia Waters." I have attached a position paper and a Power Point presentation in pdf format for review by members of the ISFMP Policy Board and the Atlantic Menhaden Management Board in preparation for the meeting. Please distribute accordingly. Further, I will confine my comments to 3 minutes.

Regards, Phil

From: Phil Zalesak [mailto:flypax@md.metrocast.net]
Sent: Friday, July 21, 2023 3:40 PM
To: 'Robert Beal'; 'LYNN FEGLEY'; 'Spud Woodward'; 'Mel Bell'
Cc: 'Josh Kurtz -DNR-'; 'DAVE GOSHORN'; 'Allison Colden'; 'DAVID SIKORSKI'; 'THOMAS LILLY'; 'MICHAEL LUISI'; 'Russel Dize'; 'bdwatt@wm.edu'; 'MICHAEL ACADEMIA'; 'THOMAS LILLY'; 'Steve Atkinson'; 'playinhookeychartersvb@gmail.com'; 'Jon Hurdle'; 'David Reed'; 'Leaddog@rockfishing.com'; 'Noah Bressman'; 'Albert Hoffman'; 'F.A. Antinori'; 'Brian Hardman'; 'Chris Buchleitner'; 'Christopher Mack'; 'Cyrus S. Picken Jr'; 'Damon K Williams'; 'Donald Johnson'; 'Eric Packard'; 'Frank Carver'; 'Gregory Allen'; 'James E Deriu'; 'James McCarter'; 'Jeff Cleland'; 'Jesse Howe'; 'Kevin McMenamin'; 'Lawrence Burkindine'; 'Lenny Rudow'; 'Mark Curt'; 'Mustafa Sidik'; 'Patrick A Cazalet'; 'Richard Alan Polk'; 'Richard Kuhlman'; 'Rudolph Lukacovic'; 'SCOTT LENOX'; 'Vince Cannul'; 'Walter N. Vieser II'; 'Wesley Muller'; 'ATLANTIC MENHADEN BOARD'
Subject: RE: [External] Friday Update to Proposed "Public Comment" Agenda Item for the Atlantic Menhaden Management Board Meeting on August 3rd at 1130

2nd try! Back at my computer . . .

Bob,

So the Management Board meetings shall be called by the Executive Director with the approval of the Commission Chair.

How did you and the Commission Chair determine that there was no need for an Atlantic Menhaden Management Board meeting in August? What was the rationale?

Regards, Phil

From: Robert Beal [mailto:Rbeal@asmfc.org]
Sent: Friday, July 21, 2023 1:50 PM
To: PHILIP ZALESAK; LYNN FEGLEY; Spud Woodward; Mel Bell
Cc: 'Josh Kurtz -DNR-'; 'DAVE GOSHORN'; Allison Colden; 'DAVID SIKORSKI'; THOMAS LILLY; MICHAEL LUISI; 'Russel Dize'; 'bdwatt@wm.edu'; MICHAEL ACADEMIA; THOMAS LILLY; Steve Atkinson; playinhookeychartersvb@gmail.com; 'Jon Hurdle'; David Reed; Leaddog@rockfishing.com; Noah Bressman; 'Albert Hoffman'; F.A. Antinori; 'Brian Hardman'; 'Chris Buchleitner'; 'Christopher Mack'; 'Cyrus S. Picken Jr'; 'Damon K Williams'; 'Donald Johnson'; 'Eric Packard'; Frank Carver; 'Gregory Allen'; 'James E Deriu'; 'James McCarter'; 'Jeff Cleland'; 'Jesse Howe'; 'Kevin McMenamin'; 'Lawrence Burkindine'; 'Lenny Rudow'; 'Mark Curt'; 'Mustafa Sidik'; 'Patrick A Cazalet'; PHILIP ZALESAK; 'Richard Alan Polk'; 'Richard Kuhlman'; 'Rudolph Lukacovic'; SCOTT LENOX; 'Vince Cannul'; 'Walter N. Vieser II'; 'Wesley Muller'; ATLANTIC MENHADEN BOARD
Subject: RE: [External] Friday Update to Proposed "Public Comment" Agenda Item for the Atlantic Menhaden Management Board Meeting on August 3rd at 1130

Mr. Zalesak,

In light of your recent threat of legal action, I wanted to let you know about the Commission's process for scheduling meetings. Management Board meetings "shall be called by the Executive Director with the approval of the Commission Chair". Individual species

management board chairs don't schedule meetings for their boards. With that said, the Commission Chair, the Board Chair and I have conferred and we all agree a Menhaden Board meeting is not necessary at this time. This decision was noted in an earlier email from Chair Woodward.

Regarding public input, the Commission provides multiple opportunities for in-person, virtual, and written public comment. You have used all of these opportunities in the past.

If a stakeholder would like to comment in person about menhaden or other issues, there is a public comment period at the beginning of the ISFMP Policy Board on Wednesday, August 3rd. As a reminder the Policy Board sets the Commission's priorities for science and management. It is also worth noting the Policy Board membership is nearly identical to that of the Menhaden Management Board.

If a stakeholder provides public comment to the Commission by 5:00pm on Tuesday, July 25th, it will be provided to all Commissioners in supplemental briefing materials for the Summer Meeting.

If a stakeholder wants to email anything directly to the Commissioners, the email lists are available on the Commission's website: <https://asmfc.org/about-us/boards-committees-panels>

Regards,
Bob

Bob Beal
Executive Director
Atlantic States Marine Fisheries Commission
Phone: 703.842.0740
www.ASMFC.org

From: Phil Zalesak <flypax@md.metrocast.net>
Sent: Friday, July 21, 2023 9:18 AM
To: LYNN FEGLEY <lynn.fegley@maryland.gov>; Robert Beal <Rbeal@asmfc.org>; Spud Woodward <swoodward1957@gmail.com>; Mel Bell <bellm@dnr.sc.gov>
Cc: 'Josh Kurtz -DNR-' <josh.kurtz@maryland.gov>; DAVE GOSHORN <david.goshorn@maryland.gov>; Allison Colden <acolden@cbf.org>; 'DAVID SIKORSKI' <davidsikorski@ccamd.org>; THOMAS LILLY <foragematters@aol.com>; MICHAEL LUISI <michael.luisi@maryland.gov>; 'Russel Dize' <mjdize@verizon.net>; bdwatt@wm.edu; MICHAEL ACADEMIA <macademia@email.wm.edu>; THOMAS LILLY <foragematters@aol.com>; Steve Atkinson <steveatkinson52@verizon.net>; playinhookeychartersvb@gmail.com; 'Jon Hurdle' <jonhurdle@gmail.com>; David Reed <david@chesapeakelegal.org>; Leaddog@rockfishing.com; Noah Bressman <noahbressman@gmail.com>; 'Albert Hoffman' <downbackshore@outlook.com>; F.A. Antinori <btf25@aol.com>; 'Brian Hardman' <Leaddog@rockfishing.com>; 'Chris Buchleitner' <CHRIS.BUCHLEITNER@GMAIL.COM>; 'Christopher Mack' <chefchrismack@gmail.com>; 'Cyrus S. Picken Jr' <cspicken@gmail.com>; 'Damon K Williams' <chesapeakebayoutdoors@gmail.com>; 'Donald Johnson' <captdonj@gmail.com>; 'Eric Packard' <ericp669@gmail.com>; Frank Carver

<loosenuptarters@gmail.com>; 'Gregory Allen' <g.allendds@comcast.net>; 'James E Deriu' <james@deriu.com>; 'James McCarter' <jfm5152@yahoo.com>; 'Jeff Cleland' <jjclelan@syr.edu>; 'Jesse Howe' <jessehowe@gmail.com>; 'Kevin McMenamin' <kevin_mcmenamin@keysight.com>; 'Lawrence Burkindine' <lburkindine@aol.com>; 'Lenny Rudow' <ultangler@gmail.com>; 'Mark Curt' <markcurl@aol.com>; 'Mustafa Sidik' <mussidik1@gmail.com>; 'Patrick A Cazalet' <patrickcazalet@yahoo.com>; PHILIP ZALESAK <flypax@md.metrocast.net>; 'Richard Alan Polk' <alanpolk09@gmail.com>; 'Richard Kuhlman' <rtkuhlman@msn.com>; 'Rudolph Lukacovic' <rlukacovic@yahoo.com>; SCOTT LENOX <fishinoc@hotmail.com>; 'Vince Cannul' <cannulia@gmail.com>; 'Walter N. Vieser II' <WALT.VIESER@GMAIL.COM>; 'Wesley Muller' <wesley8808@gmail.com>

Subject: [External] Friday Update to Proposed "Public Comment" Agenda Item for the Atlantic Menhaden Management Board Meeting on August 3rd at 1130

Lynn,

That is truly laughable.

So, you think that demanding that the Public (credible scientists and credible recreational fishermen) be given the right to express their urgent concerns regarding localized depletion of Atlantic Menhaden Management Board in Virginia waters is outrageous?

I am pretty sure that Dr. Bryan Watts, Dr. Noah Bressman, Michael Academia, Steve Atkinson (VSSA President), Captain Bill Pappas and Captain Brian Hardman would disagree with you.

This is so simple. All Mel Bell has to do is give the Public 30 minutes to express their concerns about localized depletion of Atlantic menhaden in Virginia waters. It would add a whole 30 minutes to the summer ASMFC meeting. And it wouldn't interfere with the proposed preliminary agenda.

What's the big deal?

The Monday noon deadline stands. It's not a threat. It's a statement of fact.

Have nice weekend.

Phil

From: Lynn Fegley -DNR- [<mailto:lynn.fegley@maryland.gov>]

Sent: Friday, July 21, 2023 7:39 AM

To: Robert Beal; Spud Woodward; Mel Bell

Cc: Josh Kurtz -DNR-; David Goshorn -DNR-; Allison Colden; DAVID SIKORSKI; rr; flypax; Michael Luisi -DNR-; Russel Dize

Subject: email RE menhaden and threat of legal action

Good Evening Bob, Spud and Mel,

I am hoping that you can distribute this to the menhaden board, I would appreciate it.

Dear Menhaden Management Board

This is in response to an email sent on the afternoon of 12/20 by Phil Zalesak. Once again,

Mr. Zalesak's comments do not represent the position of the State of Maryland at this time and are not representative of the input we receive from a diverse array of constituents across the state. Further, while we welcome and value public comment around all of the complex issues we manage, we feel it is important to stress that we do not condone the use of threats against Commissioners who volunteer their time and expertise to maintain the critical function of the Atlantic States Marine Fisheries Commission. We have noted the inappropriate tone of Mr. Zalesak's correspondence.

*Sincerely,
Lynn F.*

Lynn Waller Fegley
Director, Fishing and Boating Services
Maryland Department of Natural Resources
410-260-8285 (office)
443-223-9279 (cell)
lynn.fegley@maryland.gov



[Website](#) | [Facebook](#) | [Twitter](#)

Localized Depletion of Atlantic Menhaden in the Chesapeake Bay and
Its Impact on the Virginia and Maryland Economies and Marine Environment by
Phil Zalesak, President of www.smrfo.org
July 24, 2023

The Problem

Striped Bass are dependent on Atlantic menhaden for survival based on the latest science as documented in reference (a). Although there are plenty of Atlantic menhaden in the Atlantic Ocean, there are insufficient numbers in the Chesapeake Bay and its entrance during the period of industrial reduction harvesting of Atlantic menhaden.

Localized depletion of Atlantic menhaden occurs when there is very little migration into and out of the Chesapeake Bay and intense industrial reduction fishing is occurring at the same time. There is little migration at the entrance of the Chesapeake Bay from June until October which is the prime season for the Atlantic menhaden reduction fishery (b). See Figure 1.

An industrial reduction fishery located in Reedville, Virginia is harvesting over 3/4 of a billion Atlantic menhaden from the Chesapeake Bay and waters just outside the Bay. See the table below and references (c), (d), and (e). This has increased the mortality rate of Striped Bass in the Chesapeake Bay and has impacted the recreational fishing industry in Virginia and Maryland.

Allocation	Percentage	Metric Tons	Pounds	Fish*
Atlantic Coast	100.00%	233,550	514,884,330	1,119,313,761
Virginia	75.20%	175,630	387,193,016	841,723,948
Reduction Fishery	67.71%	158,137	348,628,592	757,888,243
Chesapeake Bay	21.84%	51,000	112,434,600	244,423,043
Atlantic Ocean	45.87%	107,137	236,200,420	513,479,174
Other States	24.80%	57,920	127,691,314	277,589,813
* .46 pounds per fish				

The Data

Striped Bass Metrics

The latest science has determined that there is a direct relationship between the mortality rate of Atlantic menhaden and the mortality rate of striped bass. The mortality rate of striped bass increases when the mortality rate of Atlantic menhaden increases.

Up until 2006 there was no harvesting quota for the Atlantic menhaden reduction fishery in the Chesapeake Bay. The first quota was 110,400 metric tons. It was then lowered to 87,216 metric tons from 2014 to 2018. Finally, the quota was lowered to 51,000 metric tons in 2018 where it remains today. See reference (c).

51,000 metric tons of Atlantic menhaden is over 112,434,600 pounds or a total **244,423,043** fish at .46 pounds per fish.

Currently, the reduction fishery is allocated 158,137 metric tons. 51,000 metric tons or **244,423,043** fish are being harvested from the Chesapeake Bay (e). The remaining 107,137 metric tons or **513,479,173 fish** are being harvested from just outside the Bay along the Atlantic Coast. That's a total of 348,628,592 pounds or **757,888,761** fish.

There is no science which supports removing three quarters of a billion Atlantic menhaden from the Chesapeake Bay and its entrance.

The **recreational harvest of Striped Bass** in the Chesapeake Bay has **declined over 60%** from a high in 2006 of over 2 million fish to a little over 750,000 fish in 2020. See Figure 2.

The **commercial harvest of Striped Bass** in the Chesapeake Bay has **declined over 50%** from a high of over 1 million fish in 2000 to around 500,000 fish in 2020. See Figure 3.

The purse seine nets used by the reduction fishery can be up 1,400 feet long and 65 feet deep (NOAA) and often scrape the bottom of the Bay floor when harvesting Atlantic menhaden. The Chesapeake Bay **reduction fishery Striped Bass bycatch** could easily be **greater than total Chesapeake Bay commercial harvest for the year** as the striped bass feeding on the menhaden can't escape when the nets are scraping the bottom.

In 2020 the **Striped Bass** commercial harvest in the Chesapeake Bay was **492,400 fish** (Figure 3). The total **Atlantic menhaden** reduction harvest was **244,423,043 fish**. If the bycatch of Striped Bass is greater than to .2 % of the total number of fish caught by the reduction industry, then the **reduction fishery is killing more Striped Bass than is being harvested by the Striped Bass commercial fishermen in the Chesapeake Bay.** This is further complicated by the fact that reduction fishery spotter pilots are unable to see predator fish in around that Atlantic menhaden schools they are harvesting. Go to **2:35:40** for the testimony of **Forest Brand** reduction fishery spotter pilot <https://www.youtube.com/watch?app=desktop&v=Cn-ow-dNfsE&t=5900s>.

We know that striped bass pursue schools of menhaden during the reduction harvesting process. So, the striped bass bycatch is more likely to be larger than .2 % or **2 fish out of 1000** caught in their nets. This could account for a significant reduction in the striped Young-of-Year index for the last 4 years. See Figure 4.

Striped Bass Economic Impact

Virginia

- In 2016 the GDP associated with recreational fishing for Striped Bass in Virginia was over \$241.551 million dollars and accounted for over 3,420 jobs. See Figure 5.
- In 2016 the GDP associated with the commercial sector for Striped Bass in Virginia was \$1.379 million dollars and accounted for 42 jobs.

Maryland

- In 2016 the GDP associated with recreational fishing of Striped Bass in Maryland was over \$802.791 million dollars and accounted for 10,193 jobs. See Figure 6.
- In 2016 the GDP associated with the commercial sector was \$10.9 million dollars and responsible for 584 jobs.

Summary for Virginia and Maryland

- From a **dollars** standpoint the economic impact of Striped Bass **recreational fishing** was over **90 times more significant** than commercial fishing. See the table below.
- From a **jobs** standpoint the economic impact of Striped Bass **recreational fishing** was **22 times more significant** than the commercial fishing.

	Recreational GDP	Commercial GDP	Recreational Jobs	Commercial Jobs
Virginia	\$241,551,000	\$1,379,000	3,420	42
Maryland	\$802,791,200	\$10,191,000	10,193	584
Total	\$1,044,342,200	\$11,570,000	13,613	626

Bluefish and Weakfish Metrics

Commercial harvest data for Bluefish and Weakfish, which are dependent on Atlantic menhaden for their survival, are shown in figures 7 and 8. The **Bluefish** commercial harvest has been **devastated** and the **Weakfish** have been **depleted** in the Chesapeake Bay.

For-Hire Fishing Decline

During the period of 2000 – 2019, the **number of Virginia For-Hire active vessels** declined from a high of 390 in 2009 to 269 in 2019 for a **31% decline**, and the number of **fishing trips** went from a high of 108,631 in 2001 to 33,197 for a **70% decline**. The decline in Virginia the For-Hire business base is documented in Figures 9 and 10.

During the period of 2000 – 2019, the **number of Maryland For-Hire active vessels declined** from a 428 high to 212 for a **51% decline**, and the number of **fishing trips** went from 18,199 to 9,571 for a **47% decline**. The decline in Maryland For-Hire business base is documented in Figures 11 and 12.

Osprey Metrics

According to Dr. Bryan Watts of the College of William and Mary reductions in menhaden stocks have caused osprey productivity to decline to below DDT-era rates. These rates are insufficient to support the osprey population within the main stem of the Bay. This is based on 50 years of research. See reference (f).

Michael Academia, a graduate assistant at the College of William and Mary, updated this data set in 2021 and documented his findings in a paper he presented at the International Raptor Research Foundation Conference. This paper was awarded the prestigious Andersen Memorial Award at that meeting. His research can be viewed via video at <https://youtu.be/IKR-DHwZIU>

Conclusion

Localized depletion of Atlantic menhaden in the Chesapeake Bay and the entrance to the Bay is devastating to the Virginia and Maryland recreational fishing industries and the Chesapeake Bay marine environment.

Recommendation

End the Atlantic menhaden reduction fishery in Virginia waters and limit reduction fishing to federal waters east of the 3 nautical mile Exclusive Economic Zone.

References:

- (a) SEDAR 69 Ecological Reference Points Stock Assessment Report on Atlantic Menhaden dated January 2020, pages iii and 375
- (b) Estimation of movement and mortality of Atlantic menhaden during 1966–1969 using a Bayesian multi-state mark-recovery model Emily M. Liljestrang, Michael J. Wilberg, Amy M. Schueller, Published online 2/2019
- (c) Amendment 3 to the Interstate Fishery Management Plan for Atlantic Menhaden November 2017, page v
- (d) ASMFC Press Release: Atlantic Menhaden Board Sets 2023 TAC at 233,550 MT & Approves Addendum to Address Commercial Allocations, Episodic Event Set Asides, and Incidental Catch/Small-scale Fisheries
- (e) Virginia Administrative Code, Chapter 1270, Pertaining to Atlantic Menhaden
- (f) Dr. Bryan Watts Letter to Virginia Governor Ralph Northam, 8/20/2020

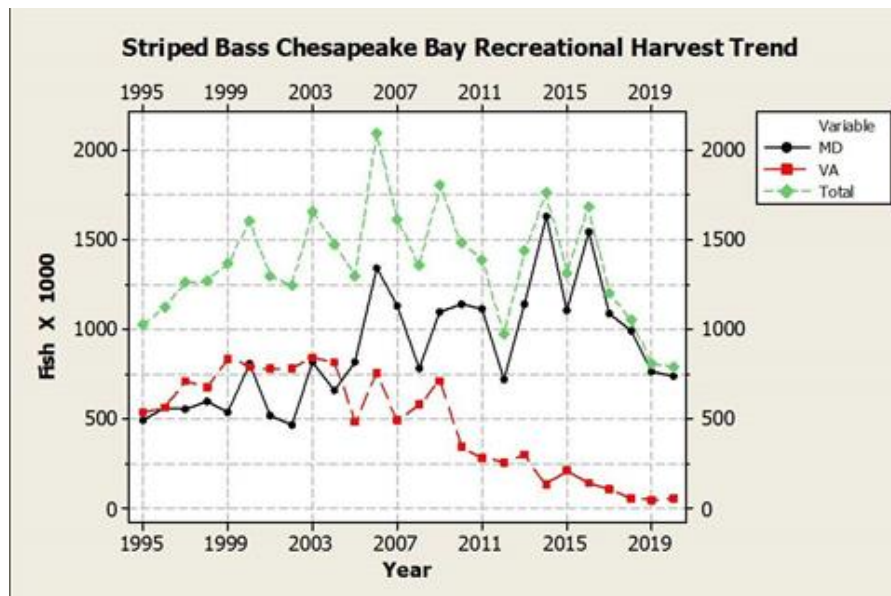
Omega Protein Purse Seine Settings and Migration



Ref: SEDAR 40 Stock Assessment Report Atlantic Menhaden, January 2015, page 10

4

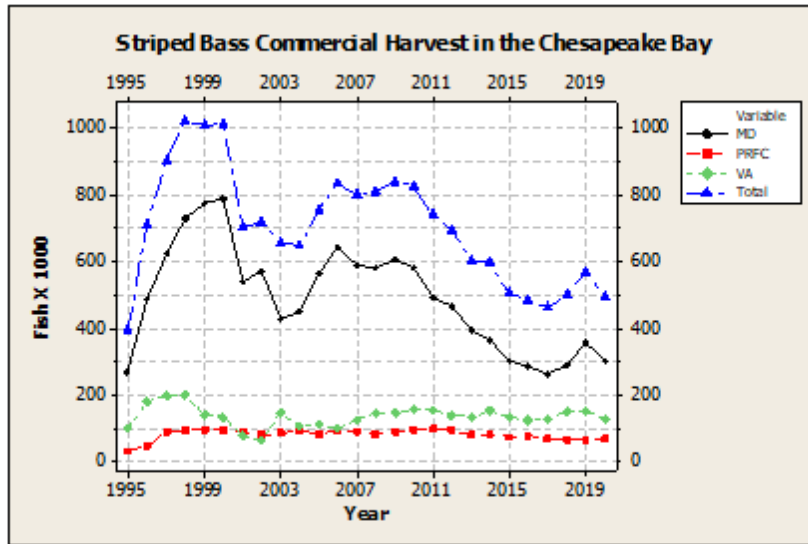
Figure 1



Draft Amendment 7 to the Interstate FMP for Atlantic Striped Bass, Table 18, page 135 - 2/2022

Figure 2

Decline in Striped Bass Chesapeake Bay Commercial Harvest



Draft Amendment 7 to the Interstate FMP for Atlantic Striped Bass, Table 15 page 132 - 2/2022

Figure 3

Chesapeake Bay 2022 Young-of-Year Survey Results

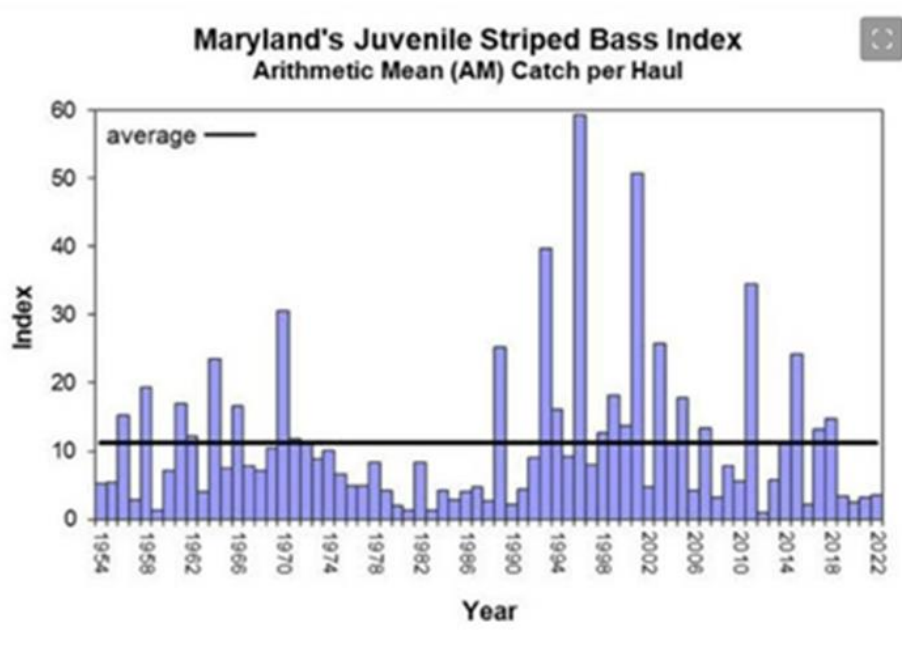


Figure 4

Striped Bass Economic Impact to Virginia (2016)

Commercial GDP: \$1,379,900
Commercial Jobs: 42

Recreational GDP: \$241,551,000
Recreational Jobs: 3,420

Comparisons Between the Fisheries

Table RI-8. Comparison of commercial and recreational impacts: Rhode Island 2016

	Commercial Fishery	Recreational Fishery	Total	Commercial Fishery	Recreational Fishery	Total
Pounds landed (000s)	174.7	1,775.6	1950.3	9%	91%	100%
Jobs supported	42	3,410	3452	1%	99%	100%
Income (\$000s)	\$984.6	\$155,293.5	\$156,278.1	1%	99%	100%
GDP (\$000s)	\$1379.9	\$241,551.0	\$242,930.9	1%	99%	100%

Ref: The Economic Contributions of Recreational and Commercial Striped Bass Fishing, Southwick Associates, page 42

Figure 5

Striped Bass Economic Impact to Maryland (2016)

Commercial GDP: \$10,919,100
Commercial Jobs 584

Recreational GPD: \$802,791,200
Recreational Jobs 10,193

Comparisons Between the Fisheries

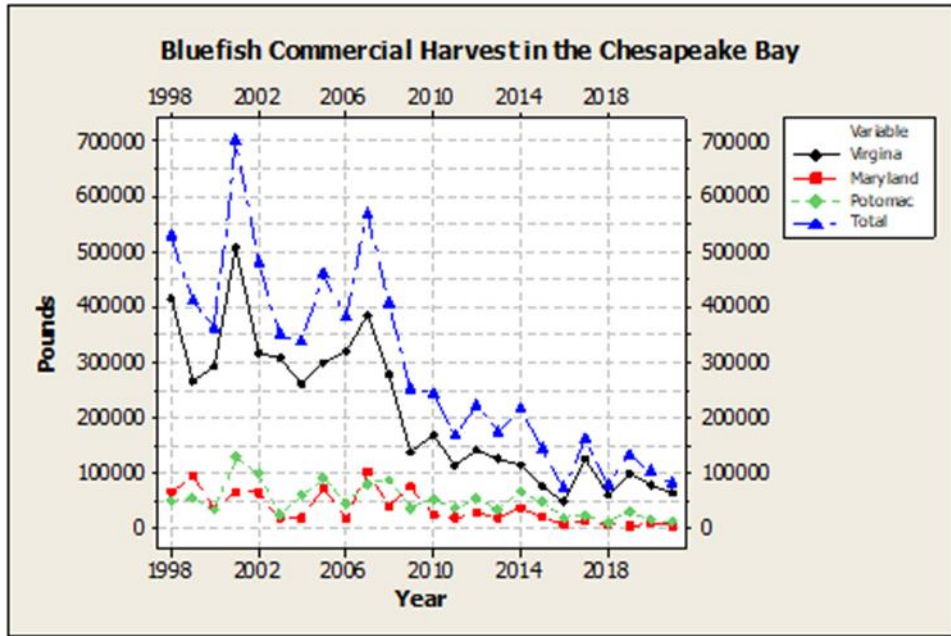
Table MD-8. Comparison of commercial and recreational impacts: Maryland 2016

	Commercial Fishery	Recreational Fishery	Total	Commercial Fishery	Recreational Fishery	Total
Pounds landed (000s)	1,709.4	10,919.1	12628.5	14%	86%	100%
Jobs supported	584	10,193	10,777	5%	95%	100%
Income (\$000s)	\$12,569.6	\$496,859.8	\$509,429.7	2%	98%	100%
GDP (\$000s)	\$17,109.7	\$802,791.2	\$819,900.9	2%	98%	100%

Ref: The Economic Contributions of Recreational and Commercial Striped Bass Fishing, Southwick Associates, page 26, 4/12/19

12

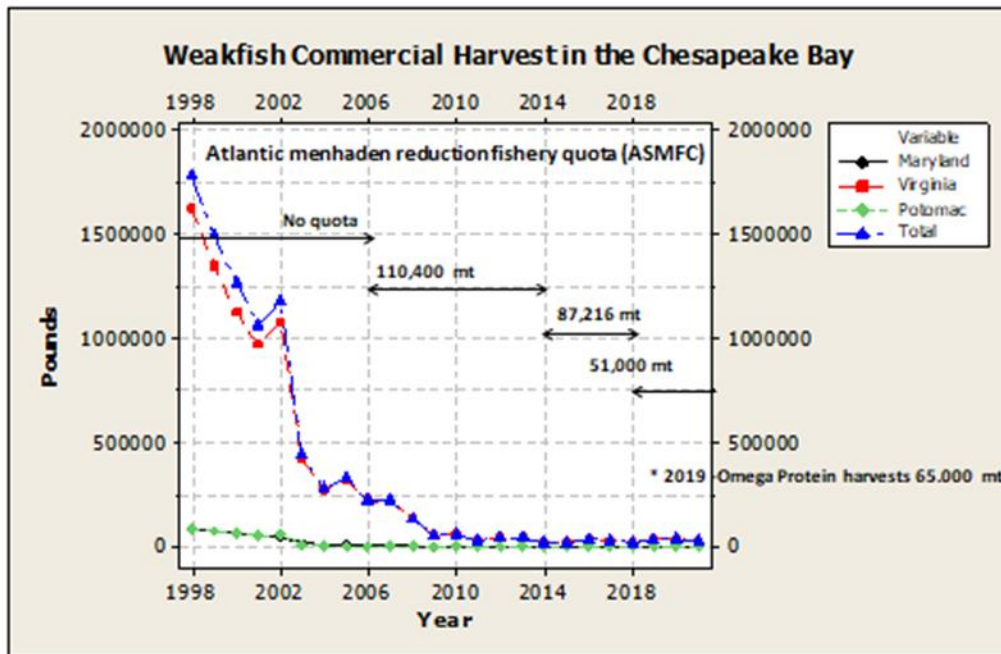
Figure 6



References: MD DNR, VMRC, PRFC

10

Figure 7

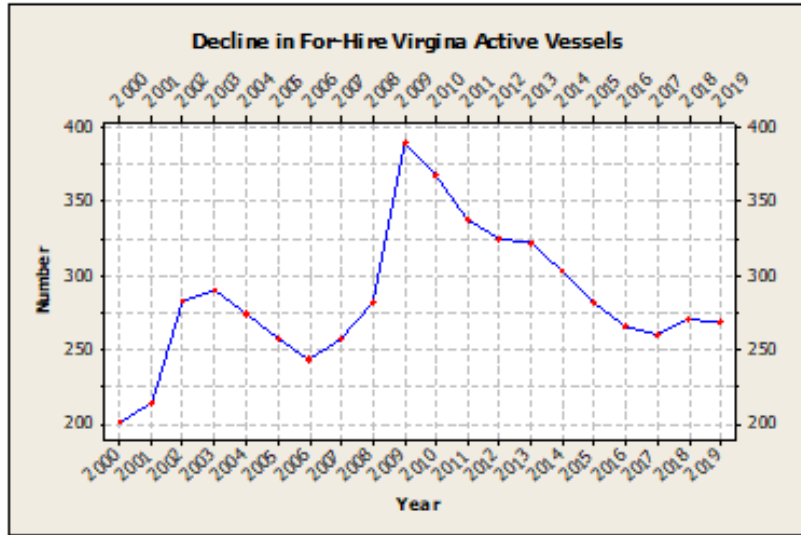


References: MD DNR, VMRC, PRFC, ASMFC

11

Figure 8

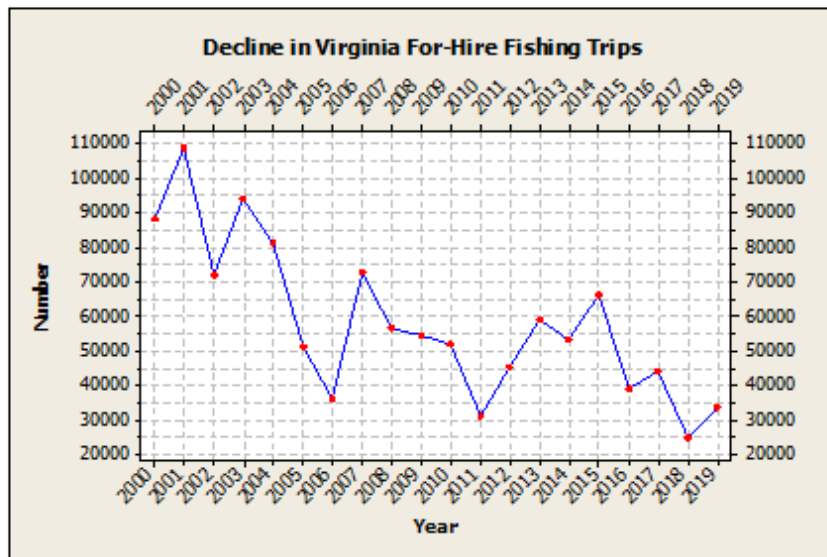
Decline in Virginia For-Hire Active Vessels



VMRC, Stephanie Iverson-Cason, 1/10/23

Figure 9

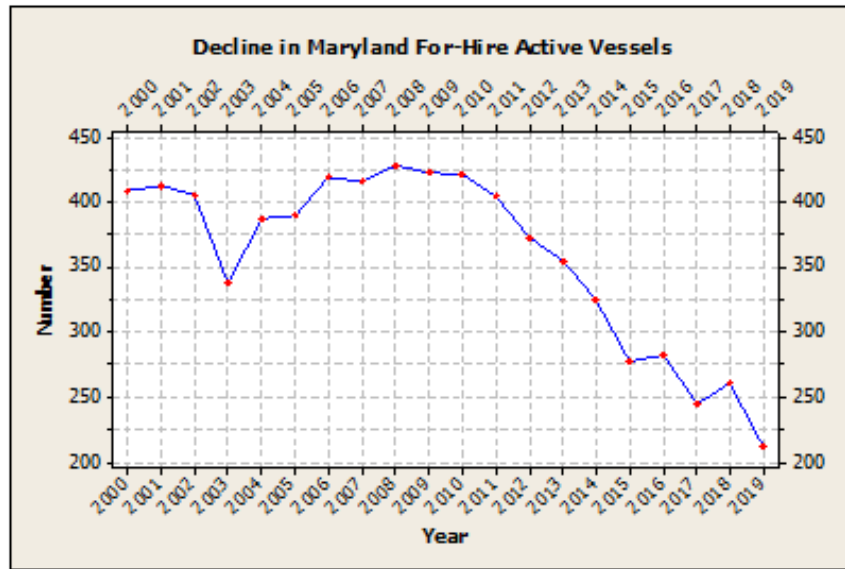
Decline in Virginia For-Hire Fishing Trips



VMRC, Stephanie Iverson-Cason 1/10/23

Figure 10

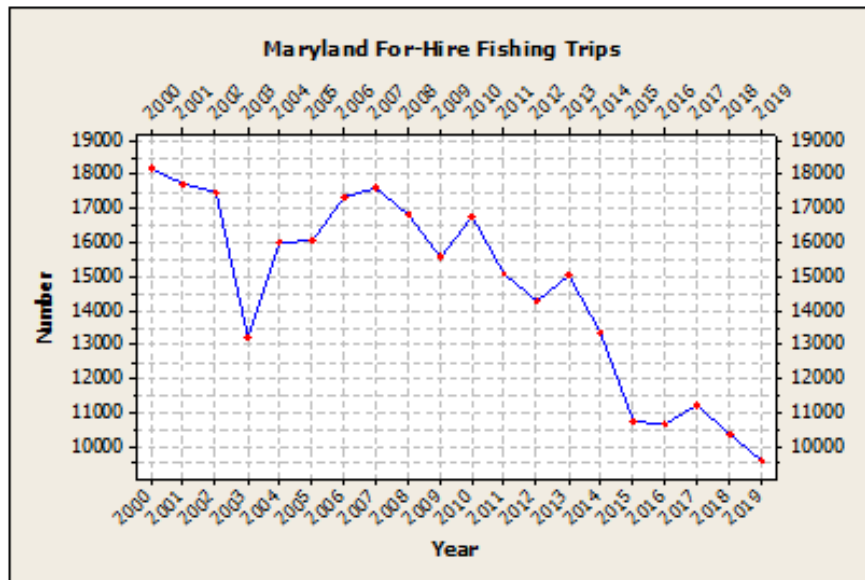
Decline in Maryland For-Hire Active Vessels



MD DNR, Gina Hunt email of 2/28/2020

Figure 11

Decline in Maryland For-Hire Fishing Trips



MD DNR, Gina Hunt email of 2/28/2020

Figure 12

**Southern Maryland Recreational Fishing
Organization**

<https://www.smrfo.org/>

**Localized Depletion of Atlantic Menhaden
in Virginia Waters**

July 24, 2023

**Phil Zalesak
President of SMRFO**

Overview

- **History of Atlantic Menhaden Harvesting**
- **The Problem**
- **The Data**
- **The Solution**
- **Action Required**

**History of Atlantic Menhaden
Reduction Fishery in Atlantic Waters
and the Chesapeake Bay**

Allocation of Atlantic Menhaden Reduction Fishery in the Chesapeake Bay

	<u>Metric Tons</u>	<u># of Fish *</u>
• Prior to 2006 No quota	No quota	
• 2006 – 2014	110,400	529,104,000
• 2014 – 2018	87,236	418,088,012
• 2018 – 2023	51,000	244,423,043

* .46 pounds per fish for reduction fishery (NOAA)

<https://asmfc.org/species/atlantic-menhaden>

Allocation of Atlantic Menhaden on the Atlantic Coast

	<u>Metric Tons</u>	<u># of Fish*</u>
• 2013 and before	No Quota	No Quota
• 2014	169,092	810,391,789
• 2015 – 2016	187,880	900,435,321
• 2017	200,000	958,521,739
• 2018 – 2019	216,000	1,035,203,478
• 2020	216,000	1,035,203,487
• 2021 - 2022	194,400	931,683,130
• 2023 – 2024	233,550	1,119,313,760

* .46 pounds per fish for the reduction fishery (NOAA)

The Problem

Localized Depletion Definition (2009)

The Technical Committee of the Atlantic States Marine Fisheries Commission defined localized depletion as:

“Localized depletion in the Chesapeake Bay is defined as a reduction in menhaden population size or density below the level of abundance that is sufficient to maintain its basic ecological (e.g. forage base, grazer of plankton), economic and social/cultural functions. It can occur as a result of fishing pressure, environmental conditions, and predation pressures on a limited spatial and temporal scale.”

https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2009/2009_05_08%20Maguire%20Chesapeake%20Bay%20menhaden%20program%20review%20report.pdf, page 4

Atlantic Menhaden Localized Depletion

Migration Pattern

“Atlantic Menhaden largely remained within the same coastal region from June to October.” 2/19/19

Intense Reduction Harvesting

Reduction harvest season begins in May in the Chesapeake Bay until the ASMFC 51,000 metric ton quota is met

References:

<https://www.sciencedirect.com/science/article/abs/pii/S0165783618302844#:~:text=Our%20objectives%20were%20to%20estimate%20movement%2C%20natural%2C%20and,and%20time-specific%20fishing%20mortality%2C%20and%20monthly%20movement.>

https://asmfc.org/uploads/file//5a4c02e1AtlanticMenhadenAmendment3_Nov2017.pdf page v

Atlantic Menhaden Purse Seine Settings

Figure 4.1.3.4.3. Locations of all purse-seine sets by Omega Protein vessels (red) and last sets of trips that were sampled for age and size composition of the catch (= port samples; green) during 2013; data are from CDFR data base.



Previous Allocation of Atlantic Menhaden by State

Allocation	Percentage	2021-2022		Fish*
		Metric Tons	Pounds	
Atlantic Coast	100.00%	192,456	424,288,498	922,366,299
Virginia	78.66%	151,392	333,758,803	725,562,616
Reduction Fishery	71.11%	136,858	301,717,958	655,908,605
Chesapeake Bay	26.50%	51,000	112,434,600	244,423,043
Atlantic Ocean	44.61%	85,858	189,283,358	411,485,561
Other States	21.34%	41,064	90,529,694	196,803,683
* .46 pounds per fish				

Current Allocation of Atlantic Menhaden by State

Allocation	Percentage	2023 - 2024		Fish*
		Metric Tons	Pounds	
Atlantic Coast	100.00%	233,550	514,884,330	1,119,313,761
Virginia	75.20%	175,630	387,193,016	841,723,948
Reduction Fishery	67.71%	158,137	348,628,592	757,888,243
Chesapeake Bay	21.84%	51,000	112,434,600	244,423,043
Atlantic Ocean	45.87%	107,137	236,200,420	513,479,174
Other States	24.80%	57,920	127,691,314	277,589,813
* .46 pounds per fish				

**Dr. Noah Bressman Assessment
Salisbury University**

“Virginia based menhaden fishery is overfishing the stock in and around the Chesapeake Bay, which is preventing the important forage fish from making its way into the Bay and its tributaries.”

Ref: Dr. Noah Bressman email to Secretary Jeannie Riccio, Maryland Department of Natural Resources, 10/21/2021

Ecological Impact of Localized Depletion on Of Atlantic Menhaden in the Chesapeake Bay (2019)

Key Predators

“A suite of five key predator and prey species were identified from diet data and other considerations (referred to as ERP focal species). Atlantic striped bass, bluefish, spiny dogfish, and weakfish were identified as key predator species of Atlantic menhaden” page iii

<http://www.asmfc.org/uploads/file/6436c5022019AtlMenhadenERPStockAssessmentReport.pdf>

pages iii

Equilibrium Striped Bass Bratio @ Ftarget over range of Menhaden F

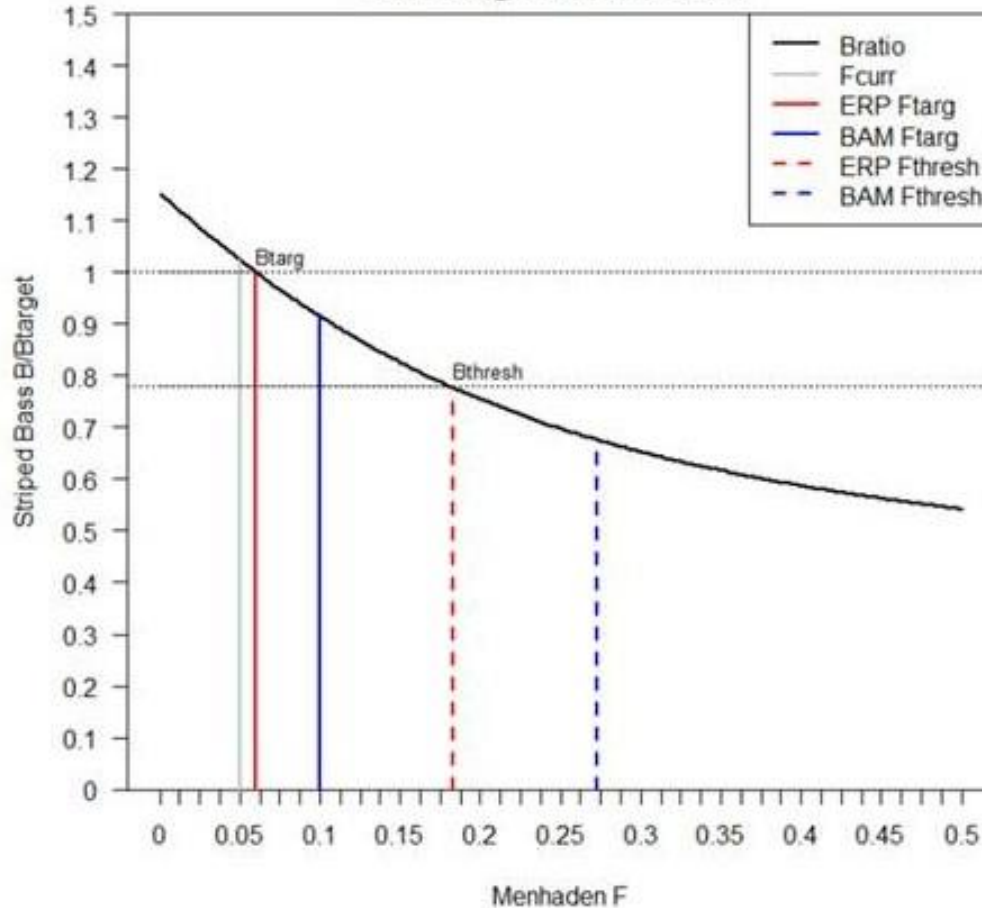
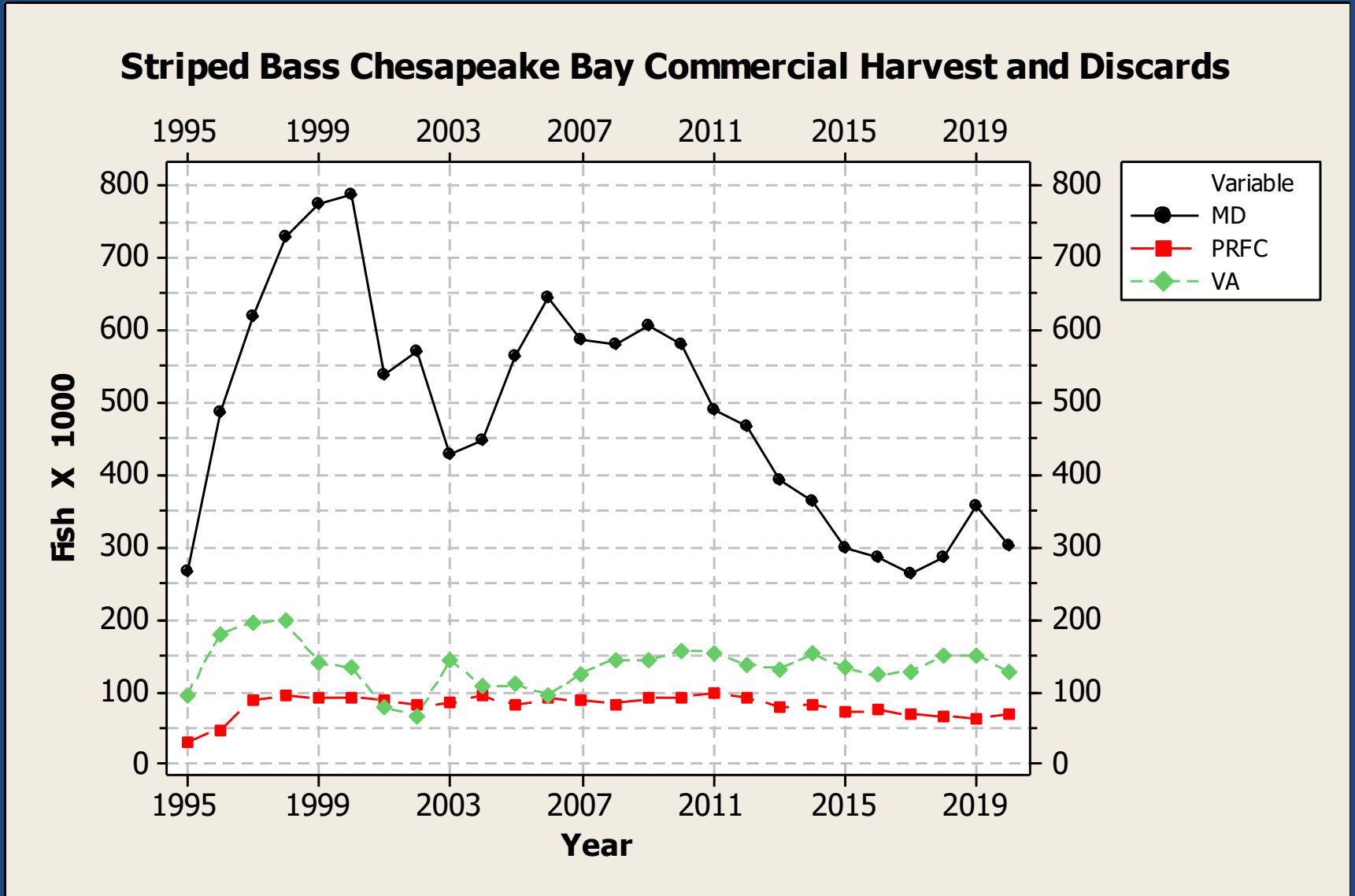


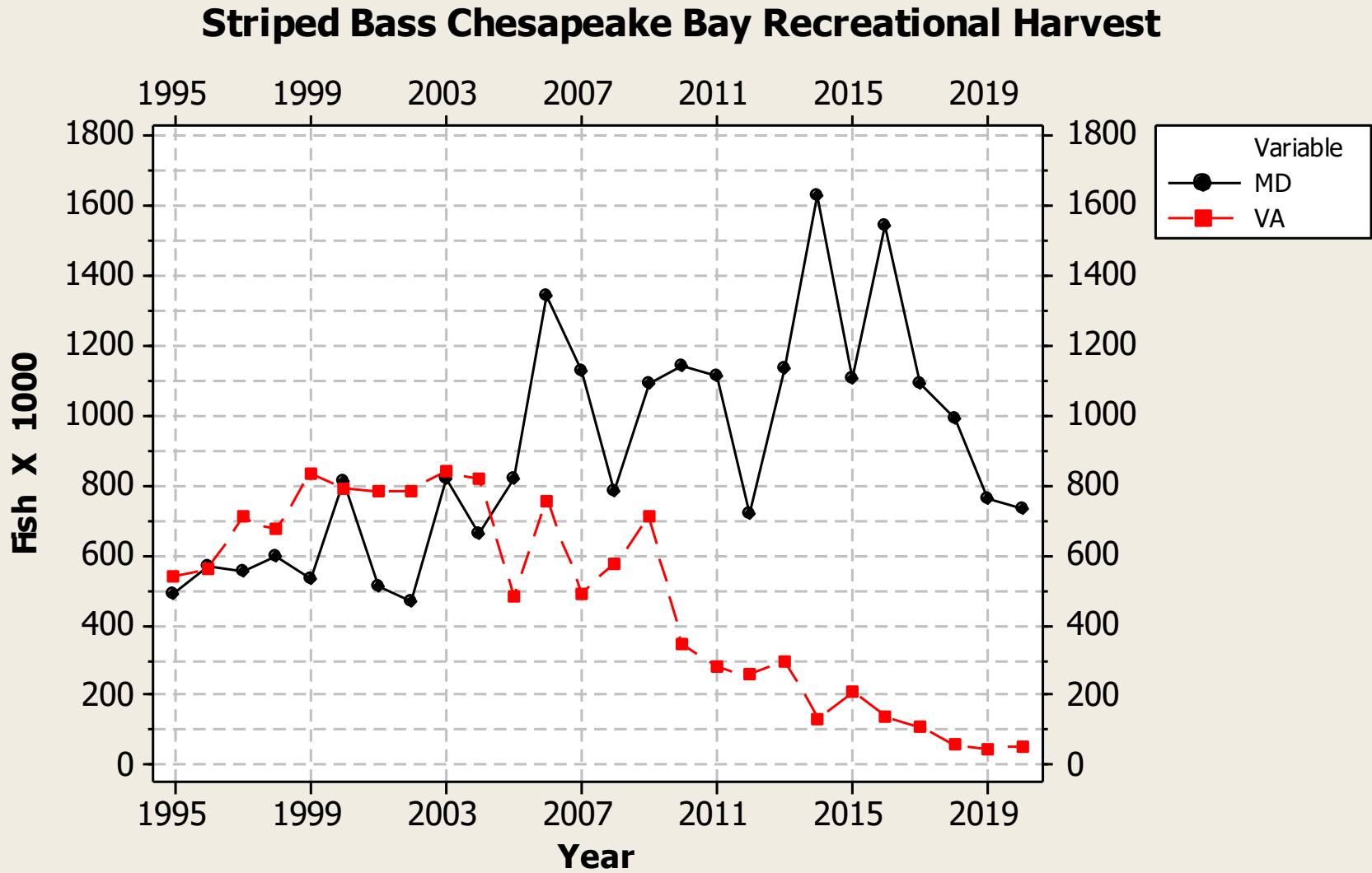
Figure 148. Terminal year biomass ratio (B/B_{TARGET}) from the NWACS-MICE model for age 6+ striped bass over a range of Atlantic menhaden F with striped bass fished at their F target. Vertical solid and dotted lines indicate the BAM single-species target and threshold F as well as the current F and the proposed ERP target and threshold F for Atlantic menhaden.

The Data

Striped Bass Chesapeake Bay Commercial Harvest and Discards Trends

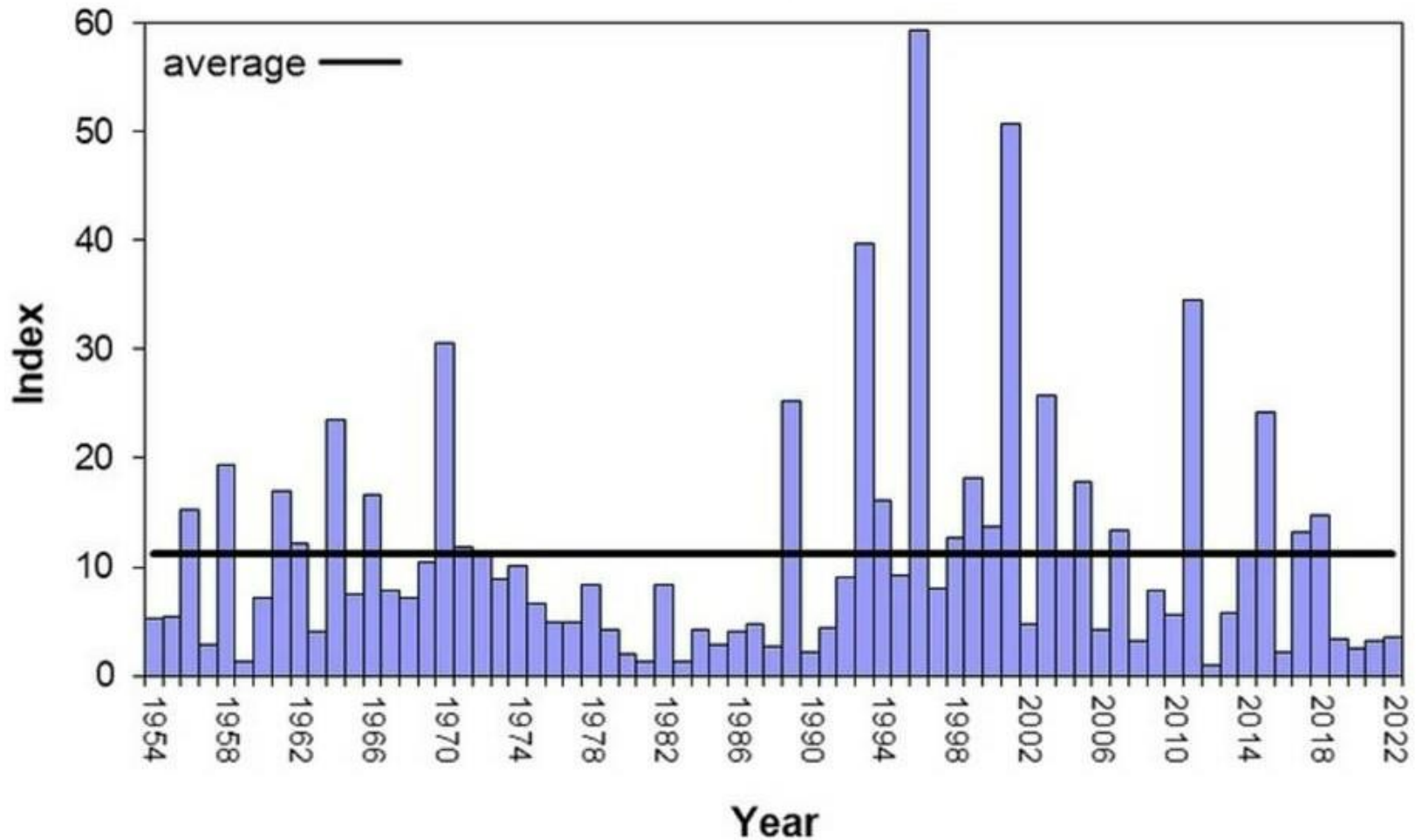


Striped Bass Chesapeake Bay Recreational Harvest Trend



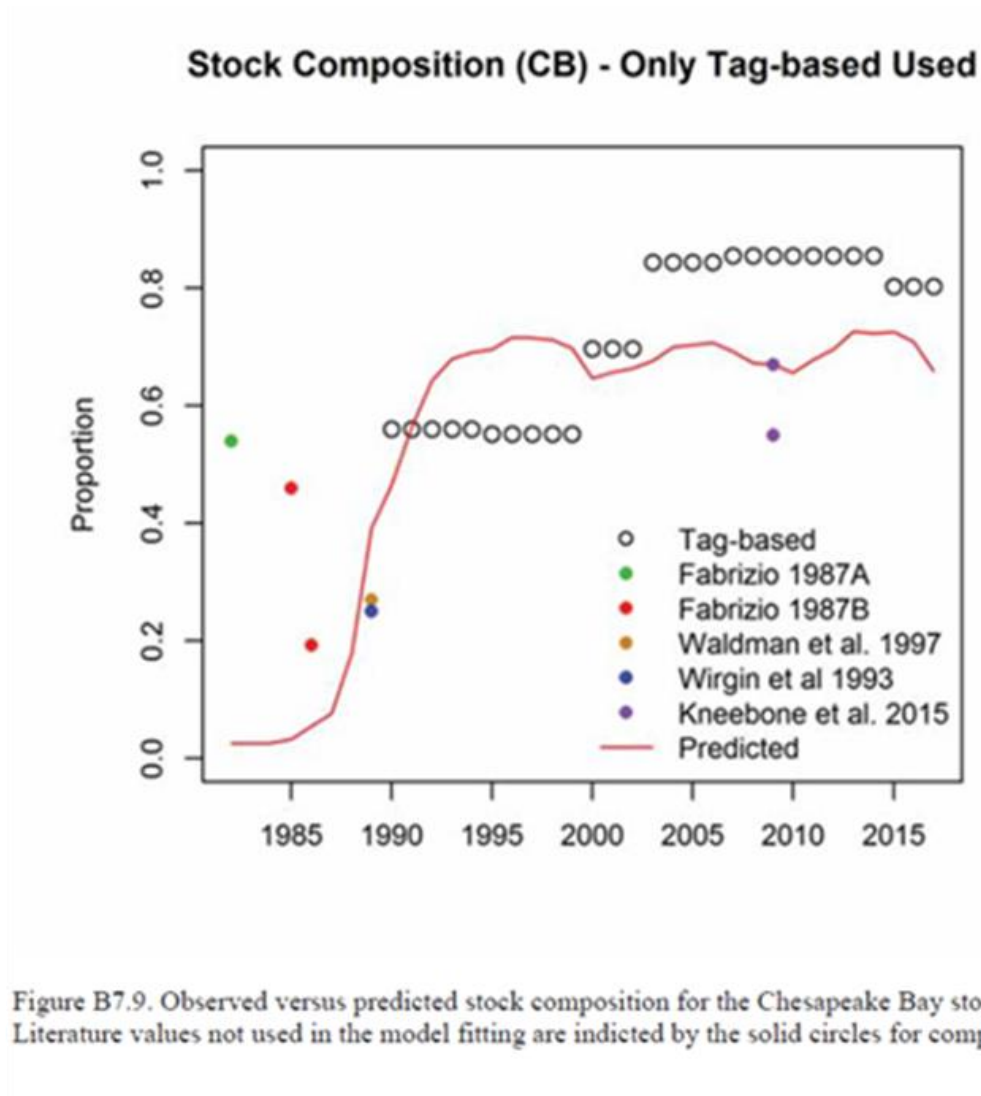
Maryland's Juvenile Striped Bass Index

Arithmetic Mean (AM) Catch per Haul



<https://news.maryland.gov/dnr/2022/10/20/chesapeake-bay-2022-young-of-year-survey-results-announced/>

Chesapeake Bay Contribution to Coastal Stock (>60%) 2019



<https://repository.library.noaa.gov/view/noaa/23031>

Atlantic Coast Economic Impact of Striped Bass (2016)

Commercial GDP: \$103,200,000
Commercial Jobs 2,664

Recreational GDP: \$7,731,600,000
Recreational Jobs 104,867

Comparisons Between the Fisheries

Table R-7. 2016 Comparison of commercial and recreational impacts: North Carolina to Maine

	Commercial Fishery	Recreational Fishery	Total	Commercial Fishery	Recreational Fishery	Total
Pounds landed (000s)	4,978.3	43,731.9	48,710.2	10%	90%	100%
Jobs supported	2,664	104,867	107,531	2%	98%	100%
Income (\$millions)	\$72.7	4,726.0	\$4,726.1	< 1%	>99%	100%
GDP (\$millions)	\$103.2	7,731.6	\$7,731.7	< 1%	>99%	100%

Ref: The Economic Contributions of Recreational and Commercial Striped Bass Fishing, Southwick Associates, 4/12/19

Striped Bass Economic Impact to Maryland (2016)

Commercial GDP: \$10,919,100

Commercial Jobs 584

Recreational GDP: \$802,791,200

Recreational Jobs 10,193

Comparisons Between the Fisheries

Table MD-8. Comparison of commercial and recreational impacts: Maryland 2016

	Commercial Fishery	Recreational Fishery	Total	Commercial Fishery	Recreational Fishery	Total
Pounds landed (000s)	1,709.4	10,919.1	12628.5	14%	86%	100%
Jobs supported	584	10,193	10,777	5%	95%	100%
Income (\$000s)	\$12,569.6	\$496,859.8	\$509,429.7	2%	98%	100%
GDP (\$000s)	\$17,109.7	\$802,791.2	\$819,900.9	2%	98%	100%

Ref: The Economic Contributions of Recreational and Commercial Striped Bass Fishing, Southwick Associates, 4/12/19

Striped Bass Economic Impact to Virginia (2016)

Commercial GDP: \$12,198,100
Commercial Jobs 384

Recreational GPD: \$106,623,300
Recreational Jobs 1,444

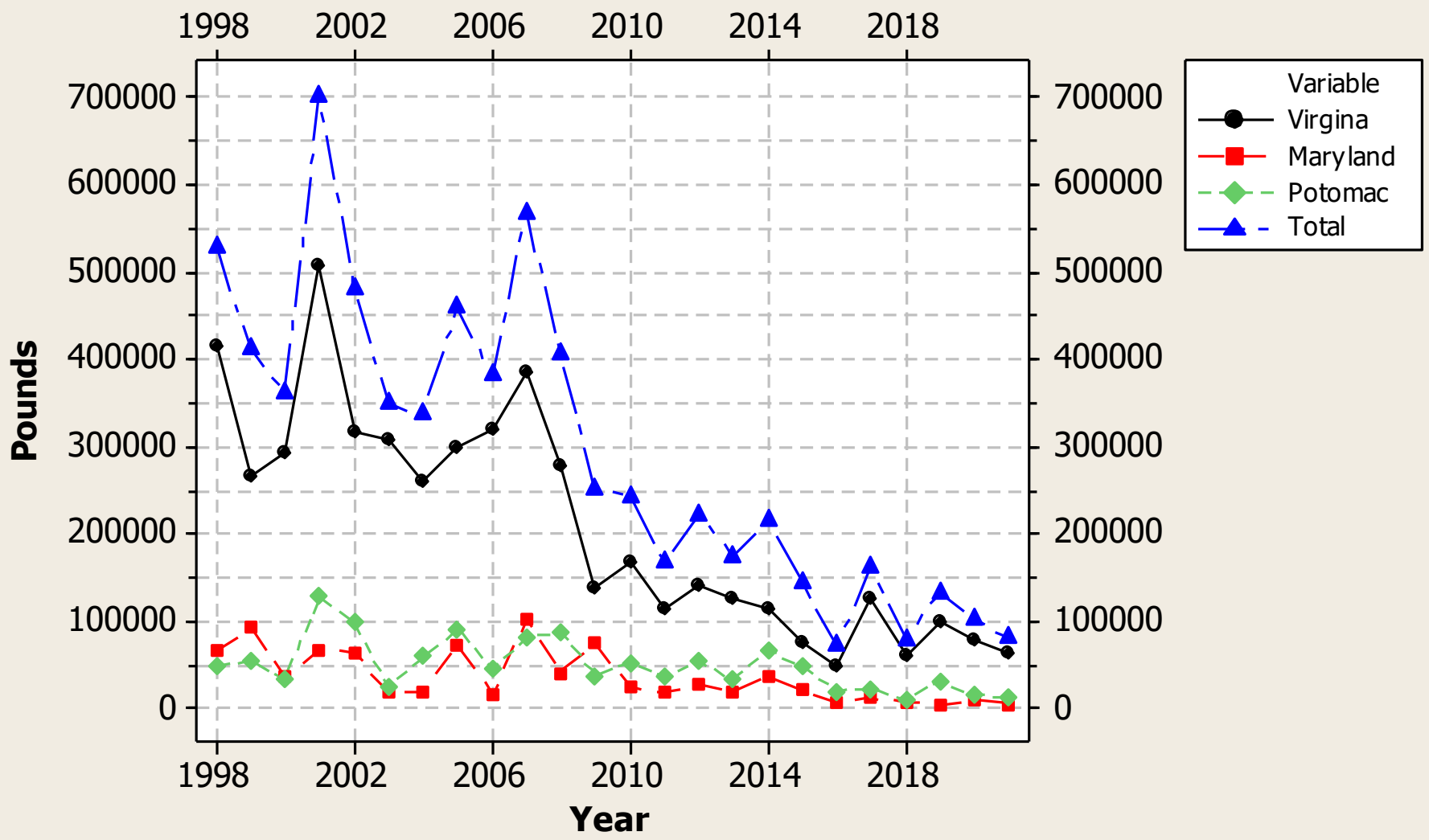
Comparisons Between the Fisheries

Table VA-7. Comparison of commercial and recreational impacts: Virginia

	Commercial Fishery	Recreational Fishery	Total	Commercial Fishery	Recreational Fishery	Total
Pounds landed (000s)	1,333.6	1,024.4	2358.0	57%	43%	100%
Jobs supported	384	1,444	1828	21%	79%	100%
Income (\$000s)	\$9,016.0	\$67,550.7	\$76,566.7	12%	88%	100%
GDP (\$000s)	\$12,198.1	\$106,623.3	\$118,821.4	10%	90%	100%

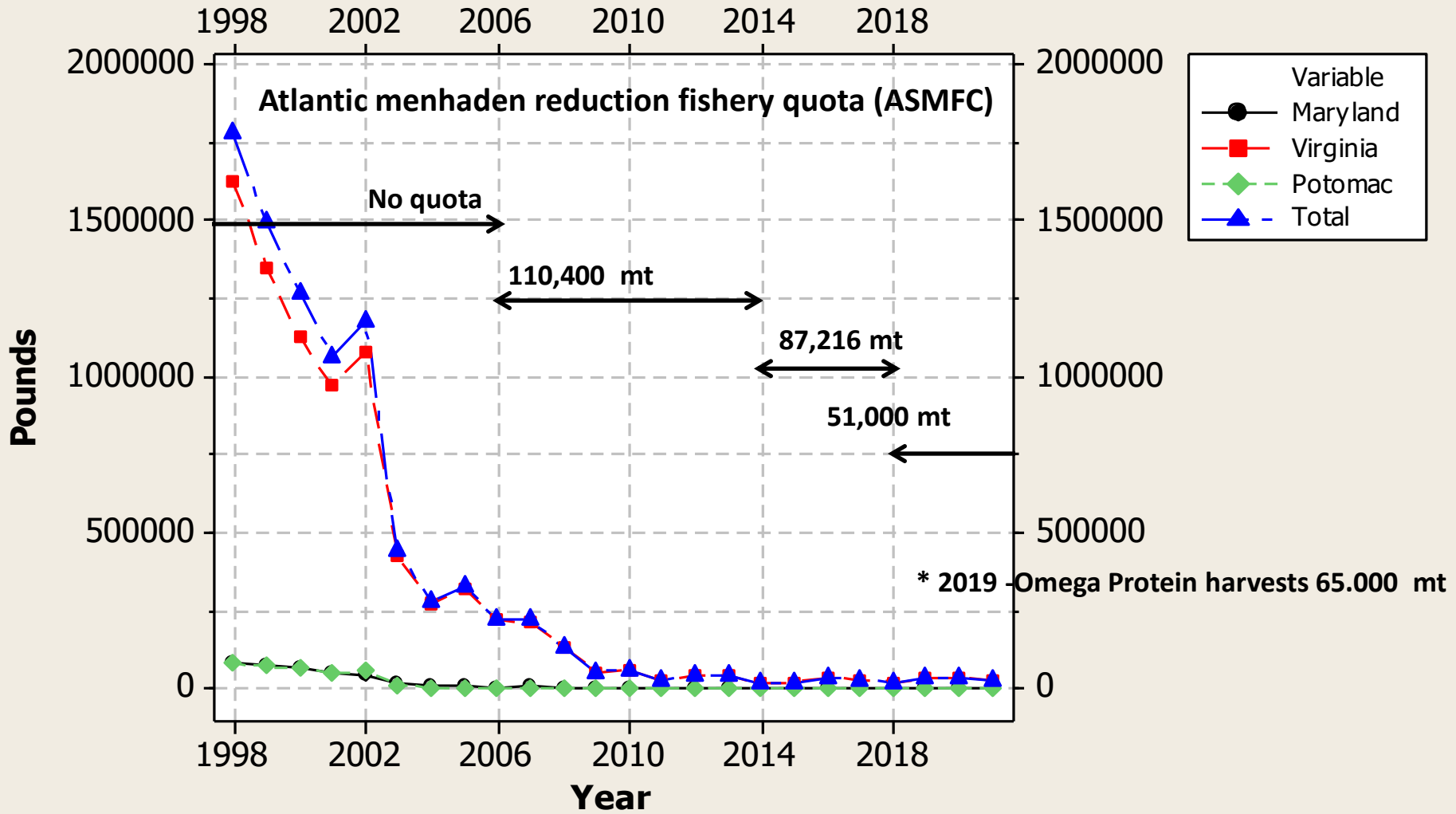
Ref: The Economic Contributions of Recreational and Commercial Striped Bass Fishing, Southwick Associates, 4/12/19

Bluefish Commercial Harvest in the Chesapeake Bay



References: MD DNR, VMRC, PRFC

Weakfish Commercial Harvest in the Chesapeake Bay



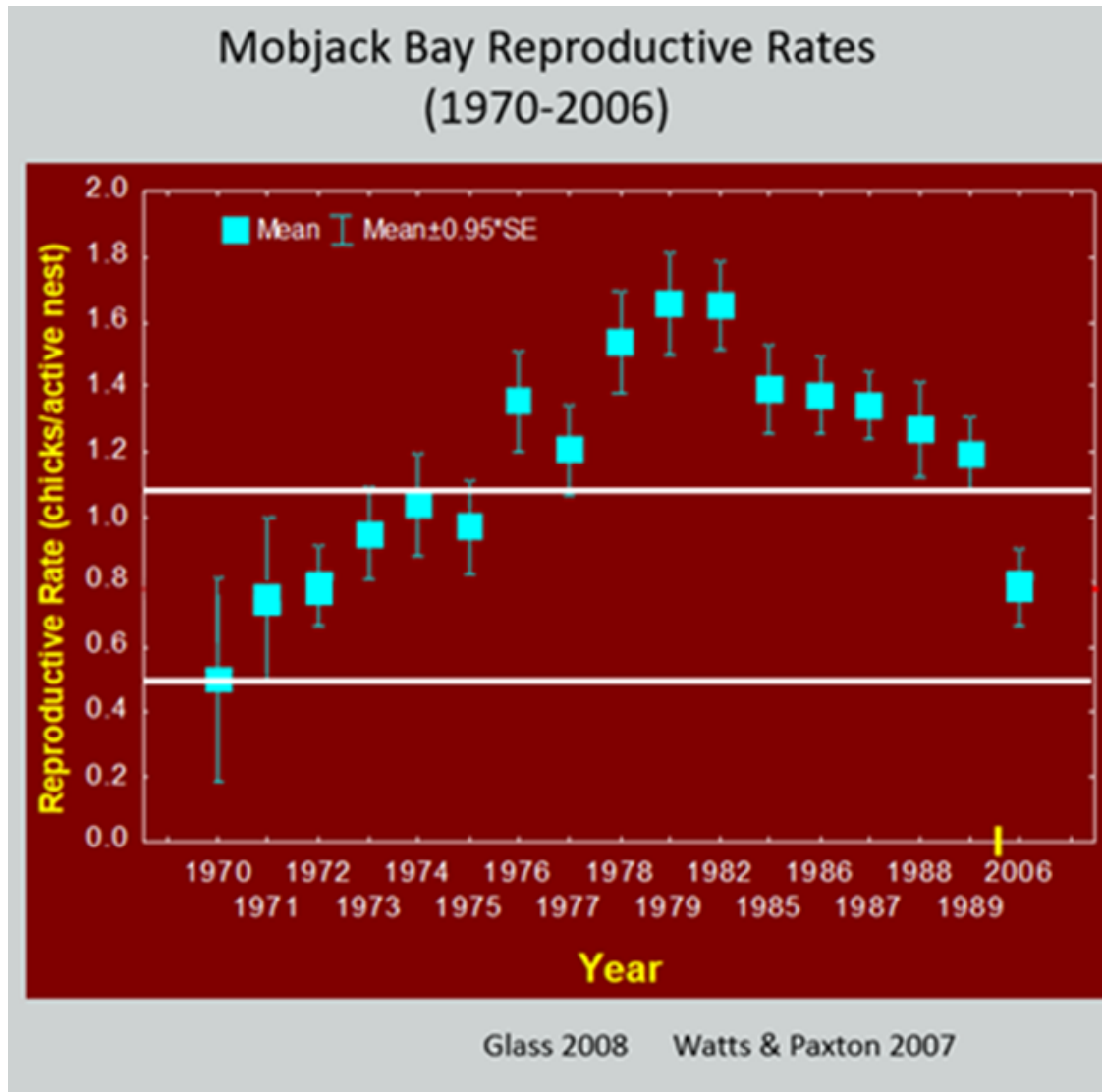
References: MD DNR, VMRC, PRFC, ASMFC

Dr. Bryan Watts
College of William and Mary

“Reductions in menhaden stocks have caused osprey productivity to decline to below DDT-era rates. These rates are insufficient to support the osprey population within the main stem of the Bay.”

Ref: Letter to Virginia Governor Ralph Northam, 8/20/2020

Osprey Reproductive Rate (Chicks/Active Nest)



Osprey Reproductive Performance Data



Food Supplementation Increases Reproductive Performance of Ospreys



Introduction | Methods | Results | Discussion | Acknowledgements | Works Cited

Food Addition Group



13 of the 16 nests succeeded at 81%.

3 nests failed during the first **1.38** weeks.

Productivity rate - **1.13** young per active nest.

Control Group



5 of 15 nests succeeded at 33%.

10 nests failed during the first **2.2** weeks.

Productivity rate - **0.47** young per active nest.

Ref: Food Supplementation Increases Reproductive Performance of Ospreys in the Lower Chesapeake Bay, Michael Academia of the College of William & Mary, October 6, 2022

Impact to Osprey in the Chesapeake Bay

Food supplementation Increases Reproductive Performance of Ospreys in the Lower Chesapeake Bay, Frontiers and Marine Science - 4/23/23

“Reproductive rates within the control group were low and unsustainable suggesting that current menhaden availability is too low to support a demographically stable osprey population. Menhaden populations should be maintained at levels that will sustain a stable osprey population in which they are able to produce 1.15 young/active nest to offset mortality.”

Michael Academia and Dr. Bryan Watts

<https://www.frontiersin.org/articles/10.3389/fmars.2023.1172787/full>

Latest Osprey Status

Michael Academia Email of 6/13/23:

“On June 13, Dr. Bryan and I did a boat survey of 83 nests in Mobjack Bay (Ware, North, and East Rivers). Out of the 83 nests, there were only 3 young (we don't think these nestlings will make it).

What is alarming is that the productivity rate is at 0.04 young per active nest in Mobjack Bay and could be more widespread in the higher salinity zones of Chesapeake Bay. In order for the population to be stable, the productivity rate must be 1.15 young per active nest.”

Chesapeake Bay Model - 5 to 7 Years

Table 1. Comparison of potential approaches for developing a spatially-explicit model for Atlantic menhaden.

Approach	Advice				Data Needs		Timeline***
	Single-spp. CB	Multi-spp. CB	Multi-spp. Regional Allocations	Fine-scale Spatial Dynamics	Possible w/ Existing Data	Add'l data needs	
Coastwide BAM + NWACS-MICE + supplemental Bay abundance	✓					Absolute abundance estimates in C. Bay	5-7 years
Coastwide BAM + NWACS-MICE + Bay indicators	✓*	✓*			✓		5-7 years
Coarse spatial BAM + coastwide NWACS-MICE ERPs	✓**				✓		5-7 years
Coarse spatial BAM + coarse spatial NWACS-MICE ERPs	✓**	✓**	✓		✓	Better diet data for ERP species	5-7 years.
Refined spatial BAM + NWACS-MICE ERPs	✓	✓	✓			Migration at age data for desired regions, better diet data for ERP species	10+ years
Detailed spatial BAM + detailed spatial ERPs	✓	✓	✓	✓		Finer scale data (all types) for ERP species	10+ years


*: This approach would likely provide qualitative, not quantitative, information on Chesapeake Bay Cap

** : Existing data could provide information on MD and VA separately from the rest of the coast, but not Chesapeake Bay itself.

***: These timelines are preliminary estimates and could be revised once model development is underway.


The Latest . . .



- The Atlantic menhaden reduction harvester was having trouble locating Atlantic menhaden in the Chesapeake Bay during May and June as documented on the Facebook page: Menhaden - Little Fish, Big Deal! - <https://www.facebook.com/groups/765772041406313>

 **William Dunn**
2d · 🌐

6/23/23 Friday

All the ships finally got back out after the blow we have been having this week. Spotters got out early searched for a while and landed. Spotters got airborne again for a couple hours and they found maybe a couple schools and then landed again at 10am. Ships have now returned to Reedville.



  John Bello, John Talley and 10 others

1 comment

Who Supports Ending Atlantic Menhaden Reduction Fishing in the Chesapeake Bay?

MD DNR Tidal and Coastal Recreation Fisheries Committee Meeting – 6/29/23

Motion from Phil Zalesak, Second by Lenny Rudow:

“The Maryland Delegation to the ASMFC Atlantic Menhaden Management Board needs to put forth a motion which states: The Atlantic menhaden reduction fishery shall be limited to federal waters east of the western boundary of the Exclusive Economic Zone beginning at 3 nautical miles from the Atlantic Coast.

No objections, 1 abstention. Motion passes.”

Who Supports Ending Atlantic Menhaden Reduction Fishing in the Chesapeake Bay?

Maryland Legislative Sportsmen's Caucus - 10/21/21

Maryland Senate Joint Resolution 6 - 1/27/2022

Maryland Sierra Club (70,000 members)

Josh Tulkin

ShoreRivers Organization (3,500 members)

Matt Pluta

Solomons Charter Captains Association

Captain Wally Williams

Somerset County Charter Captains

Maryland Recreation Fishing Organizations

Annapolis Anglers' Club

Kevin McMenamin

Atlantic Coast Sport Fishing Association

Buddy Seigel

Frederick Saltwater Anglers

Chris Linnetty

Kent Island Fishermen

Bert Olmstead

Mid-Shore Fishing Club

Tom Wilkinson

North Bay Fishing Club

Stan Cebula

Northwest Fishing Club

Mark Kurth

Severn River Rod and Keg Club

Skip Zink

Southern MD Recreational Fishing Org

Phil Zalesak

Susquehanna Fishing Club

Jim Cappetta

Who Supports Ending Atlantic Menhaden Reduction Fishing in Virginia Waters

Steve Atkinson

- President of the Virginia Saltwater Sportsfishing Association
- SMRFO Member as of 4/7/23

Captain William Pappas

- Virginia charter captain who testified at the VMRC in December
- SMRFO Member as of 5/1/23

Michael Academia, MSc.

- The Center for Conservation Biology
- SMRFO Member as of 4/16/23

Deborah Campbell

- Property owner at Silver Beach, Virginia
- SMRFO Member as of 4/13/23

Tom Lilly

- Resident of Tyaskin, Maryland
- SMRFO Member as of 3/1/21

New York Experience – 3/8/21

FWD: Menhaden

From: George Scocca george@nyangler.com

To: Tom foragematters@aol.com

Date: Mon, March 8, 2021 7:15am

Hello Tom:

I am the person that spearheaded the bill that has kept reduction fishing out of NY waters. The changes here have been unbelievable. I can talk about it all day. My single greatest accomplishment in 35 years of fisheries management.

The availability of bunker throughout our season has seen an increase in both charter and party boats carrying anglers to get in on our great striped bass fishery. Bass stick with their food source and this has kept a healthy population of stripers in our waters. It's sparked a number of for hire boats to carry more anglers than ever before.

It has also had a profound effect on our bird population. We now have about 12 dozen nest pair eagles on long island and the osprey population is thriving. All due to the amount of forage for them to eat.



And lets not forget the importance of their filtering our waters.

Thank you.

George R. Scocca
nyangler.com

[Check out my Linkedin profile](#)

“I am the person that spearheaded the bill that has kept reduction fishing out of NY waters . . .

The availability of bunker throughout our has seen an increase in charter and party boats carrying anglers to get in on our great striped bass fishery.

Bass stick with their food source and this has kept a healthy population of stripers in our waters. It's sparked a number of for hire boats to carry more anglers than ever before.

It has had a profound effect on our bird population. We now have about a dozen nest par eagles on long island and the osprey population is thriving.”

**George Scocca
Editor, nyangler.com**

New Jersey Experience

Salt Water Sportsmen – 4/27/23

“Jersey politicians did one thing right: Getting the Omega 3 bunker boats out of state waters.

That has allowed a vast biomass of menhaden to proliferate throughout the year in Jersey waters. This draws behemoth bass into the bays, river systems and alongshore to fatten up on omnipresent adult bunker.”

<https://www.saltwatersportsman.com/howto/is-new-jersey-the-new-striped-bass-mecca/>

The Solution

End Atlantic menhaden reduction harvesting in Virginia waters and limit industrial reduction harvesting to 3 nautical miles off the Atlantic Coastline like all of the other Atlantic States

From: [Academia, Michael](#)
To: [Comments](#)
Cc: [Watts, Bryan](#); [Pitts, Marie](#)
Subject: [External] Public Comment - ASMFC ISMP Meeting
Date: Monday, July 24, 2023 1:18:44 PM
Attachments: [Outlook-ivqcb4g.png](#)
[Watts-Press Release-2023.pdf](#)
[fmars-10-1172787.pdf](#)

Good Afternoon,

My name is Michael Academia, Osprey Researcher, and I will be representing the Center for Conservation Biology (William & Mary) on August 3rd at the ASMFC ISMP public comment section. Attached is a press release from Dr. Bryan Watts, Director of the Center for Conservation Biology, and our peer-reviewed publication from the Frontiers of Marine Science highlighting ospreys as ERPs.

Regards,
Michael

Michael Academia, M.Sc Biology | Osprey Researcher

Center for Conservation Biology | William & Mary

Mailing Address: PO Box 8795, Williamsburg, VA 23187

Non-USPS Shipments: 205 Ironbound Rd, Williamsburg, VA 23188

macademia@wm.edu | ccbbirds.org | osprey-watch.org





WILLIAM & MARY

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THE CENTER FOR CONSERVATION BIOLOGY

For release: July 14, 2023

Williamsburg, VA – In 2023, The Center for Conservation Biology has documented the highest rate of osprey nest failure ever recorded within the lower Chesapeake Bay. Only 17 of 167 nests monitored during the season produced any young. The nesting population produced only 21 young resulting in a reproductive rate of 0.13 young per pair. This rate is below that recorded during the height of the DDT era. In order for the population to sustain itself, pairs should produce 1.15 young per pair.

The poor reproductive performance documented during 2023 is a trend that has been observed for the past fifteen years. In Mobjack Bay, productivity peaked during the 1980s and has declined to the present day. Researchers within The Center believe that the ongoing decline in young production is driven by overharvest of Atlantic menhaden. Forage fish such as menhaden, anchovy, sardine, capelin and herring play significant roles in marine ecosystems throughout the world. These small schooling fish are responsible for transferring energy from plankton to higher-level predators such as osprey. When forage fish are overharvested the marine food web is broken and higher-level predators suffer.

Within Mobjack Bay young osprey are starving in nests because the decades-long overharvest of menhaden has caused local depletion. Within osprey pairs, males are responsible for hunting and providing fish to broods. Between 1985 and 2021, the rate of menhaden captures by male osprey declined from 2.4 fish per 10 hours to only 0.4 fish per 10 hours, a decline of more than 80 percent. Although osprey do feed on other fish species within the lower Chesapeake Bay none of these species offer comparable nutrient content. Atlantic menhaden is the keystone species that osprey depend on during the nesting season.

An experimental study conducted by Center biologists during the 2021 nesting season supplemented diets of osprey broods by providing menhaden and demonstrated that reproductive rates could be driven back to sustainable levels. On a broad scale, recovery of reproductive rates will require the restoration of menhaden stocks. Menhaden harvest policy has become a political mine field with special interests on all sides. Osprey within the lower Bay are increasingly demonstrating that our choices about harvest policy are having consequences for the broader Chesapeake Bay ecosystem.

Contact:

Dr. Bryan D. Watts, Director
The Center for Conservation Biology
William & Mary



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Food supplementation increases reproductive performance of ospreys in the lower Chesapeake Bay

Michael H. Academia* and Bryan D. Watts

Center for Conservation Biology, College of William & Mary, Williamsburg, VA, United States

The Atlantic States Marine Fisheries Commission (ASMFC), the governing body responsible for managing fisheries on the U.S. East Coast, formally adopted the use of Ecological Reference Points (ERPs) for Atlantic menhaden, *Brevoortia tyrannus*. Scientists and stakeholders have long recognized the importance of menhaden and predators such as ospreys, *Pandion haliaetus*, that support the valuable ecotourism industry and hold cultural significance. Landings in the reduction fishery are at their lowest levels and menhaden is facing potential localized depletion. Mobjack Bay, located within the lower Chesapeake Bay, has been a focus of osprey research since 1970 and represents a barometer for the relationship between osprey breeding performance and the availability of their main prey, menhaden. Since local levels of menhaden abundance were not available, we conducted a supplemental menhaden feeding experiment on osprey pairs during the 2021 breeding season. Our main objective was to determine if the delivery rate of menhaden had an influence on nest success and productivity. Nest success ($\chi^2 = 5.5$, $df = 1$, $P = 0.02$) and productivity ($\beta = 0.88$, $SE = 0.45$, $CI = 0.049, 1.825$, $P = 0.048$) were significantly higher within the treatment group. Reproductive rates within the control group were low and unsustainable suggesting that current menhaden availability is too low to support a demographically stable osprey population. Menhaden populations should be maintained at levels that will sustain a stable osprey population in which they are able to produce 1.15 young/active nest to offset mortality.

KEYWORDS

osprey, *Pandion haliaetus*, menhaden, *Brevoortia tyrannus*, localized depletion, ecological reference points, food supplementation

1 Introduction

World fisheries landings since the late 1980s have been steadily declining (Pauly and Zeller, 2016, FAO, 2020). With mounting concern over the state of our fisheries, management strategies have shifted focus from single-species to ecosystem-based objectives (Pauly et al., 2008). This style of management attempts to integrate ecological,

economic, and social factors to secure and protect the sustainability of our fisheries and the ecosystems within which they reside (Einoder, 2009). Thus, United States federal policy firmly reinforces the implementation of Ecosystem-Based Fisheries Management (EBFM) which is an approach that considers trophic interactions and aims to promote the health and resilience of the ecosystem (McLeod and Leslie, 2009; Link, 2010, NMFS (National Marine Fisheries Service), 2016). Apex predators are essential indicators within this management approach and may provide more sensitive measures of changing fish populations because of their dietary dependencies (Furness, 1982; Diamond and Devlin, 2003). Monitoring fish-eating bird populations may be both more cost effective and better suited to the problem of understanding fish populations within an ecosystem (Cairns, 1988). Bird metrics may play an increasing role in the assessment of prey availability, especially in areas where conventional fisheries data are insufficient (Cairns, 1988). Bird populations may serve as an early warning system for changes in fish populations that have ecosystem implications (Kabuta and Laane, 2003; Cury et al., 2005).

The Atlantic States Marine Fisheries Commission (ASMFC), the governing body responsible for managing fisheries on the U.S. East Coast, formally adopted the use of Ecological Reference Points (ERPs) for Atlantic menhaden, *Brevoortia tyrannus*. Historical estimates of menhaden were limited and the harvest effects did not produce sufficient information on important predator species. Therefore, the ASMFC developed an interest in establishing ERPs to set quotas and evaluate menhaden's status and role as a forage species (Drew et al., 2021). Scientists and stakeholders have long recognized the importance of predators, such as bottlenose dolphins, *Tursiops truncatus*, and humpback whales, *Megaptera novaeanglia*, that support a valuable ecotourism industry and hold cultural significance (Gannon and Waples, 2004; Glass and Watts, 2009; Butler et al., 2010; Smith et al., 2015; Drew et al., 2021).

Atlantic menhaden are a schooling fish that can be found along nearshore coasts along the Atlantic Ocean from Nova Scotia, CAN, to Florida, USA and go through large age- and size-dependent seasonal migrations (Dryfoos et al., 1973; Nicholson, 1978; Liljestrand et al., 2019). As indeterminate spawners, adults are capable of spawning multiple times in a season and inhabit estuarine and coastal areas such as Chesapeake Bay (Ahrenholz, 1991, Southeast Data Assessment and Review [SEDAR], 2020). As juveniles, they spend their first spring and summer in estuaries and by late fall, they join with other subadults and adults and migrate to nearshore coastal waters (Southeast Data Assessment and Review [SEDAR], 2020; Anstead et al., 2021).

Menhaden support the largest fishery in the U.S. East Coast by volume and is used for bait and reduced to fish oil and meal which are used for animal feed, fertilizer, and human health supplements (Anstead et al., 2021). The reduction fishery began in the mid-1800s with the use of purse seine gear and peaked in 1956 with over 20 menhaden reduction factories along the Atlantic Coast (Southeast Data Assessment and Review [SEDAR], 2020). Currently, landings in the reduction fishery are at their lowest levels (Southeast Data Assessment and Review [SEDAR], 2020) and at Chesapeake Bay, populations of menhaden are facing potential localized depletion. ASMFC defined localized depletion in Chesapeake Bay "as a

reduction in menhaden population density below the level of abundance that is sufficient to maintain its basic ecological, economic, and social/cultural functions" (Annis et al., 2009). Localized depletion has not been officially defined or evaluated by managers because estimates of the standing stock within Chesapeake Bay have been unavailable and thresholds for exploitation cannot be resolved.

Known as the fish hawk, we selected the osprey as an appropriate non-fish ERP to evaluate localized depletion of menhaden and food limitation within Chesapeake Bay. The ERP Work Group emphasized the research need for diet data collection and demographic responses of non-fish predators (Atlantic States Marine Fisheries Commission [ASMFC], 2017). According to Buccheister et al. (2017), the nearshore piscivorous birds such as ospreys are sensitive to the overfishing of menhaden. Ecologically, ospreys are generalized specialists (Beirregaard et al., 2014). Specialized in that they are obligate piscivores and generalized in that they predate upon many species of fish. Ospreys surface plunge at a maximum depth of one meter and are more susceptible to a decrease in fish density than other birds such as pursuit divers that search for prey while swimming on the water surface and dive to deeper depths (Ashmole, 1971; Cramp and Simmons, 1979). Piscivory and plunge diving influences an ecological indicator's response to fish supply perturbations (Einoder, 2009). Reduced prey availability and fluctuations in environmental conditions are more evident in the foraging behavior and breeding success of a specialist (Furness and Ainley, 1984; Montevecchi, 1993). Moreover, shallow divers and surface feeders are more vulnerable, are considered more sensitive indicators than pursuit divers, and show greater variation in breeding performance (Montevecchi, 1993, Monaghan et al., 1994; Scott et al., 2006). As one of the more recognized raptors, ospreys have been used as an ecotoxicological sentinel species of environmental health due to their reproductive responses to natural and anthropogenic pressures and life history traits (Henny et al., 2008; Johnson et al., 2008; Grove et al., 2009). Ospreys exhibit strong nest fidelity and their reproductive status is observable by ground, boat, or aerial surveys which makes them a valuable and efficient sentinel of the ecosystem (Ogden et al., 2014) and an appropriate ERP for menhaden (Buccheister et al., 2017).

The Chesapeake Bay supports one of the largest osprey breeding populations in the world (Henny, 1983; Watts and Paxton, 2007). As with many similar populations, ospreys in the Chesapeake Bay experienced dramatic declines in the post-World War II era due to reproductive suppression (Truitt, 1969; Kennedy, 1971; Wiemeyer, 1971; Reese, 1977) induced by environmental contaminants (Via, 1975; Wiemeyer et al., 1975). The population sustained a low point by 1973 when Henny et al. (1974) estimated its size to be 1,450 breeding pairs. From 1973 to 1995, the population more than doubled in size to nearly 3,500 pairs (Watts et al., 2004) and believed to be between 8,000-10,000 pairs in 2020. However, the population has experienced spatial variation in recovery (Watts et al., 2004; Watts and Paxton, 2007). For example, average doubling time for the population on low-salinity, upper reaches of tributaries, was less than four years while doubling time on higher-salinity reaches of the lower Chesapeake Bay exceeded 40 years (Watts et al., 2004). This variation reflects the extent of the

earlier decline, immigration from other regions of the Chesapeake Bay, and the local demography of pairs that may have been influenced by prey availability.

Mobjack Bay has been a focus of osprey research since 1970 and represents a barometer for the relationship between osprey breeding performance and menhaden availability (Glass, 2008). During the mid-1970s, there was little evidence of food limitation reflected in osprey reproductive performance and brood sizes within the higher salinity zones of the lower Chesapeake Bay (Stinson, 1976). However by the early 2000s, the proportion of menhaden in the diet had dropped by 40% and reproductive rates had dropped to precarious levels (Glass, 2008). We conducted a supplemental feeding experiment for osprey pairs nesting in Mobjack Bay during the 2021 breeding season. A clear barrier in resolving the relationship between osprey productivity and menhaden consumption is the lack of menhaden abundance data that can be scaled down to the local level. If such data were available, we could monitor osprey foraging, provisioning, and productivity, and assess the functional response to available menhaden. Since such data are not available, a food manipulative experiment in the wild was performed (Piatt et al., 2007). Our secondary objective was to determine prey composition and the dietary importance of menhaden.

2 Methods

2.1 Study species

Ospreys are large, long-winged raptors with a nearly global distribution that feed exclusively on fish (Poole, 2019). Most osprey populations across North America are migratory, spend the winter months in Central or South America and begin breeding at the age of three (Henny & Wight, 1969). Age-at-first-reproduction in Chesapeake Bay ospreys was recorded from 4 years (Kinkead, 1985) to 5.7 years (Poole, 1989; Poole et al., 2002). As the population reaches carrying capacity, age-at-first-reproduction increases (Spitzer, 1980; Poole, 1989). Poole (1989) estimated that pairs within the Chesapeake Bay must produce 1.15 young per year in order to offset adult mortality. On average, if the population consistently meets or exceeds this rate (demographic source) then the population would be expected to be stable to increasing (Pulliam, 1988). If the reproductive rate consistently falls below this threshold (demographic sink) the population would be expected to decline in the absence of compensatory immigration.

2.2 Food addition experiment

We established treatment (fish addition) and control (no fish addition) nests to assess the effect of increased provisioning on demography. We added $472 \text{ g} \pm 7.9 \text{ (SE)}$ of menhaden every $3.5 \text{ d} \pm 0.2$ to treatment nests from the time of hatching to six weeks of age. We delivered menhaden to nests using a telescopic pole with a mounted delivery device. We sourced fresh or previously frozen

menhaden from a local fishing supply company and the fish were counted, weighed, coded, and separated into packages for easy deployment. We selected study nests based on accessibility and randomly assigned accessible nests to treatments. We conducted an initial survey (late March to mid-April) of the study area for osprey nests ($N = 114$) and recorded location (latitude, longitude), accessibility by boat, nesting stage, nest substrate, height over water, and water depth. We screened nests for initial inclusion in the study based on accessibility, height over water (to allow for ready access to the nest) and water depth (to allow for boat access and maneuverability). We only included nests within the study that survived to hatching stage. We monitored all nests included within the initial draw until clutches hatched. Nests that hatched eggs were randomly assigned to two treatment groups (Figure 1) including a control group ($N = 15$) and a food addition group ($N = 16$). The nests in the East River were limited in boat accessibility and therefore assigned to the control group.

2.3 Demography

We monitored nests twice per week from clutch completion to fledging to quantify demographic parameters including clutch size, brood size, and the number of young fledged. From observations, we determined brood reduction (number of young lost between hatching and fledging). We noted the age that nestlings died and the stage when nests failed. We consider a nest to be successful if the pair produced at least one young to fledging age. We consider productivity to be the number of young that reached fledging age (7 wks) per active nest (Steenhof and Newton, 2007). We used a telescopic mirror pole to facilitate the examination of nest contents for nests that were $>2 \text{ m}$ above the water line.

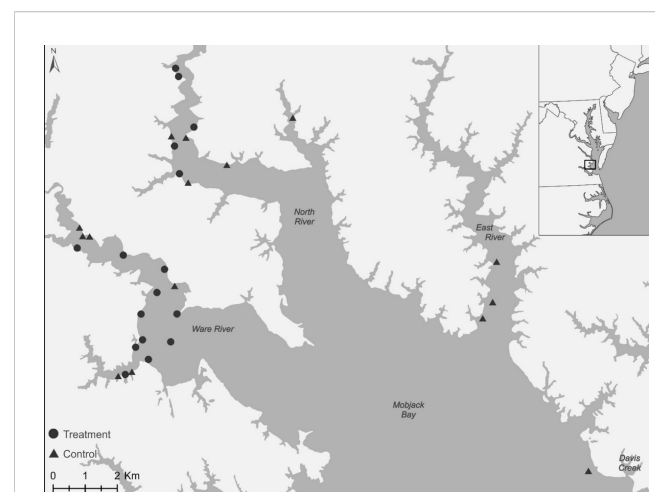


FIGURE 1
Map of the experimental area of Mobjack Bay on the lower eastern region of Chesapeake Bay, VA, USA. The locations of the control group ($N = 15$) represented by black triangles and the food addition group ($N = 16$) represented by black circles.

2.4 Provisioning

We used trail cams (Browning Strike Force HD Pro X - BTC-5HDPX) to quantify nest provisioning rates including the average number of fish (n/day), biomass (g/day) and energy (kcal/day) for a subsample of treatment (N = 7) and control (N = 4) nests. We deployed cameras on nest structures that would accommodate them. We fastened trail cams to 1.91 cm (3/4 inch) diameter conduit and mounted conduit to the nesting structure such that cameras were positioned approximately 1 m above the nest. Cameras were programmed to record an image every 5 min during daylight hours (05:00 to 22:00). We extracted images from the photo set that depicted fish delivered to nests and identified all fish to the lowest taxonomic level possible. Most fish were identified to the species level but others could only be identified to the genus or family level. We estimated fish length from photos within an image processing program, ImageJ with Java (<https://imagej.nih.gov/ij/index.html>) and compared to known lengths from reference structures (Poole et al., 2002) including adult bill (male = 32.5, female = 34.6 mm) and talon (male = 28.9, female = 30.0 mm). We estimated the biomass (g) of each fish using species-specific length-mass equations from published literature and FishBase (<https://fishbase.in/>, Appendix 2). We converted biomass to energy (kcal) using published species-specific energy density values (Appendix 3). For species that could not be identified to species, we used length-mass equations and energy density from a representative species of the taxonomic group. We consider the provisioning of control nests to include fish provided by adults and for treatment nests to include fish provided by adults and menhaden that we added to nests. It is important to note that treatment nests that did not have trail cameras were observed by boat and consumption of supplemented fish by the adults and young were verified.

2.5 Statistical analysis

Data were not independent, not normally distributed, and non-homogenous therefore, we used appropriate tests. We investigated the influence of treatment (control vs food addition) on demographic parameters including nest success, clutch size, the number of young hatched, brood reduction, and productivity. We constructed a two-by-two contingency table and used Pearson's Chi-squared analysis to compare the relationship between treatment type and nest success. We used Generalized Linear

Models (GLMs) to determine if there were the average differences in clutch size, the number of young hatched, brood reduction, and productivity between the treatment types. For provisioning (fish/d, biomass/d, energy content/d), we analyzed data from trail cameras to evaluate the relationship between provisioning and demographic parameters. It is important to note that our models were based on totals and/or average provisioning rates including naturally provisioned and supplemental fish.

We used Generalized Linear Mixed Models (GLMMs) with a negative binomial distribution and log link, nest and treatment type as the random effects, and food addition and total provisioning (natural and supplemented) as the fixed effects. For the influence of provisioning on demographics, we used GLMs with a negative binomial distribution and log link and compared the effects of the mean fish/d, biomass/d, and energy content/d (natural and supplemented) on productivity (both treatment groups combined, N = 11). We calculated the supplemented average biomass/d/nest and energy content/d/nest threshold needed for the production of 1.15 fledglings per nest-season (estimated break-even rate). All analyses were performed in RStudio 4.02 and we used the MASS and glmmTMB packages for model development and validated by the DHARMA package for residual diagnostics on hierarchical regression models (Venables and Ripley, 2002; Brooks et al., 2017; R Core Team, 2020; Hartig, 2021).

3 Results

3.1 Food addition and demography

For the food addition group, 13 of the 16 nests (81%) succeeded with an average productivity rate of 1.13 ± 0.18 (SE) young/active nest. The three nests that failed in this group failed on average during the first 1.38 ± 0.5 wks. or when young were 10 d old. For the control group, five of the 15 nests (33%) succeeded with an average productivity rate of 0.47 young/active nest. The ten nests that failed in this group failed on average during the first 2.2 ± 0.5 wks. The age at failure (d) between the food addition and control groups was not statistically significantly different ($\beta = -0.47$, SE = 0.41, P = 0.25). The age at failure for the control group ranged from 3 - 42 d with the highest mortality experienced during the first $15.5 \text{ d} \pm 3.4$ of the nestling period. Nest success and productivity were significantly different between the control and food addition groups (Table 1, Figure 2). Clutch size, the number of young hatched, and brood

TABLE 1 Two-way contingency table used for the Pearson's Chi-squared analysis that summarizes the relationship between treatment types and nest success during the 2021 osprey breeding season in the lower Chesapeake Bay, VA, USA ($\chi^2 = 5.5$, df = 1, P = 0.02).

TREATMENT	NEST SUCCESS (NESTS)		
	SUCCESSFUL	FAILED	TOTAL
FISH ADDITION	13	3	16
CONTROL	5	10	15
TOTAL	18	13	31

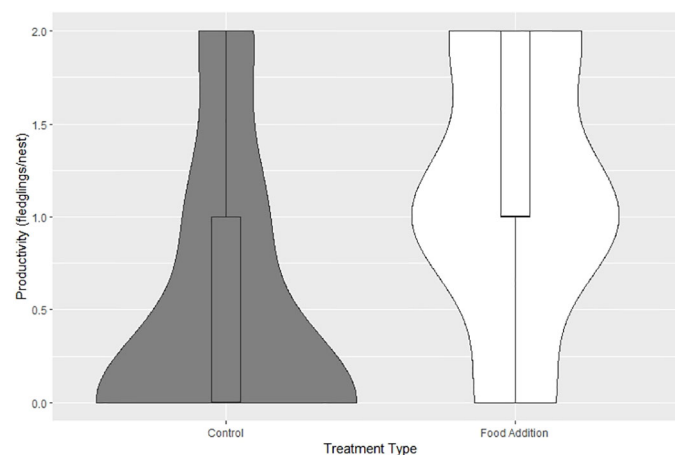


FIGURE 2

Productivity between the control group (N = 15) and the treatment group (N = 16) of ospreys during the 2021 breeding season in the lower Chesapeake Bay, VA, USA ($\beta = 0.88$, SE = 0.45, pseudo $R^2 = 0.14$, CI = 0.049, 1.825, $P = 0.048$). Violin shapes represent the density of data distribution and the middle horizontal line of the box plots represent the median values.

reduction were not significantly different between the control and food addition groups (Table 2).

3.2 Provisioning and productivity

Food supplementation had a significant influence on the number of fish and amount of energy available to osprey broods (Table 3). A total of 241 Atlantic menhaden was supplemented to the food addition group and contributed 32,384 g that represented an estimated 61,206 kcal. This increased the average total prey biomass and energy content within the food addition group to 226.5 g/d/nest and 396.2 kcal/d/nest. The average biomass that was delivered to the control group was 166.8 g/d/nest and the average energy content was 242.2 kcal/d/nest (Appendix 1). For the control group, adult osprey delivered an average of 1.2 fish/d/nest compared to 1.1 fish/d/nest for the supplemented group.

Food supplementation had a significant influence on the likelihood that pairs reached the threshold reproductive rate of 1.15 young/nest (Figure 3). The estimated average fish biomass and energetic content needed for a pair to produce the threshold reproductive rate was 202.7 g/d and 338.6 kcal/d respectively. Within the study area, pairs required supplementation of 63.4 g/d of menhaden or 121 kcal/d in order to reach the productivity threshold.

Diet composition included a diverse list of fish species (Appendix 1). A total of 600 fish were documented as prey by ospreys in which 81% of taxa were identified to 21 species or to at least family. Atlantic menhaden (39%) dominated prey composition. Other known species included Atlantic herring (*Clupea harengus*) (10.3%), Atlantic croaker (*Micropogonias undulatus*) (5.8%), gizzard shad (*Dorosoma cepedianum*) (5.7%), and spot (*Leiostomus xanthurus*) (5%).

TABLE 2 Results for GLMs used to compare demographic parameters between treatment types during the 2021 osprey breeding season in the lower Chesapeake Bay, VA, USA.

DEMOGRAPHIC PARAMETERS	β	SE	PSEUDO r^2	CI	P
CLUTCH SIZE	0.07	0.21	0.75	-0.34, 0.48	0.75
No. of YOUNG HATCHED	0.12	0.24	0.04	-0.33, 0.62	0.57
BROOD REDUCTION	0.20	0.31	0.02	-0.81, 0.40	0.50

TABLE 3 Results of GLMMs with treatment effects on provisioning rates per d of nests under trail camera surveillance (N = 11) during the 2021 osprey breeding season in the lower Chesapeake Bay, VA, USA.

TREATMENT EFFECTS	β	SE	z VALUE	CI	P
FISH (number of fish/d)	0.25	0.02	13.4	0.21, 0.29	< 0.001
BIOMASS (g of fish/d)	0.002	0.0004	4.65	0.001, 0.003	< 0.001
ENERGY CONTENT (kcal of fish/d)	0.001	0.0002	5.22	0.008, 0.002	< 0.001

4 Discussion

Supplementation of osprey nests with menhaden had a significant influence on the ability of nesting pairs to reach reproductive rates required for population maintenance. Our study shows that productivity was food limited as previous studies have substantiated (Simons and Martin, 1990; Richner, 1992; Wiehn and Korpimäki, 1997; Ferrer et al., 2018). Osprey pairs that did not receive supplementation had reproductive rates (0.47 young/nest) that were less than half of threshold levels. Within Mobjack Bay, productivity rates have shifted from reproductive surplus to reproductive deficit since the 1980s. For example, populations at various locations along the main stem of Chesapeake Bay were considered strongholds (McLean, 1986; Byrd, 1988). During 1983 and 1984, the average reproductive rate was 1.39 young/pair (Byrd, 1987). By 1988 and 1990, average productivity had dropped to 0.91 young/pair (Byrd, 1988, Byrd, 1990) and by 2005 and 2006 productivity had dropped further to 0.75 young/pair (Glass, 2008). If fishing pressure on menhaden within Chesapeake Bay persists, osprey productivity rates could decline precipitously, threaten population stability, and eventually lead to widespread population collapse. Menhaden populations should be maintained at levels that will sustain a stable osprey population in which they are able to produce 1.15 young/active nest to offset mortality.

Our research suggests that food addition significantly influenced osprey provisioning rates and these rates impacted reproductive performance. Specifically, daily average biomass and energy content of the prey composition significantly influenced productivity. Lind (1976) used a model developed by Wiens and Innis (1974) and calculated that each adult osprey required 286 kcal/d and each nestling at 11–16 d old needed at least 113 – 170 kcal/d. Based on calculations in which fish with an energy content of 1 kcal/g, a nest with two young plus the female would require 794 g of fish/d in order

to successfully fledge and a nest with three young would require 1048 g of fish/d (Winberg, 1960). Along the U.S. Eastern Coast, Poole (1982) determined that male ospreys delivered 816 – 1426 g/d to nests that had young and nests that produced three – four young. In our study, menhaden consisted of 39% of the total diet composition and these fish have a high energy content of 1.89 kcal/g (June and Nicholson, 1964). Based on the calculations of Winberg (1960), if a nest fledged two young that was supplied with 39% or 309.7 g/d or 585.3 kcal/d of menhaden, the estimated additional biomass and energy content required would be 648.2 g/d or 1,225.1 kcal/d. Similarly if a nest fledged three young and was supplied with 39% or 408.7 g/d or 772.4 kcal/d of menhaden, the estimated additional biomass and energy content required would be 855.5 g/d or 1,616.9 kcal/d. For the nests in our study, the added average biomass and energetic threshold needed for a nest to reach the reproductive break-even point are 63.4 g/d and 121 kcal/d which would be a total average of 208.1 g/d and 347.6 kcal/d (Figure 3).

When we directly compared the provisioning rates in this study to historical studies in Mobjack Bay and the higher salinity areas of Chesapeake Bay, declines in daily fish deliveries were made evident. In 1975 and 1985, the fish delivery rate was 0.53 fish/hr/nest and 0.35 fish/hr/nest (McLean and Byrd, 1991). In 2006 and 2007, ospreys in the higher salinity areas delivered an average of 0.26 fish/h/nest (Glass, 2008). Our study revealed that in 2021, the fish delivery rate diminished to a mean of 0.11 fish/hr/nest. The average daily biomass delivered per nest fell from 237.1g and 172.3g in 1975 and 2007 to 144.7g in 2021 (Appendix 1, McLean and Byrd, 1991; Glass, 2008).

Brood reduction has been an effective parameter linking reproductive performance to food limitation in osprey (Glass, 2008). In a 5-yr study, Reese (1977) determined nestling loss rates in the upper Chesapeake Bay ranged from 8–23%. Nestling mortality rates were 47% and 78% for the supplementation and control groups respectively in this study. Poole (1984) conducted a

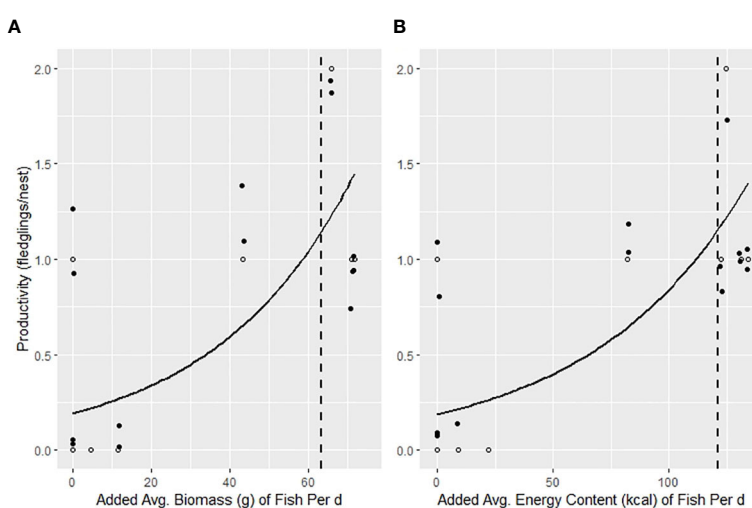


FIGURE 3

GLM's of the influence of the added (A) avg. biomass/d/nest ($\beta = 0.03$, SE = 0.01, Pseudo $R^2 = 0.60$, CI = 0.01, 0.05, P = 0.02) and (B) avg. energy content/d/nest (kcal) ($\beta = 0.02$, SE = 0.005, Pseudo $R^2 = 0.64$, CI = 0.006, 0.03, P = 0.02) for osprey pairs under trail camera surveillance after seven weeks post hatch of the first egg in 2021 breeding season in the lower Chesapeake Bay, VA, USA. The data points represented by white circles have been "jittered" along with random points represented in black circles for improved visibility of model fit. The dotted lines indicate the supplemented average biomass (63.4 g) and energy content (121 kcal) thresholds needed per d to produce 1.15 young per nest-season.

4-yr study in New England and determined that 75% of nestling mortality was caused by starvation. Glass and Watts (2009) determined that brood reduction was highly significant between nests in the lower estuarine sites compared to the higher estuarine sites and these data suggested that ospreys in the higher salinity areas were experiencing more food limitation than the lower salinity areas. Brood reduction has generally been linked with the lack of food availability in other study areas (Poole, 1982; Jamieson et al., 1983; Eriksson, 1986; Hagan, 1986; Forbes, 1991; Glass and Watts, 2009). Although brood reduction was higher in the control group, differences were not found to be significant in our study. This discrepancy could have been attributed to treatment effects in which the timing and intensity of the protocol was not strong enough to detect a significant signal. Perhaps if we supplemented more fish in greater frequency, we would have observed significant differences in the average brood reduction between the experimental groups.

The most compelling explanation for lower provisioning and productivity rates is localized depletion of the primary prey base. Although proximate causes of lower productivity may include storms, inter- and intraspecies competition, predation, as well as age-related care by parents, the ultimate cause of lower productivity may often be food shortage (Steenhof and Newton, 2007). Atlantic menhaden has a higher lipid content compared to other species with a nearly a 2:1 energy content/biomass ratio (June and Nicholson, 1964). Ospreys depend on menhaden and their reproductive performance is inextricably linked to the availability and abundance of this fish. In fact, previous studies have substantiated that menhaden are a vital prey item for ospreys during the breeding season particularly in the mid-Atlantic and northeastern United States (Spitzer and Poole, 1980; Poole, 1989; McLean and Byrd, 1991; Steidl et al., 1991, Glass and Watts, 2009). In 1985, this fish species consisted of 75% of the prey composition of ospreys in the lower Chesapeake Bay (McLean and Byrd, 1991). Then in 2006 and 2007, menhaden declined to 32% of the prey composition (Glass, 2008). In our study menhaden comprised of 39% of the total prey composition (Appendix 1). Assuming that the prey composition of ospreys reflects prey availability on a local level (Greene et al., 1983; Edwards, 1988; Glass, 2008), the current percentage of menhaden could indicate that this species has diminished in availability compared to the later portion of the 20th century.

Potential localized depletion of menhaden populations is one of the major sources of concern and conflict within Chesapeake Bay. According to the ASMFC, the coastwide stock assessment has determined that menhaden is not overfished and that no overfishing is occurring (Southeast Data Assessment and Review [SEDAR], 2020). However, a coastwide assessment does not capture spatial variation in menhaden availability for locations with persistent depletion such as Chesapeake Bay. Seine surveys of juvenile menhaden in Maryland and Virginia indicate that low levels of abundance and recruitment have been happening since the early 1990's and 2000's (Atlantic States Marine Fisheries Commission [ASMFC], 2004, Southeast Data Assessment and Review [SEDAR], 2020). Our data suggests that the reliable metric that links osprey population decline and food limitation is the osprey productivity rate. During the population decline in northern Florida, Bowman et al. (1989) determined that the productivity rate was 0.56 young/nest and this was due to

insufficient food availability. When the Florida Bay population was healthy and food was abundant (Henny and Ogden, 1970), the productivity rate was 1.22 young/nest which is similar to the rate acquired by the food addition group of our study at 1.13 young/nest.

5 Conclusion

EBFM evolves when ERPs are consistently monitored (Pikitch et al., 2004). According to Amendment 3 of the Interstate Fishery Management Plan (FMP) for Atlantic menhaden (Southeast Data Assessment and Review [SEDAR], 2020; Anstead et al., 2021), ERPs are described as “a method to assess the status of menhaden not only with regard to the sustainability of human harvest, but also with the regard to their interaction with predators and the status of other prey species.” The ERP working group is tasked with developing ERPs that are menhaden-specific that can account for the abundance of menhaden and their species role as a forage fish (Amendment 3 to the FMP, Anstead et al., 2021). Ospreys are non-fish predators and can serve the ERP role which can allow management to practice informed decisions to develop harvest targets, assess menhaden's role as prey for upper trophic levels, and advance an ecosystem approach to fisheries management (EAFM) which considers multiple components of the ecosystem than just the target species (Patrick and Link, 2015). The menhaden population within Mobjack Bay is not currently adequate to sustain the osprey breeding population and we recommend that industrial purse seine fishing occur outside Chesapeake Bay.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material. Further inquiries can be directed to the corresponding author.

Ethics statement

The animal study was reviewed and approved by Institutional Animal Care and Use Committee (IACUC-2021-05-03-14981-bjpaxt).

Author contributions

MA and BW designed and conducted the research. MA and BW performed the experiment, statistical analysis, and wrote the paper. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fmars.2023.1172787/full#supplementary-material>

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From: [Andy CORTEZ](#)
To: [Comments](#)
Subject: [External] osprey deaths
Date: Monday, July 24, 2023 1:44:36 PM
Importance: High

July 24, 2023

Dear Chairman Bell:

The current management strategy in Lower Chesapeake Bay is insufficient and on a collision course with state and federal agencies responsible for the protection of osprey. The Lower Chesapeake Bay osprey population is stressed - due to concentrated, industrial menhaden fishing. Starvation is causing nest failures. The evidence shows that the purse seine fleet is simply not leaving enough menhaden in the lower bay to maintain a balanced ecosystem. Currently, there is a nationwide groundswell of public interest and heated calls for action. This is a matter of extraordinary importance that compels your full attention and leadership. So, in the cooperative spirit of the ASMFC Compact, and as a fellow American, I respectfully call on your leadership to please commence fact-finding and deliberation regarding this urgent issue.

Kind regards,

Andy Cortez

6457 Lakeway Drive

Mechanicsville, VA 23111

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