

# Atlantic States Marine Fisheries Commission

## Atlantic Menhaden Management Board

*October 17, 2023*

*1:30 – 3:00 p.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>M. Bell</i> )   | 1:30 p.m. |
| 2. Board Consent  | 1:30 p.m. |
| • Approval of Agenda  |           |
| • Approval of Proceedings from May 2023   |           |
| 3. Public Comment   | 1:35 p.m. |
| 4. Progress Update on Ecological Reference Point Benchmark Assessment ( <i>K. Drew</i> )                                    | 1:45 p.m. |
| 5. Review Virginia Chesapeake Bay Menhaden Study Design Report  | 2:00 p.m. |
| 6. Consider Fishery Management Plan Review and State Compliance for the 2022 Fishing Year ( <i>J. Boyle</i> ) <b>Action</b> | 2:45 p.m. |
| 7. Other Business/Adjourn   | 3:00 p.m. |

The meeting will be held at Beaufort Hotel (2440 Lennoxville Road, Beaufort, North Carolina; 252.728.3000) and via webinar; click [here](#) for details

# Atlantic States Marine Fisheries Commission

## MEETING OVERVIEW

Atlantic Menhaden Management Board

Tuesday, October 17, 2023

1:30 p.m. – 3:00 p.m.

Hybrid Meeting

|   |  |  |
|---|--|--|
| Chair: Mel Bell (SC)<br>Assumed Chairmanship: 10/21   | Technical Committee Chair:<br>Caitlin Craig (NY) | Law Enforcement Committee<br>Representative: Matthew Corbin (MD) |
| Vice Chair:<br>Conor McManus (RI)   | Advisory Panel Chair:<br>Meghan Lapp (RI)        | Previous Board Meeting:<br>May 1, 2023                           |
| Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, PRFC, VA, NC, SC, GA, FL, NMFS,<br>USFWS (18 votes) |  |  |

### 2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 1, 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 should use the webinar raise your hand function and the Board Chair will let you know when to speak. 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 Board 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. Progress Update on Ecological Reference Point (ERP) Benchmark Assessment (1:45 p.m. –2:00 p.m.)

#### Background

- In October 2023, the ERP Working Group convened for a Data and Methods Workshop.

#### Presentations

- Update on ERP Stock Assessment by K. Drew

### 5. Review Virginia Chesapeake Bay Menhaden Study Design Report (2:00 p.m.–2:45 p.m.)

#### Background

- In response to a bill approved in March 2023, VIMS is developing plans to study the ecology, fishery impacts, and economic importance of menhaden populations in the Commonwealth and include potential methodologies, timelines, and costs.

#### Presentations

- Review of VIMS Study Design Report

## ***Atlantic States Marine Fisheries Commission***

### **6. Consider Fishery Management Plan Review and State Compliance for 2022 Fishing Year (2:45-3:00 p.m.) Action**

#### **Background**

- State compliance reports were due August 1, 2023
- The Plan Review Team reviewed each state reports and compiled the annual FMP Review.
- Pennsylvania, South Carolina, Georgia, and Florida have requested and meet the requirements for *de minimis*.

#### **Presentations**

- Overview of Atlantic menhaden FMP Review by J. Boyle (**Supplemental Materials**)

#### **Board Actions for Consideration**

- Accept 2022 FMP Review and State Compliance Reports
- Approve *de minimis* requests for Pennsylvania, South Carolina, Georgia, and Florida

### **7. Other Business/Adjourn**

## Atlantic Menhaden

### Activity level: High

**Committee Overlap Score:** High (SAS, ERP WG overlaps with American eel, striped bass, northern shrimp, Atlantic herring, horseshoe crab, weakfish)

#### Committee Task List

- 2023 Ageing Workshop
- 2025 Single-species and Ecological Reference Point Stock Assessments
- Annual compliance reports due August 1st

**TC Members:** Caitlin Craig (NY, Chair), Josh Newhard (USFWS), Holly White (NC), Keilin Gamboa-Salazar (SC), Jason McNamee (RI), Eddie Leonard (GA), Jeff Brust (NJ), Matt Cieri (ME), Ingrid Braun (PRFC), Micah Dean (MA), Kurt Gottschall (CT), Shanna Madsen (VMRC), Chris Swanson (FL), Ray Mroch (NMFS), Sydney Alhale (NMFS), Amy Schueller (NMFS), Alexei Sharov (MD), Garry Glanden (DE), Heather Walsh (USGS), Kristen Anstead (ASMFC), James Boyle (ASMFC)

**SAS Members:** Amy Schueller (NMFS, SAS Chair), Caitlin Craig (NY, TC Chair), Brooke Lowman (VA), Matt Cieri (ME), Chris Swanson (FL), Sydney Alhale (NMFS), Jason McNamee (RI), Alexei Sharov (MD), Jeff Brust (NJ), Katie Drew (ASMFC), Kristen Anstead (ASMFC), James Boyle (ASMFC)

**ERP WG Members:** Matt Cieri (ME, ERP Chair), Jason Boucher (NOAA), Michael Celestino (NJ), David Chagaris (FL), Micah Dean (MA), Rob Latour (VIMS), Jason McNamee (RI), Amy Schueller (NFMS), Alexei Sharov (MD), Howard Townsend (NFMS), Jim Uphoff (MD), Shanna Madsen (VMRC), Genny Nesslage (MD), Kristen Anstead (ASMFC), Katie Drew (ASMFC)

**DRAFT PROCEEDINGS OF THE  
ATLANTIC STATES MARINE FISHERIES COMMISSION  
ATLANTIC MENHADEN MANAGEMENT BOARD**

**The Westin Crystal City  
Arlington, Virginia  
Hybrid Meeting**

**May 1, 2023**

These minutes are draft and subject to approval by the Atlantic Menhaden Management Board.  
The Board will review the minutes during its next meeting.

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**Adjournment .....11**

**INDEX OF MOTIONS**

1. **Approval of Agenda** by consent (Page 1).
2. **Approval of Proceedings of February 1, 2023** by consent (Page 1).
3. **Move to approve the Terms of Reference for the 2025 Atlantic Menhaden Ecological Reference Point Benchmark Stock Assessment and Peer Review** (Page 11). Motion by Conor McManus; second by Raymond Kane. Motion carried unanimously (Page 12).
4. **Move to adjourn** by consent (Page 12).

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**ATTENDANCE**

**Board Members**

|  |   |
|--|---|
| Megan Ware, ME, proxy for Pat Keliher (AA)       | Loren Lustig, PA (GA)                           |
| Steve Train, ME (GA)                             | John Clark, DE (AA)                             |
| Rep. Allison Hepler, ME (LA)                     | Roy Miller, DE (GA)                             |
| Cheri Patterson, NH (AA)                         | Craig Pugh, DE, proxy for Rep. Carson (LA)      |
| Doug Grout, NH (GA)                              | Lynn Fegley, MD, AA (Acting)                    |
| Dennis Abbott, NH, proxy for Sen. Watters (LA)   | Russell Dize, MD (GA)                           |
| Nichola Meserve, MA, proxy for D. McKiernan (AA) | Allison Colden, MD, proxy for Del. Stein (LA)   |
| Raymond Kane, MA (GA)                            | Pat Geer, VA, proxy for J. Green (AA)           |
| Sarah Ferrara, MA, proxy for Rep. Peake (LA)     | Bryan Plumlee, VA (GA)                          |
| David Borden, RI (GA)                            | Chris Batsavage, NC, proxy for K. Rawls (AA)    |
| Conor McManus, RI, proxy for J. McNamee (AA)     | Jerry Mannen, NC (GA)                           |
| Eric Reid, RI, proxy for Sen. Sosnowski (LA)     | Chad Thomas, NC, proxy for Rep. Wray (LA)       |
| Matt Gates, CT, proxy for J. Davis (AA)          | Mel Bell, SC (AA)                               |
| Rob LaFrance, CT, proxy for B. Hyatt (GA)        | Malcolm Rhodes, SC (GA)                         |
| Jesse Hornstein, NY, proxy for B. Seggos (AA)    | Chris McDonough, SC, proxy for Sen. Cromer (LA) |
| Emerson Hasbrouck, NY (GA)                       | Spud Woodward, GA (GA)                          |
| Jeff Brust, NJ, proxy for J. Cimino (AA)         | Gary Jennings, FL (GA)                          |
| Tom Fote, NJ (GA)                                | Marty Gary, PRFC                                |
| Kris Kuhn, PA, proxy for T. Schaeffer (AA)       | Max Appelman, NMFS                              |

**(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)**

**Ex-Officio Members**

Caitlin Craig, Technical Committee Chair

**Staff**

|                  |                         |                |
|------------------|-------------------------|----------------|
| Bob Beal         | Kurt Blanchard          | Adam Lee       |
| Toni Kerns       | James Boyle             | Mike Rinaldi   |
| Madeline Musante | Julie DeFilippi Simpson | Caitlin Starks |
| Tina Berger      | Emilie Franke           | Chelsea Tuohy  |
| Lindsey Aubart   | Chris Jacobs            |                |
| Tracey Bauer     | Jeff Kipp               |                |

**Guests**

|                           |                         |                      |
|---------------------------|-------------------------|----------------------|
| Brendan Adams             | Josh Carloni, NH F&G    | Steve Doctor, MD DNR |
| Sydney Alhale, NOAA       | Beth Casoni             | Sam Duggan, NOAA     |
| John Bello                | Matt Cieri, ME DMR      | Bill Dunn            |
| Alan Bianchi, NC DENR     | Barry Clifford, NOAA    | Julie Evans          |
| Colleen Bouffard, CT DEEP | Haley Clinton, NC DENR  | Glen Fernandes       |
| Andrew Button, VMRC       | Margaret Conroy, DE DFW | Cynthia Ferrio, NOAA |
| Debbie Campbell           | Sarah Cvach, MD DNR     | Joe Fessenden        |

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**Guests (continued)**

|                                   |                              |                                  |
|-----------------------------------|------------------------------|----------------------------------|
| James Fletcher                    | Patrice McCarron, LA         | Kathleen Reardon                 |
| Tony Friedrich, SGA               | Genine McClair, MD DNR       | Harry Rickabaugh, MD DNR         |
| Alexa Galvan, VMRC                | Joshua McGilly, VMRC         | Paul Risi, City Univ NY          |
| Keilin Gamboa-Salazar, SC DNR     | Dan McKiernan, MA (AA)       | Amy Schueller, NOAA              |
| Lewis Gillingham, VMRC            | Jason McNamee, RI (AA)       | Tara Scott, NOAA                 |
| Angela Giuliano, MD DNR           | Kevin McMenamin, Annapolis   | Burton Shank, NOAA               |
| Robert Glenn, MA DMF              | Sophie Meltzer               | Kyle Shreve, Advantus Strategies |
| Amalia Herrington, Univ. ME       | Meredith Mendelson, ME DMR   | Ethan Simpson, VMRC              |
| Heidi Henninger, Offshore Lobster | Steve Meyers                 | Somers Smott, VMRC               |
| Jay Hermsen, NOAA                 | Lorraine Morris, ME DMR      | David Stormer, DE DFW            |
| Jaclyn Higgins, TRCP              | Allison Murphy, NOAA         | Mary Beth Tooley                 |
| Peter Himchak, Cooke Aqua         | Thomas Newman                | Corinne Truesdale                |
| Taylor Hinson, Omega Protein      | Jeff Nichols, ME DMR         | Jim Uphoff, MD DNR               |
| Harry Hornick, MD DNR             | Scott Olszewski, RI DEM      | Beth Versak, MD DNR              |
| Todd Janeski, VCU                 | Gerry O'Neill, Cape Seafoods | Jessica Waller, ME DMR           |
| Mike Jarbeau, Save the Bay        | Dana Pazolt                  | Craig Weedon, MD DNR             |
| Jeff Kaelin, Lund's Fisheries     | Justin Pellegrino, NYS DEC   | Ritchie White                    |
| TJ Karbowski                      | Mike Pentony, NOAA           | Tim Wheeler, <i>Bay Journal</i>  |
| Emily Keiley, NOAA                | Derek Perry, MA DMF          | John Whiteside                   |
| Adrienne Kotula, CBF              | Stephen Pickard              | Erin Wilkinson, ME DMR           |
| Wilson Laney                      | Chris Pickard                | Angel Willey, MD DNR             |
| Thomas Lilly, Forage Matters      | Nicole Pitts, NOAA           | Chris Wright, NOAA               |
| Pam Lyons Gromen, Wild Oceans     | Will Poston, SGA             | Erik Zlokovitz, MD DNR           |
| Shanna Madsen, VMRC               | Tracy Pugh, MA DMF           | Renee Zobel, NH F&G              |
| Rich Malinowski, NOAA             | Jill Ramsey, VMRC            |                                  |
| John Maniscalco, NYS DEC          | Marianne Randall, NOAA       |                                  |

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The Atlantic Menhaden Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Monday, May 1, 2023, and was called to order at 3:55 p.m. by Chair Mel Bell.

### **CALL TO ORDER**

CHAIR MEL BELL: Good afternoon, I'm Mel Bell; the Chair of the Menhaden Board. I'm going to call to order the May 1st meeting of the Atlantic Menhaden Management Board.

### **APPROVAL OF AGENDA**

CHAIR BELL: The first item would be Approval of the Agenda. Any edits to the agenda, any modifications? I don't see any hands, so, the agenda will stand approved by consensus.

### **APPROVAL OF PROCEEDINGS**

CHAIR BELL: Approval of the Proceedings from our February 1st meeting, any edits necessary to the proceedings from the February 1st meeting of the Menhaden Board? I don't see any hands for edits, so if there is no objection then the proceedings will stand approved by consensus.

### **PUBLIC COMMENT**

CHAIR BELL: That takes us to Public Comment. I would like to have anyone that is in the room for public comment go first, and then if we have people online, we'll shift over. I know we have at least one person in the room, we can go ahead and get started. Phil, if you would like to take three minutes and provide public comment, thank you for coming.

MR. PHIL ZALESK: My name is Phil Zalesak; and I fish in the Chesapeake Bay. The subject is localized depletion of Atlantic menhaden in the Chesapeake Bay. Localized depletion of Atlantic menhaden is occurring in the Chesapeake Bay, and it is adversely impacting predators dependent on Atlantic menhaden for their survival.

This includes striped bass, bluefish, weakfish, and

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osprey. I've attached a position paper to my written comments, and I would like you and your Technical Committee to review it. The Virginia Marine Resources Commission held two meetings last fall in October and December, in response to the number of complaints regarding the purse seine reduction fishery in and around the Chesapeake Bay.

Here is the sworn testimony of those who address localized depletion. Steve Atkinson, President of the Virginia Salt Water Sportfishing Association, presented a petition signed by over 9,000 anglers, asking the Governor to take action on the Atlantic menhaden reduction fishery. In September he previously presented a joint letter signed by 21 fishing, business and environmental groups, calling on the Governor to move reduction fishing out of the Chesapeake Bay, until science demonstrates the high-volume reduction fishing can be allowed without negatively affecting the broader Bay ecosystem. Christi Madice of Silver Beach, Virginia, testified regarding fish spills on beaches, impacting the health and safety of Virginia residences, the negative impact of purse seines scraping the bottom of the Bay, in terms of bycatch destruction, and negative impact localized depletion is having on the Virginia eastern shore economy.

Doctor Steven Zalesak and Phil Zalesak presented evidence that the VMRC is in violation of Section 28.2-203, the code of Virginia. Michael Academia, formally of William and Mary College, presented data from 50 years of research, documenting the unsustainability of osprey in the Chesapeake Bay.

His paper received an international award, has gone through peer review, and was published in Frontiers of Marine Science Magazine April 20, 2023. William Pafis, representing over 15 charter captains, stated that Virginia does not have a healthy fishery, and for the menhaden population coastwide does not represent what is happening in Virginia waters.

The VMRC completely ignored the issue of localized depletion, ignored the most recent science regarding Atlantic menhaden migration, and wrote an unenforceable MOU, according to counsel assigned to the VMRC. That was on December 6 of 2022. I

would like to see localized depletion as an agenda item at the August Board meeting. I thank you for your time.

CHAIR BELL: Thank you, Phil, appreciate it. Also, I'll point out that we've received over 90 pages of public comment already, which you received in the materials for the meeting, as well as some e-mails with additional public comment. Is there anyone here in the room that would like to make comment? I don't see any hands. Anybody online? Okay, Jim Fletcher, if you would like to go first, you've got three minutes, please.

MR. JAMES FLETCHER: I would like to address the chemicals in the water that are affecting the Atlantic menhaden, and why ASMFC has not done some basic research. I brought up a couple of years ago the hybrid menhaden that were found in the St. Johns and St. Mary's River off of Florida, and the decline in menhaden in North Carolina, which none of us understood.

I now understand, after seeing the advertisements from the litigation in Camp Lejeune Military Base from manmade chemicals affecting birth of humans. All of that water that came from Camp Lejeune flowed out into the rivers. I asked ASMFC to ask their staff, and I'm jumping subjects from menhaden to weakfish.

Could this be the reason, the chemicals in the water that the weakfish disappeared and nobody could fine them? Could it also be the reason that the calico scallops off of North Carolina disappeared? Are we missing the copy of the chemicals that man is putting into the rivers and sounds and ocean?

Every day we see new chemicals coming out that are protein based, to remove stains from dishes and clothes. But we're not addressing the problem of what do these do to the membranes of eggs in the fish that are a protein? I think ASMFC before we go down the line of further banning or talking about stopping one group of fishermen, we need to look at the affects of the chemicals. I would ask ASMFC to invite the Environmental Protection Agency to come to one of your meetings of what they know about

chemicals in the water, and how it affects the fish. I don't think it's the fishermen or the fisheries, I think it's the chemicals in the water, and I thank you for your time and allowing me to talk.

CHAIR BELL: Thank you, Jim, for your input and observations. Debbie Campbell, if you would like to take three minutes, go ahead.

MS. DEBBIE CAMPBELL: Yes, Debbie Campbell, I have a cottage of Silver Beach, in fact I'm working from here today as I dial into this meeting. I sent you a number of materials in advance of the meeting, and appreciate the response that they have been received and that they had been circulated to the members.

I agree with Phil Zalesak's comments, and hope that you have all had time to review my materials. This is such an important matter. I mean I can tell you; I did tell you in my letter what I have observed personally. There is nothing left but tiny, tiny, tiny, little schools of menhaden. We used to have these huge balls of menhaden that just bubbled across the surface.

The reduction fishing boats are just out here all day, pretty much every day. It is destroying the Bay. You have the authority to actually change something, because what has been done in the past is not working, or we would not see this exponential decline, and it's heartbreaking, and I beg you to take this under advisement, and to maybe change your tact.

The science is there, and the neighbors' voices are there. We're telling you first hand; we don't make money off the fishery. We would like to be able to catch dinner. We would like not to have dead fish all over our beaches, and those horrific kills from the bycatch, like we saw at Kiptopeke. I thank you all for your service, and I'm really, really prayerful that you're going to see this from our perspective, and make some real protective changes. Thank you.

CHAIR BELL: All right, thank you, Debbie, for your input prior to and at the meeting here. That's it, okay. That is all we have. That will end the public comment period. In the interest of moving along

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we'll move to our next agenda item, which would be a review of the report of the Atlantic menhaden fishery from Virginia. Recall at the last meeting we had asked Pat what the Commonwealth could provide us, with a summary of what all has been going on in Virginia.

We've received a lot of public comment at various meetings over opinions about what is going on in the Bay, observations, a lot of pages of material. But we've not really kind of heard from Virginia what is going on with the fishery for the past few years, and you've seen Pat's report. The report is actually in the briefing materials, very thorough, thank you very much. But he's going to work us through an actual little presentation here.

#### **REVIEW REPORT ON THE ATLANTIC MENHADEN FISHERY IN VIRGINIA**

MR. PAT GEER: Thank you to the Board to hear an update from Virginia on the menhaden fisheries. Just really quickly, I think most of you are aware that menhaden was managed by our General Assembly prior to 2020. It's the only fish species in the state that was managed by the General Assembly, which makes it very difficult when ASMFC comes up with a mandate to respond to. When Amendment 3 was passed in 2017, VMRC tried to get the General Assembly to change that Bay cap to 51,000 metric tons two years in a row, and it didn't occur. In September of 2019, VMRC reported that the reduction fleet, we reported to ASMFC that the reduction fleet did exceed the Bay cap of 51,000 metric tons.

We sat at the Annual Meeting in October, and all the states, including Virginia, unanimously agreed that Virginia was out of compliance with Amendment 3, because we did not adopt the new. There was 87,126 metric tons, and it was now 51,000 metric tons. In December, the Secretary of Commerce concurred with that finding and said Virginia had until June 16 to address the issue of compliance, or there would be a moratorium declared on the whole fishery, not just the reduction, but on the Bay fishery as well.

As a result of that there was a flurry of legislative action. In the 2020 Session there were a lot of bills introduced. Senate Bill 791 and House Bill 1448 were the winners that finally got approved in both houses and signed by the Governor, which gave Virginia Marine Resources Commission the authority to manage menhaden.

In those bills it also included the establishment of Menhaden Management Advisory Committee, which was up to 12 Virginia residents, including folks from the industries, NGOs, conservation groups and recreational angling groups as well that meets twice a year. You'll hear about some more of the things that they've done in a second.

In April of that year, the VMRC Board approved those changes, so it became official in April, and we also for that year we lowered the bait cap to 36,196 metric tons, because Amendment 3 required a payback for the overage. Our quota was lower that year. Just in the summer time, in June through August of 2020 and June through September in '21.

We had four net spills each year. The ones in 2020 were in the ocean, and in 2021 there were two that were in the Bay. One of them was over 400,000 fish, and was reported in the spills. I'll talk about that a little bit more in a second. But we do have spills from this fishery almost every year. As Ms. Campbell pointed out, some of those do come ashore, if the wind and currents are inappropriate, I guess is the right word.

You want to say correct, because if it's coming ashore, it's not a good thing. In 2022 was a really busy year for us. In June, the Theodore Roosevelt Conservation Partnership teamed up with state and national fishing and conservation groups, and requested that Governor Yonkin move the Omega fleet out of the Bay until which time research shows that industrial fishing for menhaden can be supported within the ecosystem.

Also, in June of that year, our MRC Board approved amendments to our regulation, which allowed transfers, and I'll go into that in a second as well. We had three more spills in July of 2020, two right back-

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to-back, and where Ms. Campbell lives in Silver Beach, and two weeks later in Kiptopeke, and I'll talk about that in a second.

This all cumulated with December of 2020, where we had a public hearing to discuss all these things. The Governor was involved and I'll get into more details on that. At one of the recent Commission meetings, somebody caught me in the elevator and said to me, he goes, it seems like Virginia is a glutton, asking for transfer of quota, when we get 75.21 percent of the coastwide quota. But as you can see from here, we further divide that. Initially it was in code, but now it's in regulation where purse seine reduction gets 90 percent of that.

The purse seine bait gets 8.4, and all other gears get 1.6 percent of that quota. There was no mechanism to have transfers internally between those, and if any state wanted to transfer quota to us, which some have done so, it would have to go in those percentages. Virginia is the biggest supplier of bait, crab pot bait and chum bait for states from Delaware southward.

Some of those states were aware of that. What we did, you can see that basically ASMFCA, it was different for most of the states, and understandably so. Most of the states say, we're not going to transfer anything to Virginia, because they are already getting so much. But we needed to have a mechanism to allow states to say, we want to transfer that to go directly to the bait fishery.

We did it as a pilot study in 2022. Several states reciprocated, and we're very thankful for that, and it helped them out. It kept the bait fishery open for the whole year for the first time in several years, because they weren't catching their quota and had to shut down. In 2023, we made that permanent. Yes, we did request transfers last year, but it was going exclusively to the bait fishers.

As Mr. Zalesak and Ms. Campbell also pointed out, we do have fish spills, it's caused by when the purse seine boats are encircling the nets and start pulling them in, their maneuverability is limited, and then when they come alongshore of the mother ship and

start unloading, that vessel has limited maneuverability.

They drift into shallow waters, the net comes in contact with the bottom, they hit an obstruction and that tears, and fish are spilled out. We don't know what the mortality rate on those are, it all depends on how, the word that the industry uses, is drive, and that is how much they've actually pulled in on the net.

We have, like I said, about 3.4 spills per year on average since 2018. The average spill is about 100,000 fish. We do have a mechanism for them to report that to us, and we document it all in a database, along with any follow up as well. As Ms. Campbell pointed out, we had one approximately on July 1st, at Silver Beach, it washed ashore on July 4th weekend.

We had another one in the same section of beach on July 5th, from ocean harvesters, which are the vessels operated by Omega Protein. They were very prompt on calling me and reporting it, and then also then having their contractors go on the beach and clean up the fish. I think the estimate was about 20,000 fish washed ashore.

It became an issue, because they cleaned them up, but the dumpster sat in the parking lot for quite a long time in the July heat of Virginia, because the local municipalities couldn't decide what landfill it would go to, because the contractor was not a resident, so it sat there for a while. As Ms. Campbell pointed out, on July 25th, one of the vessels was fishing off Kiptopeke State Park, and they noticed there was some red drum in the net, so they rolled the net to get them out, hopefully they would survive. Those fish started washing ashore along with some menhaden on Kiptopeke State Park. The beach had to be closed. All total it was about 10,000 menhaden, about 6,700 pounds and about 12,000 pounds of red drum. My staff were able to get some of those samples, and the average fish was 48 inches in length, and the average weight was about 43 pounds, so they were large, spawning age red drum.

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The oldest fish that we aged was 49 years old. When these incidents occurred, along with the campaign to get them out of the Bay, it brought things to a fever pitch. We started having folks show up at every one of our Commission meetings, our monthly Commission meetings, and want to speak about menhaden.

Just like we do here, we have a period for items that are not on the agenda. It went from 2 people to 5 people, to as many as 25 people showing up, just to say what are we going to do about this? The Governor was receiving letters, we were receiving letters, answering press releases. The Governor said, what are we going to do about this, and we started working on some solutions.

I hope you can see this, but what came out of this was, this is a cumulation of six months' worth of work, where basically we would provide something to the Governor's office, they would come back and say this looks good, but let's see this instead. We would try something else, okay how about this, how about that. But this is the cumulation of what we came up with, and it was a proposed temporal and spatial restrictions that were proposed and presented at our December 6th Commission meeting.

Off to the right is a calendar of the menhaden 2023 season, which starts May 1st, and the Bay season runs through November 17. The green is when the ocean is still open, and for the menhaden fleet the ocean is considered the area east of the Chesapeake Bay Bridge Tunnel, which, I don't know if you can see that, it's sort of in purple on that map.

What was proposed was, if the Bay is closed prior to holidays, you can't have a spill, because there is no fishing. You can't have any fish wash ashore. What was proposed was four days prior to Memorial Day, including Memorial Day, four days prior to Labor Day, and a whole week around July 4th. It was 17 total days that were proposed.

It was about 8.5 percent of the Bay season, and based on historical effort, it was about 6.1 percent of the Bay effort. Also, what was proposed was a buffer

around the entire Bay. You can see the green dots on that. Those green dots are five years' worth of the purse seine reduction fleets effort, based on the captains daily fishing reports.

There is also a number of red dots on there that are the purse seine bait effort as well. That buffer is 1 nautical mile from, you know how water runs along the east and west coast, runs along and all the way down to Virginia Beach, so the state line. That was proposed as a buffer, as well as an area a half mile on either side of the Chesapeake Bay Bridge Tunnel.

That was a recommendation of the Menhaden Management Advisory Committee. It's already a cautionary on NOAA Maps, so those boats should probably stay out of that area, because there is a lot of activity in that area. It's one-half mile on each side. That buffer was about 6.4 percent of the Bay effort, the historical Bay effort. Overall, for the state it was about 3 percent. At that meeting we had over 350 people in our conference room, because that is the capacity. There were a number of people out in the hallway, there were people in the lobby, there were people outside.

We presented this, Rob Latour got up and spoke, that's the Rob Latour from VIMS, our Secretary of Natural Resources spoke, and we had over 100 people provide public comment. After all was said and done, about four and a half to five hours of that, what was proposed never came to the floor. Instead, there was this motion for a Memorandum of Understanding, where the industry would not fish the weekends of Labor Day and Memorial Day.

They wouldn't fish on July 4th; they would not fish over the weekends between Memorial Day and Labor Day. They would not fish around the Chesapeake Bay Bridge Tunnel, that one-half nautical mile on each side, and they would work with the Governors' office and General Assembly members to adjust geographic buffers.

That was what was proposed. Our Counsel said a Memorandum of Understanding really doesn't have much clout, but it passed our Commission 5 to 4. That was the end of that meeting. As a result, the

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General Assembly brought up more menhaden issues. The legislators have said at some of the meetings, has there ever been a session that we haven't talked about menhaden?

Nobody could recall any. There was a bill put forward to eliminate the time restrictions on regulations. Right now, we cannot adopt new regulations for menhaden except for October through December. That is the only species we have that kind of restrictions on. That got tabled. There was a bill to have a 2-year moratorium on the Bay, to study the affects of the fishery. That got tabled as well.

Senator Lewis through SB1388, came up with 10 really good factors that we've talked about in this room before, you know ecological reference points, having observers on boat, looking at bycatch, looking at abundance, looking at the economics of the fisheries, looking at a number of things that they wanted VIMS to study.

But they wanted the results by December of 2024, so gave them less than two years to do that work. Much of that work, as we've already talked about in this room, would take at least five years. When we went to the Appropriations Committee, VIMS worked with them and said, you know this is going to cost a lot of money, there are really good ideas, you know we can take this in little bites and try to work on it.

The final thing that came out from the House and the Senate and the Governor, which was signed in March, was that they were going to put forward a proposal of what has to be done and what the process is going to be, and how long it's going to take. That is going to be due in September of this year. Hopefully, the General Assembly will take that up starting next year.

I didn't include the Memorandum of Understanding in the briefing packet, because it hadn't been signed yet. It was just signed on April 20th by representatives from the reduction fleet and the bait fleet, as well as our Secretary and our Commissioner. It included all the same items that were proposed on our December 6 meeting, but it also included buffers

on the eastern shore that were somewhat smaller than what were proposed earlier, and one on the western side as well. It also had recommendations for improvements of protocol in response to fish spills.

This is that same map. It's really hard to see, I don't know why this is so dark. The black dot you see on the eastern shore, that's Occahannock Creek. The eastern shore buffer goes from there all the way down to the Chesapeake Bay Bridge Tunnel. The Chesapeake Bay Bridge Tunnel still has that buffer, and the buffer on the western shore, which is way down by the James River at the Hampton fishing pier there.

It goes along the shoreline and then goes all the way down to Virginia Beach to Sandbridge. You can see the percentages, how many net sets were involved in this, as far as the effort over the five-year period. Overall, effort was displaced, so overall for the period for those that are on there, the five years of data for the bait and reduction fleet, it's about 1.65 percent of their total effort would be displaced.

Whereas before, the previous one was 3 percent. We had to stress to the industry that you are not prohibited, you just can't fish in those areas. It's just displacing the effort. Based on the recommendations they had for the season. On orange, you can't see the numbers very clear on here, but the orange are the holidays, so the weekends on Memorial Day and Labor Day and July 4th, and the red is the weekends during the summertime.

It was 39 closed days, so it's almost 19.4 percent of the Bay season would be closed. However, the purse seine fisheries really don't fish the weekends very often, so only 0.61 percent of the Bay effort would be displaced, versus what we proposed earlier it was almost 6.1 percent. The reason they probably don't fish, their labor is unionized, so working weekends and on holidays is probably cost prohibitive to them, but they don't work that time, so there is really not much impact on this.

Finally, the fish kill protocol. I mean we have a

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protocol in place where Andy Hall, who is their operations manager, whenever there is a spill, he calls me right away. We document certain things; we have a database that we've been maintaining since 2018. We have follow-ups if there are more phone calls.

If there is a cleanup on the beach, we document that as well, but we want to try to have better communications with that, better logging of information, reporting information to the local municipalities that may be impacted if these spills come ashore, because the industry knows if the wind is going from the right direction, they know these fish are coming ashore. They know that and they will go ahead and have their contractors ready to be on the beach when that occurs.

We're going to maintain the database, and we're also going to be looking at any historical spills we can find. Any time a spill comes ashore it made the news, so we can use archives and find that. But before 2018, most of this would just be e-mails. The industry is looking at ways that if they do have a spill, how can they keep it from washing ashore. Omega has bought a skimming vessel that they plan on using. It's been recommended that they have spill simulation exercises, so that everybody knows what has to be done when something occurs. We plan on having regular meetings with the purse seine vessel captains and the spotter planes on a regular basis, just to keep them aware. But you have to be careful when you're out there, when you're doing these kinds of things, you know if you see your depth is starting to get too shallow, then maybe not set the nets.

That's all I have, but I want to just say that we have been spending a disproportional amount of time on menhaden. As with many of you, we have a number of species. I think we have 38 species or species groups that we manage in our state that deserve our attention as well. We've been spending a lot of our time doing redundant FOIA requests, and doing legal challenges and responding to letters for the Governor, and other responses of those nature that we've been spending a lot of our time doing that.

You know blue crabs is an issue that we have right now that we're not giving attention to, because we're spending all of our time on this. I've said that on the record before, and it's a species that we are concerned about, the Governor is aware of this. We're all supporting additional research, but that research has to be funded, and it's going to take time to get the information to make decisions. That is all I have and I'll take any questions, if anybody has anything.

CHAIR BELL: Yes, thanks, Pat. Thanks for the thorough written report that we all have, and thank you for that report. It's really obvious, as you said, the Commonwealth is engaged. If the Governor, the Secretary, the General Assembly, the Commission, the Advisory Panel, I mean it's something that you are obviously working at, and appreciate the summary of all that.

I think that is a really good point too, about if you're going to shift the way you manage a fishery, it needs to be based on solid data. If you want more robust solid data, it requires money. That is of course all of our fisheries we run into that. It's the process that we follow is a very exact process that needs to be driven by solid data and solid data costs money. Any questions for Pat? Yes, Rob.

MR. ROB LaFRANCE: Thank you very much for a very full report. I really appreciate it and learned a lot just from listening to what you said. I just want to understand when you do this, when a spill takes place. How is that accounted for against your allocations? In other words, how do you account for that? I tried to understand what was happening.

MR. GEER: That's a good point. Right now, it's not. That is one of the things that our Menhaden Management Advisory Committee had made a recommendation that it be held against the quota. But the problem is, the spotter planes know, they have an estimate of how many fish when they set on it. They have an estimate, but they don't know what is the mortality rate of that spill. We would have to kind of figure that out. We could assume 100 percent mortality. We would have to change our regulations. That has been brought up.

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MR. LaFRANCE: Just a follow up if I might. In essence, will the studies that you're talking about, the ones that are now funded, will they start to look into that a little bit more?

MR. GEER: Right now, none of them are funded. That bill went to the Appropriations Committee when they asked VIMS, and we knew this was going to be multi-million dollars of research. That is why they said, all right, come to us with a full plan. Nothing has been funded yet.

CHAIR BELL: Now, do you revisit in September, I think you said?

MR. GEER: VIMS is going to have a report to our House and Senate Natural Resources Committee by September 1 of this year, so they will be able to enact, it could add some planning for the budget the next year.

CHAIR BELL: Great! John Clark and then Emerson.

MR. JOHN CLARK: Thanks for the presentation, Pat. I was just curious. Obviously, it seems like awareness of spills and things like that have increased, and the amount of fishing going on in the Bay. Has any of this been attributed to the change in ownership of Omega, or has it not been tracked, so you can tell if there is any difference in where they've fishing and how they're fishing?

MR. GEER: I'm not sure about that. I think in 2019 when they exceeded the Bay Cap, that is about when Cook bought the company. The statement we got was that the Bay Cap was 87,000 metric tons. As you recall, Omega Protein sat in this room and said, we're not going to catch all that.

They were looking at that as if the Bay Cap was 87,000 metric tons at that time. I don't think there has been much change in their behavior and how they catch it. But in that one instance that first year, it was interesting that they just recently purchased the company, and that first year they had that overage.

CHAIR BELL: Yes, Lynn.

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MS. LYNN FEGLEY: Thank you, Pat, for that presentation. Is there ever, now that you guys are able to take transfers from other states to a sector. Is there ever a case where the bait fishery has transferred back to the reduction fishery? Is there something that would prevent, if the bait fisheries were to receive a transfer and not consume it, is there anything to block that transferred quota from being retransferred over to the reduction? Is that a case that could happen? I'm just curious how that dynamic works.

MR. GEER: Well, we've only done it one year so far, so it's hard to judge. But we were kind of surprised when we started looking at this that we didn't have the ability internally to transfer. As one person said, what happens if a bait at their dock they had a fire and they couldn't fish anymore? Would they be able to transfer? It has the ability to go both ways. Theoretically we could transfer out at that point, but right now our regulation says we can't transfer out until the season ends. So far, it's been going to the bait.

CHAIR BELL: Yes, Craig.

MR. CRAIG PUGH: Maybe I have a wrong understanding of this. I have so few contacts with your state. Sometimes the ones that catch the bait catch a bait that may be of lesser quality. It is my understanding that the reduction fishery takes that off their hands. Are you aware of that?

MR. GEER: We have two purse seine bait individuals, if you're talking about purse seine. One of them does work with Omega Protein, they do unload there, but it's separated out into reduction. We get reports for what is reduction and what is bait.

MR. PUGH: Yes, I guess what I'm trying to point out is that sometimes there is less than a good quality bait that is taken in, and sometimes the reduction fishery can accept that and use it, where it's not discharged as a byproduct, which I think is a positive thing. I am also aware that some of those people that are employed by them are your locals, would that be correct?

MR. GEER: Are our, what?

MR. PUGH: Locals, the local people.

MR. GEER: Locals, yes.

MR. PUGH: Thank you.

CHAIR BELL: All right, Emerson.

MR. EMERSON C. HASBROUCK: Thank you, Pat, for your very comprehensive report. I'm just wondering. I understand the jurisdictional issues about whose landfill that is going to go, we run into that on Long Island as well. But I'm just wondering, why didn't it just go to Omega, right and let them cook it?

MR. GEER: They did take a lot of the red drums, Omega. The menhaden, it wasn't a whole lot, I don't know why. I don't know why they didn't take it. I don't know, I don't know why they didn't do it.

CHAIR BELL: If there is nothing else right now, we're kind of in the weeds on some of this. I would encourage you to just maybe get up with Pat when you get a second, if you've got additional questions or things you think of.

**PROGRESS UPDATE ON MENHADEN SINGLE-SPECIES AND ECOLOGICAL REFERENCE POINT (ERP) STOCK ASSESSMENT**

CHAIR BELL: I would like to move us along to our next agenda item. We're at the end, we do have an action to take. Dr. Katie Drew is going to work us through the next item, which is an Update on the Single Species and ERP Stock Assessments, and then we'll have to approve some terms of reference, which is always really exciting.

DR. KATIE DREW: I will try to go through this quickly. Starting with the ERP Assessment. The Board is going to review and hopefully approve the TORs at this meeting. We had scheduled our Methods Scoping Webinar for later this month, and then a data and methods workshop, which will be in person in October.

This is sort of the kickoff for the ERP assessment, where we look at the data that we have, try to pull in new data, and then decide what we're going to do, what our overall goals are for the assessment models of what we're going to update and focus on for the benchmark. We will be doing a press release and a call for data, and model submission before that October Workshop, to bring in any potential external data or models for the ERP Assessment. The bigger changes on the single species assessment side.

The SAS recommends changing the single species from a benchmark assessment to an assessment update. There are several reasons for this. First of all, there are no changes to the single species model plan. The BAM is a solid, well-developed model that has been peer reviewed multiple times, and we are not planning any changes to the model structure. In addition, there have been no new menhaden data sources identified that could go into this model that would warrant a benchmark assessment.

Basically, we would not accomplish anything with a benchmark that we could not accomplish with an update. In addition, an update reduces the workload for the TC and the SAS, many of whom overlap with the ERP Workgroup, as well as staff and the Peer Review Panel, and allows more time and energy to be focused on the ERP Assessment.

In fact, one of the Peer Review recommendations at the last benchmark was, don't bring this single species back next time if you're not going to make any major changes, because it is a lot of work to develop that assessment to warrant a benchmark, and then to have a Peer Review Panel give it the same amount of time and attention as the ERP Assessment is not the best use of everybody's time.

That is why we are recommending that the single species go down to an assessment update, and this will be sort of the Stock Assessment Subcommittee and TC put this forwarded or recommended this. The Assessment Science Committee, which handles the scheduling of ASMFC assessments reviewed this decision and approved it, and is recommending it to the Policy Board. We are bringing it for here to you guys, to get this on your radar.

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But the Policy Board will make the final decision on that. The things to remember about this, the ERP assessment will remain a benchmark. We'll have a full peer review of that. If problems arise during the single-species assessments or new data sources are identified that would warrant a benchmark for this single species assessment, we can revert back to the benchmark and undergo peer review at the ERP assessment.

We do sort of have an emergency fall back plan if necessary. Then the single-species model will undergo a full benchmark with the ERP assessment in 2031, when hopefully we're coming back to this spatial question, and where we will have made significant changes to the BAM, in order to support a more spatially developed model. With that I can take any questions about the progress on these two assessments.

#### **REVIEW AND CONSIDER APPROVAL OF ERP TERMS OF REFERENCE**

CHAIR BELL: Any questions about that? To be clear, so 2025 single species will be an update, and the ERP will be benchmark. Any comments, questions, discussion of that? Yes, Ma'am.

MS SHANNA MADSEN: Thank you, Katie, as always. Just a couple clarifying questions specifically on the ERP benchmark stock assessment TORs. First, for both the internal and the peer review terms of reference, it mentions that there would be an assessment of the data sources for predator and prey species included in the ERP models.

I know when it was developed the last time around there were several other species that were evaluated but not included at the time. I just want to clarify for the record that the data call that you all are planning would incorporate a data call for maybe other species that were not previously included in the MICE Model?

DR. DREW: Yes, absolutely. This would be a very general call, and then the ERP Workgroup would review those data submissions and sort of line it up with what we are interested in doing from a

modeling perspective, and if they align and provide new information they could be included, regardless of whether they are a species that were or were not included last time.

MS. MADSEN: Okay, that might just be worth clarifying, because the way that it's written it just says included in the ERP model. It might be more clear if that was broadened a little bit. Mr. Chair, I had a follow up question as well.

CHAIR BELL: Sure, go ahead.

MS. MADSEN: The other issue that I just want to clarify will be looked at through the ERP assessment is one that has been of concern within the Chesapeake Bay, which is the change in the age composition of the reduction landings. We've seen over the past couple years a shift to younger fish. I just wanted to be sure that was something that could be looked at, as part of this round of the ERP assessment.

DR. DREW: Sure. Actually, that could be addressed through either the single species or the multi-species. We would obviously bring in the observed data on the age composition of the reduction fishery and the bait fishery, as part of the update for the single-species model. We could consider adding a selectivity block at the end, if we think there is something that would be warranted, in the changes to the way the fishery has operated.

That information would be processed through the single-species model, and then sort of transferred over to the ERP models, depending on what the ERP model itself could handle. But we did it as something that could be explored and investigated through the single-species update as we grew the benchmark for the ERP.

CHAIR BELL: We have Conor and then Rob.

DR. CONOR McMANUS: Thanks, Katie, for that. Quick question. I guess I'm just curious from the Working Group perspective, do you anticipate a new suite of models being brought forth, based on recent work that has been done in the field over the last

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several years since the last peer review, or do you anticipate the workload primarily focused on the inclusion or exclusion of models previously examined in the last go around?

DR. DREW: I think that is what we would like to make the decision on at the October Workshop. We will be opening it up to, I think we would like to pursue that multi-model approach. I think it was very helpful for us last time. We will for sure update and improve the NWACS-MICE Model, which is our current base model.

We will update and extend that NWACS full model for a comparison, and then I think the question is, what else do we want to consider? For example, the multispecies statistical catch at age model, are we in a position to update that, to bring it more inline with our management objectives? Do we want to look at maybe something like indicators?

Do we want to look at the production models further, or switch to maybe a different approach? I think we would be looking to both the work that our ERP Workgroup members have done or have been involved with, as well as opening this up as a call for additional external collaborators to bring updates.

DR. McMANUS: Thank you, Katie, and Mr. Chair, when you're ready, I'm happy to approve.

CHAIR BELL: Rob, did you want to go ahead?

MR. LaFRANCE: Yes, just another follow-up question. I think you might have answered it here, but I just want to get clarification. Atlantic herring, how would that be incorporated, because isn't that a difficulty in the last go of this, and I know it's gone over its status. I'm just trying to make certain I understand how that species will be incorporated into the ERP model.

DR. DREW: We will have an update of the herring assessment to go into these models, and I think we're interested in looking at some of the seasonal components, to get a better handle on that particular relationship, where it appears that the relationship between striped bass and herring is

important and intense, but maybe only in specific seasons. That seems to make the model a little sensitive, so I think that is one of our high priority steps for the model development, as a better spatial handle for that species specifically. But it will be part of the consideration.

MR. LaFRANCE: I just want to thank you for your amazing work on this stuff really, it's unbelievable. Thank you.

DR. DREW: Obviously a team effort, and thanks, we have a great working group on this, so thank you. Since we're running short on time, I won't actually put the terms of reference up on the board. I'm sure you guys have had a chance to read them, hopefully you don't feel the need to walk through them in person. But if you had specific questions about the TORs that we have not addressed, we can go to them directly. But otherwise, I think we would hope that you had a chance to read them as part of the materials.

CHAIR BELL: Our one action item here for this session was to approve the Terms of Reference. Do I have a motion? Yes, Conor.

DR. McMANUS: Mr. Chair, would you like me to read the motion in?

CHAIR BELL: Please.

**DR. McMANUS: I would like to move to approve the Terms of Reference for the 2025 Atlantic Menhaden Ecological Reference Point Benchmark Stock Assessment and Peer Review.**

CHAIR BELL: Do we have a second? Second by Ray. Discussion of the motion. **Any discussion of approval of the Terms of Reference, very straightforward. I don't see any hands. Any objection to approval of the motion? I don't see any hands, so the motion carries unanimously.**

#### ADJOURNMENT

CHAIR BELL: All right, there is no other business to come before the Menhaden Board, do I have a

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motion to adjourn? Ray, second, Conor, okay. We are adjourned.

(Whereupon the meeting adjourned at 4:45 a.m. on Monday, May 1, 2023)

207 South 17<sup>th</sup> Street  
Morehead City, NC 28557  
August 30, 2023

Ms. Jennifer Farmer  
Virginia Marine Resources Commission  
380 Fenwick Road, Bldg. 96  
Fort Monroe, VA 23651

Dear Ms. Farmer,

I am writing to you and VMRC concerning the petition titled: “Emergency Gear Restriction Zone for Purse Seine Nets in the Chesapeake Bay.” As background, before retirement in 2015, I was a fishery biologist at NOAA’s Beaufort Laboratory in North Carolina. For over thirty years, my chief duties were to maintain fishery-dependent data for the menhaden fisheries, mainly, catch records, port sampling data for size and age composition of the catch, and vessel logbooks. I am writing to object to any emergency action to restrict purse-seine activity for menhaden in Chesapeake Bay relative to recent reports on osprey feeding habits.

According to a recent article that I read on the subject, one of the chief areas of concern about osprey diets is Mobjack Bay and vicinity along the Western Shore of Virginia (Watts 2023). The article cites recent research which implies that ospreys in the area are starving because they are unable to find enough of their preferred food, namely menhaden, for themselves and their chicks. The piece goes on to note that “Harvest policy and rates over the past three decades have not allowed [menhaden] stocks to recover to levels required by osprey to successfully reproduce.” The emergency gear restriction petition is no doubt in reaction to this report.

I am concerned that the tone of the osprey report implies that harvest rates of menhaden by the purse-seine fishery in the Mobjack Bay area have led to the localized depletion of menhaden – an often ill-defined term – and a subsequent lack of the osprey’s preferred prey. Relative to menhaden removals from the Mobjack Bay area, nothing could be further from the truth. Menhaden vessel captains keep meticulous logbooks of daily activity which include time, location, and an estimate of catch for each purse-seine set that they make. The logbooks are called the Captains Daily Fishing Report (CDFRs) and were devised in the late 1970s through a joint effort by the menhaden industry, state managers, and the National Marine Fisheries Service. Compliance, although for a time voluntary, has been almost 100% since the program’s inception (compliance became mandatory in 2001 with passage of Amendment 1 to the Atlantic States Marine Fisheries Commission’s Fishery Management Plan [FMP] for Atlantic Menhaden). In a NOAA Technical Report in 1999, I summarized CDFR data, namely catch and effort information, for the Virginia and North Carolina menhaden fleets from 1985 to 1996 (Smith 1999). For summary purposes, the Virginia portion of Chesapeake Bay was divided into seven sub-areas (Figure 1): three pairs of east-west sub-areas moving from north to south (Smith Point-Pocomoke Sound; Rappahannock River-Silver Beach; York River-Cape Charles) and a seventh sub-area (Ocean View) near the Bay mouth and inside the Bay Bridge Tunnel. Mobjack Bay and vicinity are included in the York River sub-area which stretches from a few miles north of New Point Comfort south to the Back River near Poquoson and out to the center of Chesapeake Bay.

Summary data for the study years 1985 to 1996 revealed that on average the purse-seine fleet, which at the time consisted of up to 22 vessels from two factories at Reedville, removed on average 149,500 metric tons (mt) of Atlantic menhaden from the Virginia portion of Chesapeake Bay. Fishing effort and removals were concentrated in the two northwestern-most sub-areas, namely Smith Point and Rappahannock River (a combined region from the Maryland line south to about Winter Harbor Haven in Mathews County and out to the center of the Bay). Catches on average in these two sub-areas accounted for 51% (75,300 mt) of the

Ms. Farmer, VMRC

August 29, 2023

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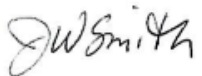
menhaden removals from Chesapeake Bay. By contrast, catches from the Mobjack Bay sub-area on average accounted for only about 14% (21,100 mt) of the removals from Chesapeake Bay during the study period. Within the Mobjack Bay sub-area, catches by-distance-from-shore were concentrated in the two strata greater than 2.1 miles from the shoreline (78%, or 16,400 mt). That the purse-seine fishery tends to operate mainly in the mainstem of Chesapeake Bay is indicated by the fact that about 70% of the catch within the Bay occurred beyond 2.1 miles from the shoreline. Avoidance of nearshore waters is probably in part due to the myriad of crab pots which occur inshore and the potential for gear conflicts.

I have more recent unpublished data from the CDFR data base that indicates that during 2013 and 2014 purse-seine vessels from Reedville (about 7 vessels and one factory) removed only on average 40,300 mt from Chesapeake Bay; moreover, only 710 mt, or 2%, came from the York River sub-area for these two years. Note that an Addendum to ASMFC's FMP for Atlantic menhaden "capped" removals from Chesapeake Bay in 2006 at 109,020 mt, then by Amendment capped removals even lower at 51,000 mt in 2017. As far as I am aware, the CDFR Program is still in place, and perhaps more up-to-date data on Bay catches are available from NOAA's Beaufort Laboratory.

My point in all of this is to note that going back into the mid-1980s, there exists very accurate data on removals of Atlantic menhaden by the purse-seine fishery. During the period 1985 to 1996 the menhaden fleet on average removed 149,500 mt from Chesapeake Bay; this at a time when menhaden recruitment of young-of-the-year fish was in decline. Because of regulation, removals are presently capped at approximately one-third of the historical removals, and in some years (2013-2014) removals amounted to only about 27% of the historical catch from the Bay (a time when incidentally recruitment of young menhaden has improved). To look at the graph in the Watts article, one could surmise that osprey-chick survival was quite good during the late 1980s, a time when three to almost four times the quantities of menhaden were being removed from Chesapeake Bay compared to recent years. Additionally, the area in question, that is Mobjack Bay and vicinity, is of minor importance to the purse-seine fishery. Clearly, drawing a straight line from menhaden removals to poor osprey-chick survival has serious flaws. In my mind's eye, the menhaden fishery is not the culprit; there are other and unknown factors that are determining osprey-chick survival in lower Chesapeake Bay.

Thank you for considering my letter in VMRC's deliberations on this matter.

Sincerely,



Joseph W. Smith

[jwsmith4309@gmail.com](mailto:jwsmith4309@gmail.com)

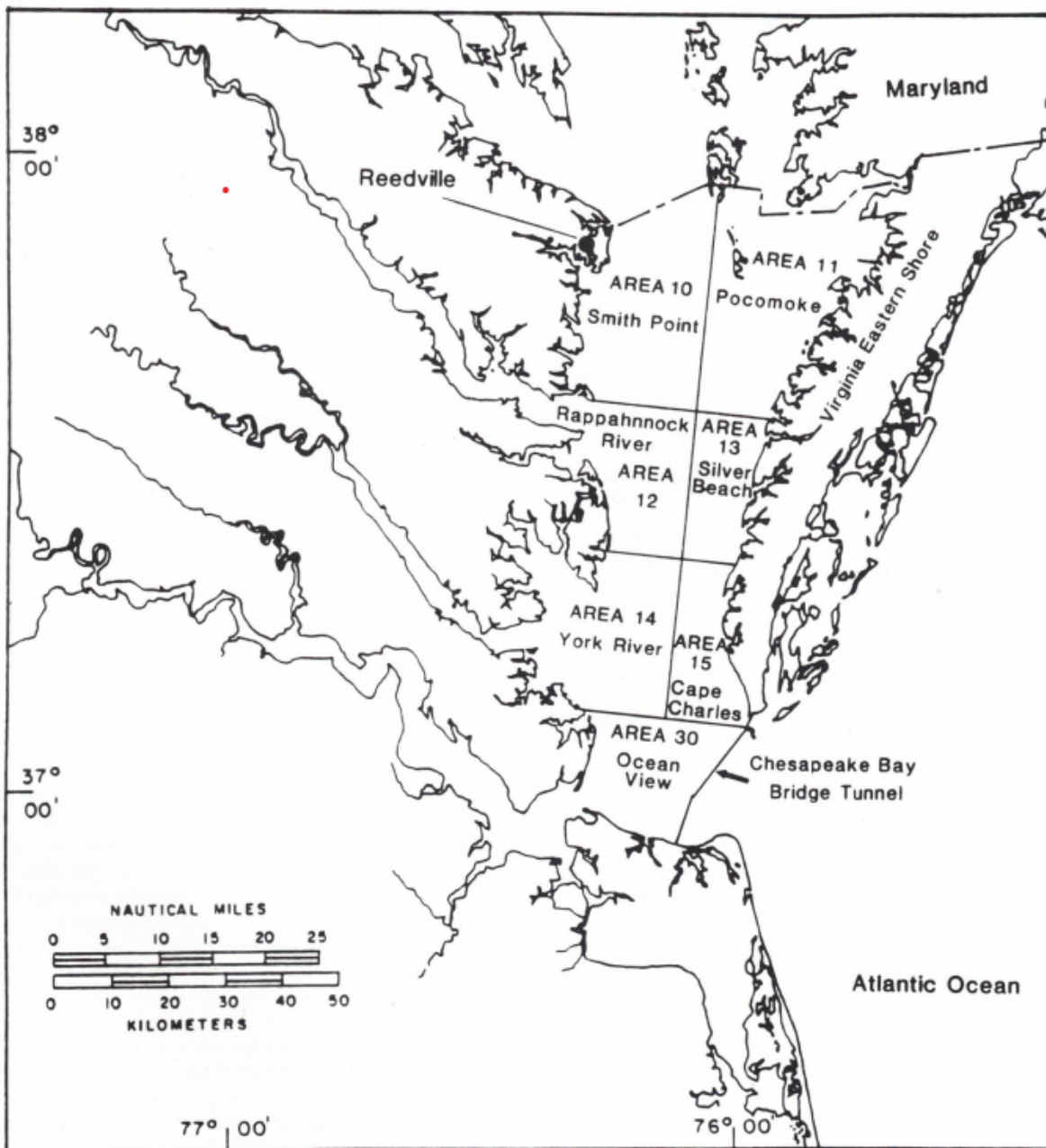
cc: Montgomery Deihl, Omega Protein Inc., Reedville, VA

Literature Cited:

Smith, J.W. 1999. Distribution of Atlantic menhaden, *Brevoortia tyrannus*, purse-seine sets and catches from southern New England to North Carolina, 1985-96. NOAA Technical Report NMFS 144, 22p.

Watts, B. 2023. A tale of two Bays: Osprey fortunes diverge. Retrieved on August 26, 2023 from: <https://ccbbirds.org/2023/07/08/a-tale-of-two-bays-osprey-fortunes-diverge/>

Figure 1. Chesapeake Bay sub-areas from CDFR Guidebook.





**From:** [Mike Delzingo](#)  
**To:** [marine.fish@mass.gov](mailto:marine.fish@mass.gov)  
**Cc:** [Jaron Frieden](#); [Rob Savino](#); [Bmdelzing](#); [Capt. Tim Egenrieder](#); [Jack Holmes](#); [mike@bostonfishingcharters.com](mailto:mike@bostonfishingcharters.com); [Michael J Pierdinock](#); [Gahagan Ben \(FWE\)](#); [Ayer Matt \(FWE\)](#); [Comments](#); [Dan Parma](#); [Jay Ponte](#); [Patrick Kearney](#); [Patrick Paquette](#)  
**Subject:** [External] public comments, IN-SEASON ADJUSTMENT TO COMMERCIAL MENHADEN TRIP LIMIT  
**Date:** Wednesday, August 30, 2023 8:47:56 AM

---

The in season adjustment to the menhaden trip limits are unstoppable from a recreational fisherman's stand point, We would be naïve to think otherwise. However I request the Friday opening trigger at 50% not follow this.

We need Fridays to remain closed in Boston to let the pogies and striped bass settle down after 4 continuous straight days of sein netting.

Closed Fridays are important to the recreational fishermen and the large charter boat fleet in downtown Boston.

You've seen my pics and videos, You've received my emails and the emails of many more frustrated recreational fishermen, of the daily user conflict Monday thru Thursday between multiple seine-net boats and recreational fishermen. We're very frustrated by this outright bullying by the seine net boats against us, removing large schools of important forage fish right in front of us and even right from under us while actively fishing!

Friday-Saturday & Sundays have been very peaceful, please DO NOT open Fridays to sein netting in Boston.

Captain Mike Delzingo  
Fishbucket Sportfishing, Boston  
BOD Stellwagen Bank Charter Boat Association  
Founder Massachusetts Commercial Striped Bass Association (1000+ Members strong!)

## Tina Berger

---

**Subject:** FW: [External] Rockfish catch restrictions

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

From: Kerry Boggs <o2besailing@gmail.com>

Sent: Wednesday, August 16, 2023 12:40 PM

To: Comments <comments@asmfc.org>

Subject: [External] Rockfish catch restrictions

To Whom It May Concern,

I would like to make a quick comment on catch limits for rockfish in the Chesapeake Bay. First, let me say that I am not a fisherman. However I am concerned about commercial and recreational rockfish catch limits. I stopped buying my saltwater license a number of years ago because of catch restrictions on striped bass.

The charter captains and recreational fishermen are being hurt because of catch limits while at the same time Omega Protein boats are stripping the Bay clean of menhaden, a primary food source for predatory fish like the striped bass.

I'm a sailor and on a recent trip down the Bay I encountered 6-8 Omega boats fishing on the Bay. This is a common occurrence for us while sailing the Bay.

Wouldn't it make sense to limit menhaden fishing on an industrial scale and leave more of the food source for the striped bass and other predatory fish? If we're concerned about striped bass populations and breeding stock wouldn't it be important, in addition to protecting the striped bass, to also protect their primary food source? Catch limits may preserve some striped bass (over 31" for example) but limiting Omega menhaden fishing would save literally tons of an invaluable food source!!

More food...more fish! We're not over-fishing striped bass...we're over-fishing their food source!

Please, please limit industrial fishing on the Bay and on the near coast of the Delmarva before its too late and the fisheries of the Bay completely collapse!!

Thank you for taking the time to read my comments and for your consideration of my concerns!

Kerry D. Boggs

o2besailing@gmail.com

Bay sailor for over 30 years

Former striped bass fisherman

Concerned citizen

**Localized Depletion of Atlantic Menhaden in the Chesapeake Bay and  
Its Impact on the Chesapeake Bay Environment and Economy**

Phil Zalesak, President of [www.smrfo.org](http://www.smrfo.org)

September 25, 2023

**Executive Summary**

Although the statement that “Atlantic menhaden are not over fished and overfishing is not occurring” may apply to the Atlantic Coast, it does not apply to the Chesapeake Bay.

The latest scientific data indicates that there are insufficient Atlantic menhaden in Virginia waters during the Atlantic menhaden reduction fishing season to sustain life for fish and birds dependent on Atlantic menhaden for their survival. This lack of menhaden is caused by the removal of 3/4 of a billion fish from the Chesapeake Bay and the waters just outside the Bay along the Atlantic Coast. The solution to this problem is to end the Atlantic menhaden reduction fishing in Virginia waters and limit reduction fishing to federal waters east of the 3 nautical mile Exclusive Economic Zone.

**The Problem**

Striped Bass, bluefish, and weakfish are dependent on Atlantic menhaden for survival based on the latest science as documented in reference (a).

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 as documented in reference (b). See Figure 1.

This video depicts typical industrial reduction harvesting of Atlantic menhaden off the Atlantic Coast using purse seines and large ships. [https://www.youtube.com/watch?v=ZcE\\_uGmz-yw](https://www.youtube.com/watch?v=ZcE_uGmz-yw)

The last remaining industrial reduction fishery on the Atlantic Coast is Omega Protein. They are located in Reedville, Virginia. This year they are allocated over 3/4 of a billion Atlantic menhaden from the Chesapeake Bay and waters just outside the Bay along the Atlantic Coast. 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 and commercial 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. When the mortality rate of Atlantic menhaden increases, the mortality rate of Striped Bass increases (reference (a)).

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. 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 in the Chesapeake Bay 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 2:35:20 for the testimony of Forest Brand reduction fishery spotter pilot. <https://www.youtube.com/watch?v=Cn-ow-dNfsE&t=5921s>

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

[https://mcgraw.org/wp-content/uploads/2022/01/McGraw-Striped-Bass-Report-FINAL\\_compressed.pdf](https://mcgraw.org/wp-content/uploads/2022/01/McGraw-Striped-Bass-Report-FINAL_compressed.pdf)

#### 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 page 26.
- In 2016 the GDP associated with the commercial sector was \$17.1 million dollars and responsible for 584 jobs.

#### Virginia

- In 2016 the GDP associated with recreational fishing for Striped Bass in Virginia was over \$106.6 million dollars and accounted for over 1,444 jobs. See page 45.
- In 2016 the GDP associated with the commercial sector for Striped Bass in Virginia was \$12.2 million dollars and accounted for 384 jobs.

#### Summary for Virginia and Maryland

- From a dollars standpoint the economic impact of Striped Bass recreational fishing was over 31 times more significant than commercial fishing. See the table below.
- From a jobs standpoint the economic impact of Striped Bass recreational fishing was 12 times more significant than the commercial fishing.

|          | Recreational<br>GDP | Recreational<br>Jobs | Commercial<br>GDP | Commercial<br>Jobs |
|----------|---------------------|----------------------|-------------------|--------------------|
| Maryland | \$802,791,200       | 10,193               | \$17,109,200      | 584                |
| Virginia | \$106,623,300       | 1,444                | \$12,198,100      | 384                |
| Total    | \$909,414,500       | 11,637               | \$29,307,300      | 968                |

## Bluefish and Weakfish Metrics

Commercial harvest data for Bluefish and Weakfish, which also are dependent on Atlantic menhaden for their survival, are shown in figures 5 and 6. 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 For-Hire business base is documented in Figures 7 and 8.

During the period of 2000 – 2022, the number of Maryland For-Hire active vessels declined from a high of 423 to 327 in 2022 for a decline of 23%. In addition, the number of Maryland For-Hire Anglers declined from a 138,442 to 94,711 for a 31% decline, and the number of fishing trips went from 18,199 to 12,409 for a 31% decline. The decline in Maryland For-Hire business base is documented in Figures 9, 10, and 11.

### Osprey Metrics

According to Dr. Bryan Watts of the College of William and Mary reductions in menhaden stocks have caused osprey reproductive productivity to decline to below DDT-era rates. This is based on 50 years of research. Dr. Watts provided sworn testimony before the Virginia Marine Resources Commission on 8/22/23. He stated the following:

“The reason we decided to finally to begin to make statements about this issue is that we had moved from several 100 chicks starving in the nests to now 1,000s of chicks starving in the nests in the lower Bay.”

He went on to state “If you look at the relationship between reproductive rates over the last 40 years and the Atlantic menhaden relative abundance index, they are directly related.”

<https://www.youtube.com/watch?v=hf58Z9SLNlg> (14:43). His testimony is summarized in the table below:

| Osprey Reproductive Rate | Chicks/Active Nest |
|--------------------------|--------------------|
| Requirement              | 1.15               |
| 1970                     | 0.50               |
| 1980                     | 2.00               |
| 2006                     | 0.75               |
| 2021                     | 0.30               |
| 2023                     | 0.10               |

These rates are insufficient to support the osprey population within the main stem of the Bay.

A peer reviewed paper was written by Michael Academia of documenting this research and was published in April 2023. [Frontiers | Food supplementation increases reproductive performance of ospreys in the lower Chesapeake Bay \(frontiersin.org\)](https://www.frontiersin.org)

## Conclusion

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

## Options

- **First**, the Maryland delegation to the ASMFC Atlantic Menhaden Management Board could file a motion to end Atlantic menhaden reduction fishing in Virginia waters. This would be the quickest and most cost effective option.
- **Second**, conduct more research to quantify the Atlantic menhaden biomass in the Chesapeake Bay throughout the reduction fishery season. This option has already been evaluated by the ASMFC Ecological Reference Point Working Group and Atlantic Menhaden Technical Group. Their conclusion is that it will take 10+ years to provide quantitative data for evaluation purposes. See page 4 of Enclosure (1). This is not a tenable solution based on the current crisis in the Chesapeake Bay.

## 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.

## Support for this Recommendation

**First**, below is an excerpt from the minutes of the Maryland Department of Natural Resources Tidal and Coastal Recreational Fisheries Committee meeting of 6/29/23. This committee represents thousands of recreational fishermen across the State of Maryland:

***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***

**Second**, both New York and New Jersey have greatly improved its striped bass recreational fishery due to ending Atlantic menhaden reduction fishing in their waters. See references (f) and (g) and Figures 12 and 13 below.

It's time to take action now!

## References:

- SEDAR 69 Ecological Reference Points Stock Assessment Report on Atlantic Menhaden dated January 2020, pages iii and 375 <https://sedarweb.org/documents/sedar-69-atlantic-menhaden-ecological-reference-points-stock-assessment-report/>
- Estimation of movement and mortality of Atlantic menhaden during 1966–1969 using a Bayesian multi-state mark-recovery model Emily M. Liljestrand, Michael J. Wilberg, Amy M. Schueller, Published online 2/2019

<https://sedarweb.org/documents/sedar-69-rd03-estimation-of-movement-and-mortality-of-atlantic-menhaden-during-1966-1969-using-a-bayesian-multi-state-mark-recovery-model/>

- (c) Amendment 3 to the Interstate Fishery Management Plan for Atlantic Menhaden November 2017, page v  
[http://asmfc.org/uploads/file/5a4c02e1AtlanticMenhadenAmendment3\\_Nov2017.pdf](http://asmfc.org/uploads/file/5a4c02e1AtlanticMenhadenAmendment3_Nov2017.pdf)
- (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  
[http://www.asmfc.org/uploads/file/636e6629pr32AtlMenhaden2023TAC\\_AddendumApproval.pdf](http://www.asmfc.org/uploads/file/636e6629pr32AtlMenhaden2023TAC_AddendumApproval.pdf)
- (e) Virginia Administrative Code, Chapter 1270, Pertaining to Atlantic Menhaden  
<https://www.mrc.virginia.gov/Regulations/fr1270.shtm>
- (f) George Scocca email to Tom Lilly, 3/8/21. See Figure 12.
- (g) Saltwater Sportsman, 4/27/23 [Is NJ the New Striped Bass Mecca? | Salt Water Sportsman I](#) See Figure 13.

### Omega Protein Purse Seine Settings and Migration

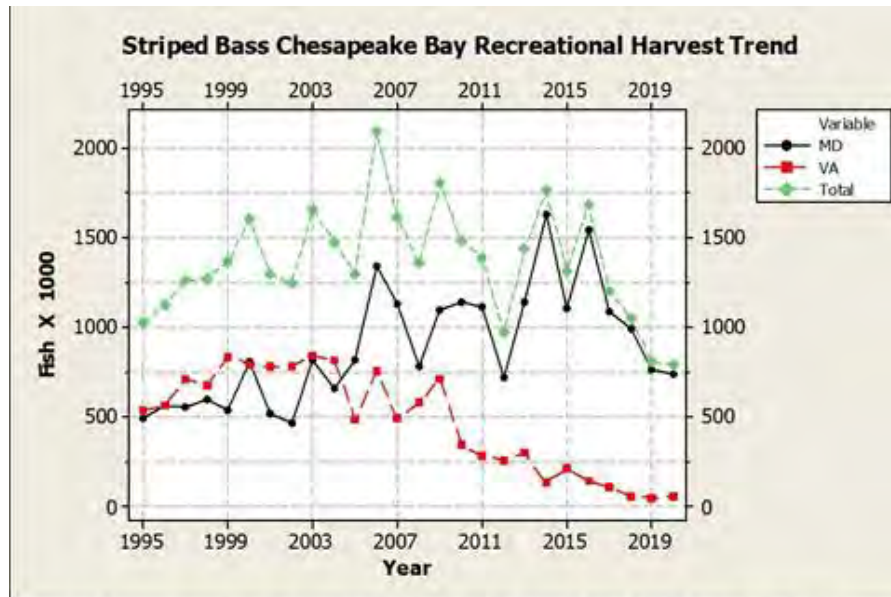


Ref: SEDAR 40 Stock Assessment Report Atlantic Menhaden, January 2015, page 10

<https://sedarweb.org/documents/sedar-40-stock-assessment-report-atlantic-menhaden/>

Figure 1

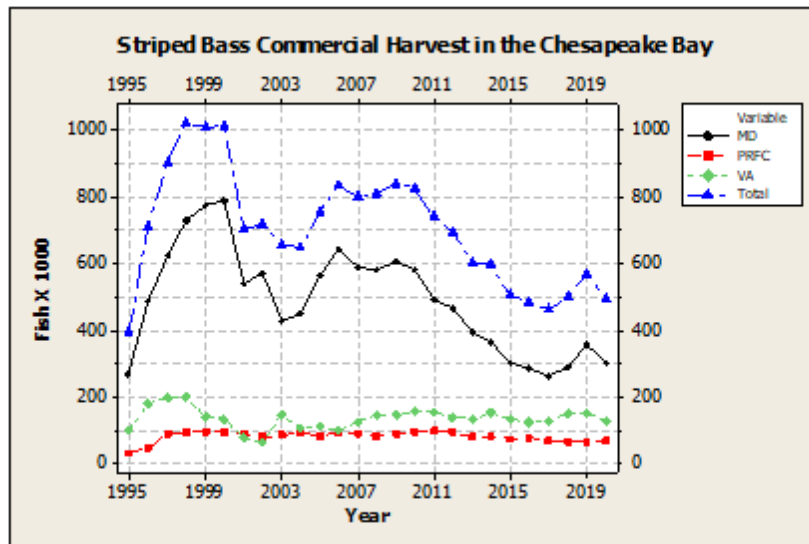




Draft Amendment 7 to the Interstate FMP for Atlantic Striped Bass, Table 18, page 135 - 2/2022

Figure 2

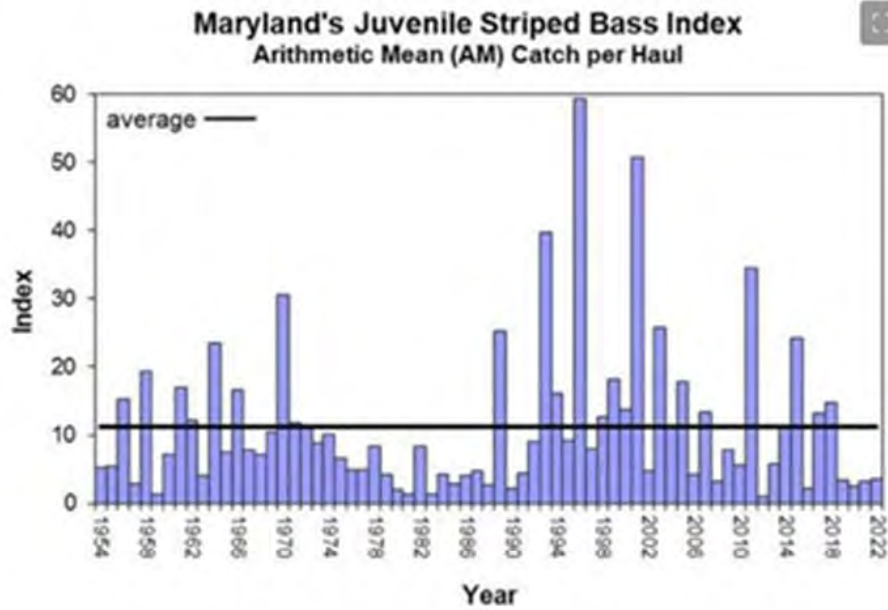
**Decline in Striped Bass Chesapeake Bay Commercial Harvest**



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

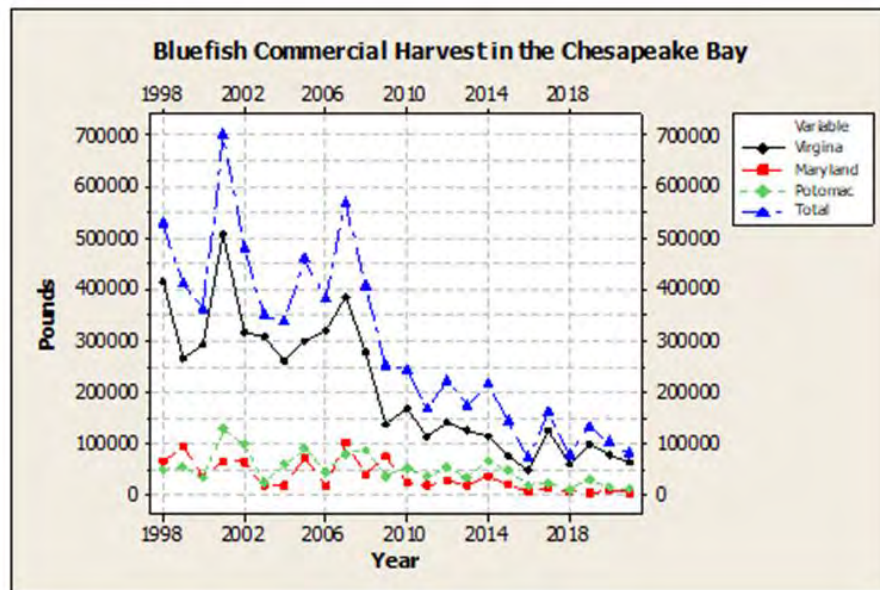
Figure 3

## Chesapeake Bay 2022 Young-of-Year Survey Results



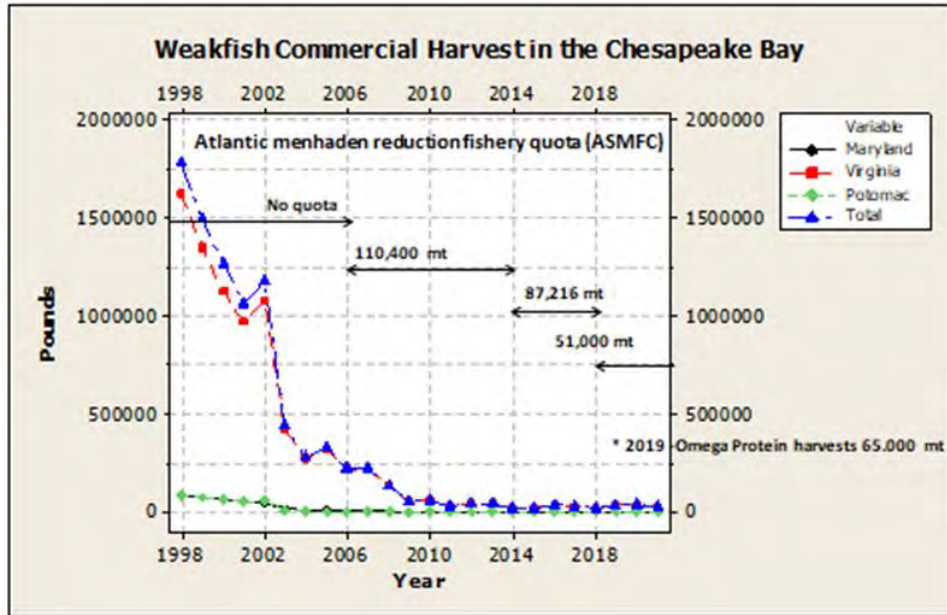
[Chesapeake Bay 2022 Young-of-Year Survey Results Announced \(maryland.gov\)](https://www.maryland.gov/announcements/story.aspx?id=ANN0708202201)

Figure 4



References: MD DNR, VMRC, PRFC

Figure 5

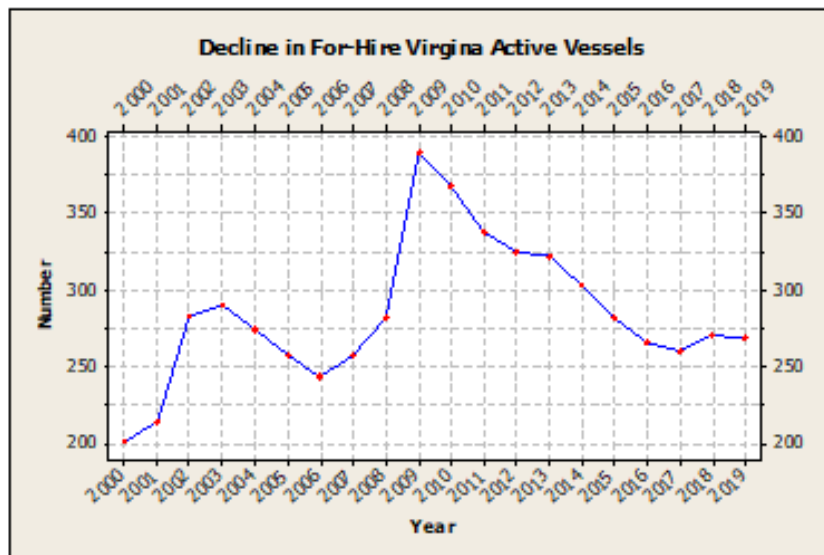


References: MD DNR, VMRC, PRFC, ASMFC

11

Figure 6

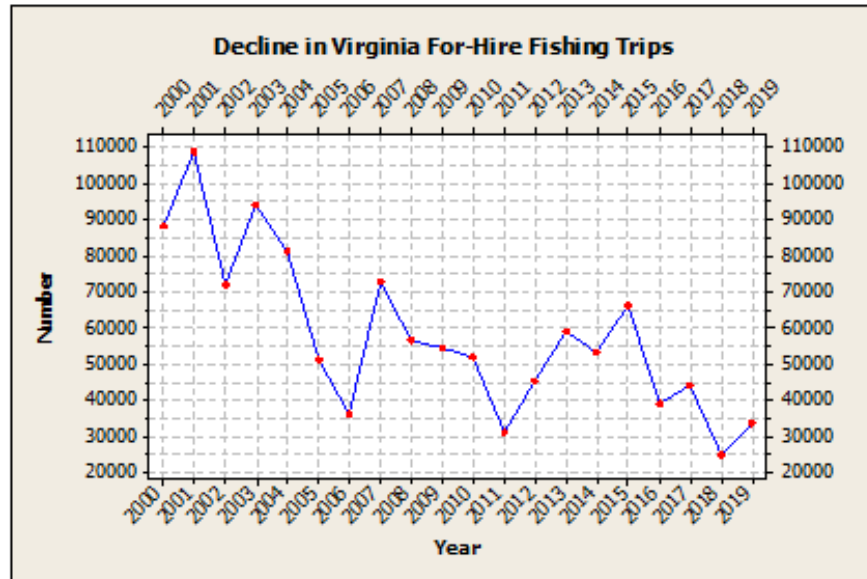
### Decline in Virginia For-Hire Active Vessels



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

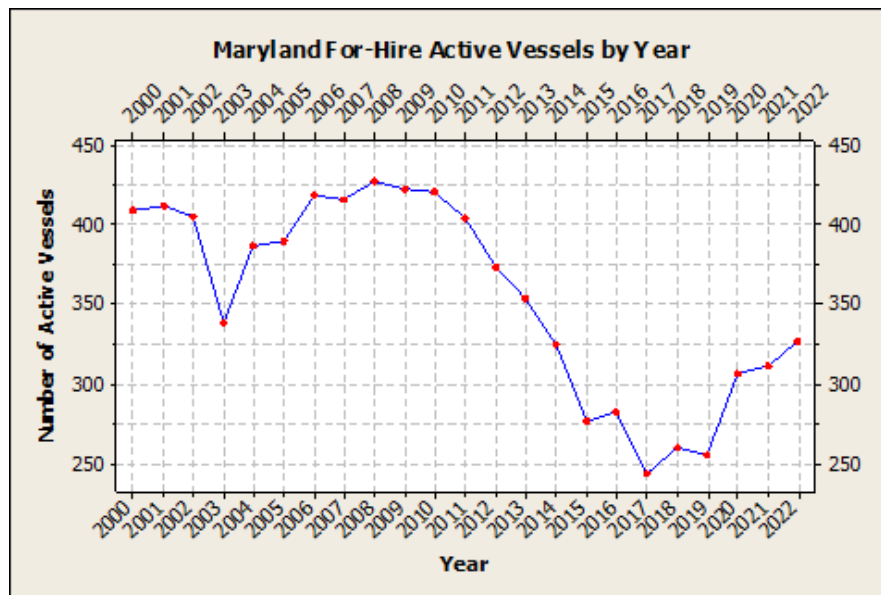
Figure 7

### Decline in Virginia For-Hire Fishing Trips



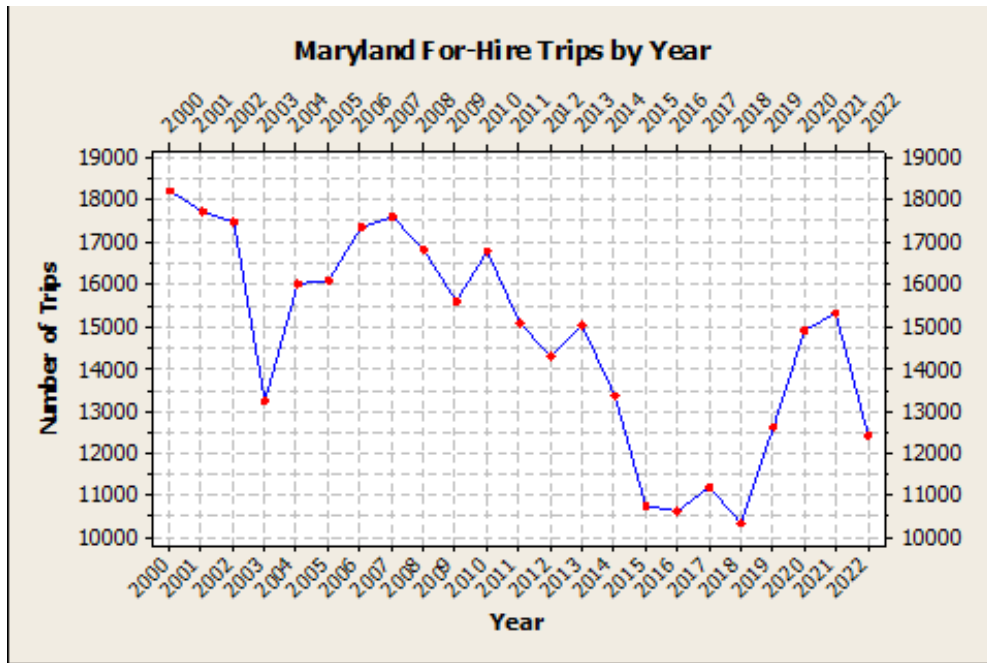
VMRC, Stephanie Inverson-Cason 1/10/23

Figure 8



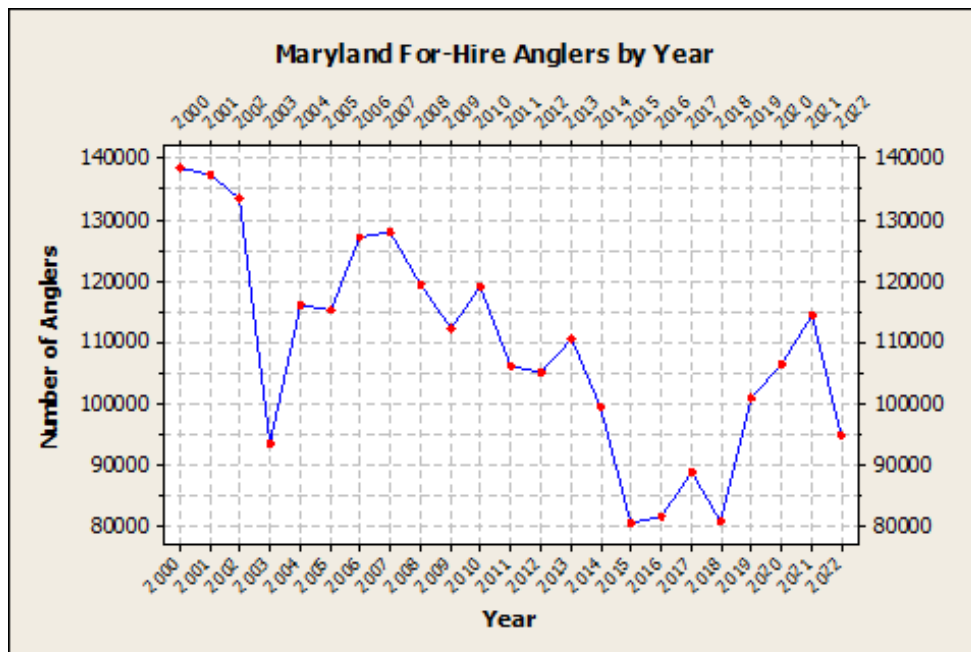
Ref: Connie Lewis, MD DNR, 9/6/23

Figure 9



Ref: Connie Lewis, MD DNR, 9/6/23

Figure 10



Connie Lewis, MD DNR, 9/6/23

Figure 11

### New York Experience – 3/8/21

FWD: Menhaden  
From: George Scocca [gsocca@nyangler.com](mailto:gsocca@nyangler.com)  
To: Tom [tcraemer@nyangler.com](mailto:tcraemer@nyangler.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](http://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 pair eagles on long island and the osprey population is thriving."

George Scocca  
Editor, [nyangler.com](http://nyangler.com)

30

Figure 12

### 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/>

36

Figure 13

# Localized Depletion of Atlantic Menhaden in the Chesapeake Bay



**September 25, 2023**

**Phil Zalesak  
President**

**SMRFO ([www.smrfo.org](http://www.smrfo.org))**

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This lack of menhaden is caused by the removal of 3/4 of a billion fish from the Chesapeake Bay and the waters just outside the Bay along the Atlantic Coast.

The solution to this problem is to end the Atlantic menhaden reduction fishing in Virginia waters and limit reduction fishing to federal waters east of the 3 nautical mile Exclusive Economic Zone.

## References:

[https://asmfc.org/uploads/file/63d8390fAtlMenhadenERPAssmt\\_PeerReviewReports.pdf](https://asmfc.org/uploads/file/63d8390fAtlMenhadenERPAssmt_PeerReviewReports.pdf) page iii  
<https://www.frontiersin.org/articles/10.3389/fmars.2023.1172787/full>



**Atlantic Menhaden:  
A Critical Forage Fish for Striped Bass, Bluefish, Weakfish and Osprey**



# Striped Bass Mortality Rate a Function of Atlantic Menhaden Mortality Rate

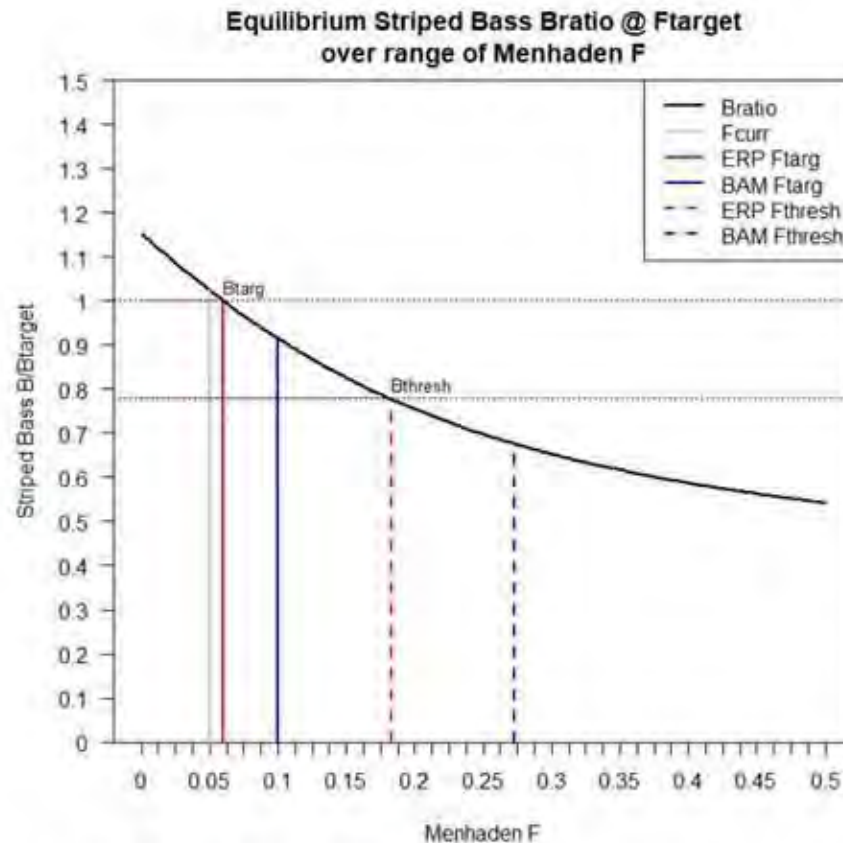


Figure 148. Terminal year biomass ratio ( $B/B_{TARGET}$ ) from the NWACS-MICE model for age 6+ striped bass over a range of Atlantic menhaden  $F$  with striped bass fished at their  $F$  target. Vertical solid and dotted lines indicate the BAM single-species target and threshold  $F$  as well as the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

# 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>

# Atlantic Menhaden Industrial Harvesting



# Atlantic Menhaden Storing and Shipping (Purse Seining for Atlantic Menhaden in Cape May NJ)



[https://www.youtube.com/watch?v=ZcE\\_uGmz-yw](https://www.youtube.com/watch?v=ZcE_uGmz-yw)

# Atlantic Menhaden Purse Seine Settings

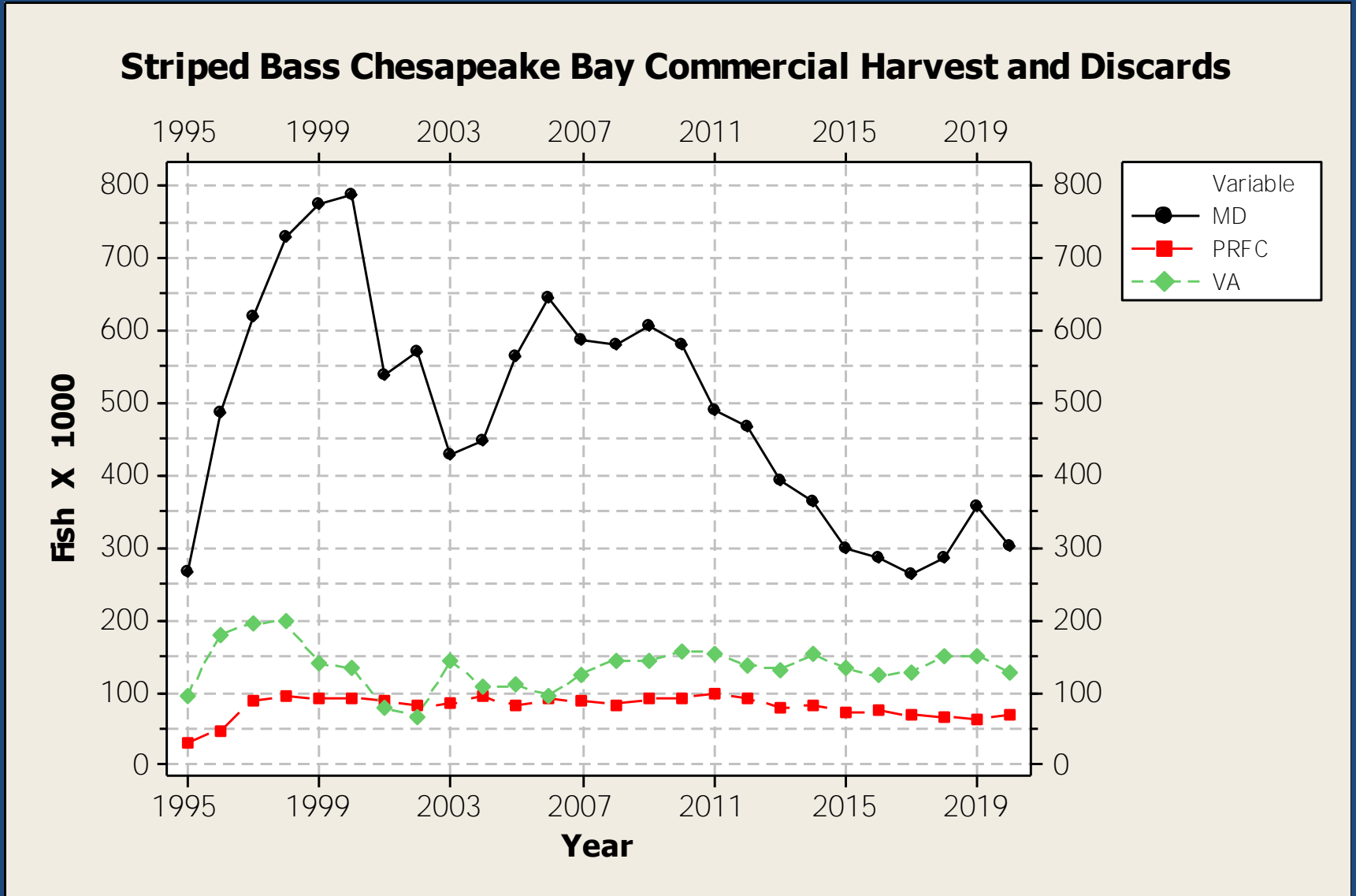
**Figure 4.1.3.4.3.** Locations of all purse-seine sets by Omega Protein vessels (red) and last sets of trips that were sampled for age and size composition of the catch (= port samples; green) during 2013; data are from CDFR data base.



# Current Allocation of Atlantic Menhaden by State

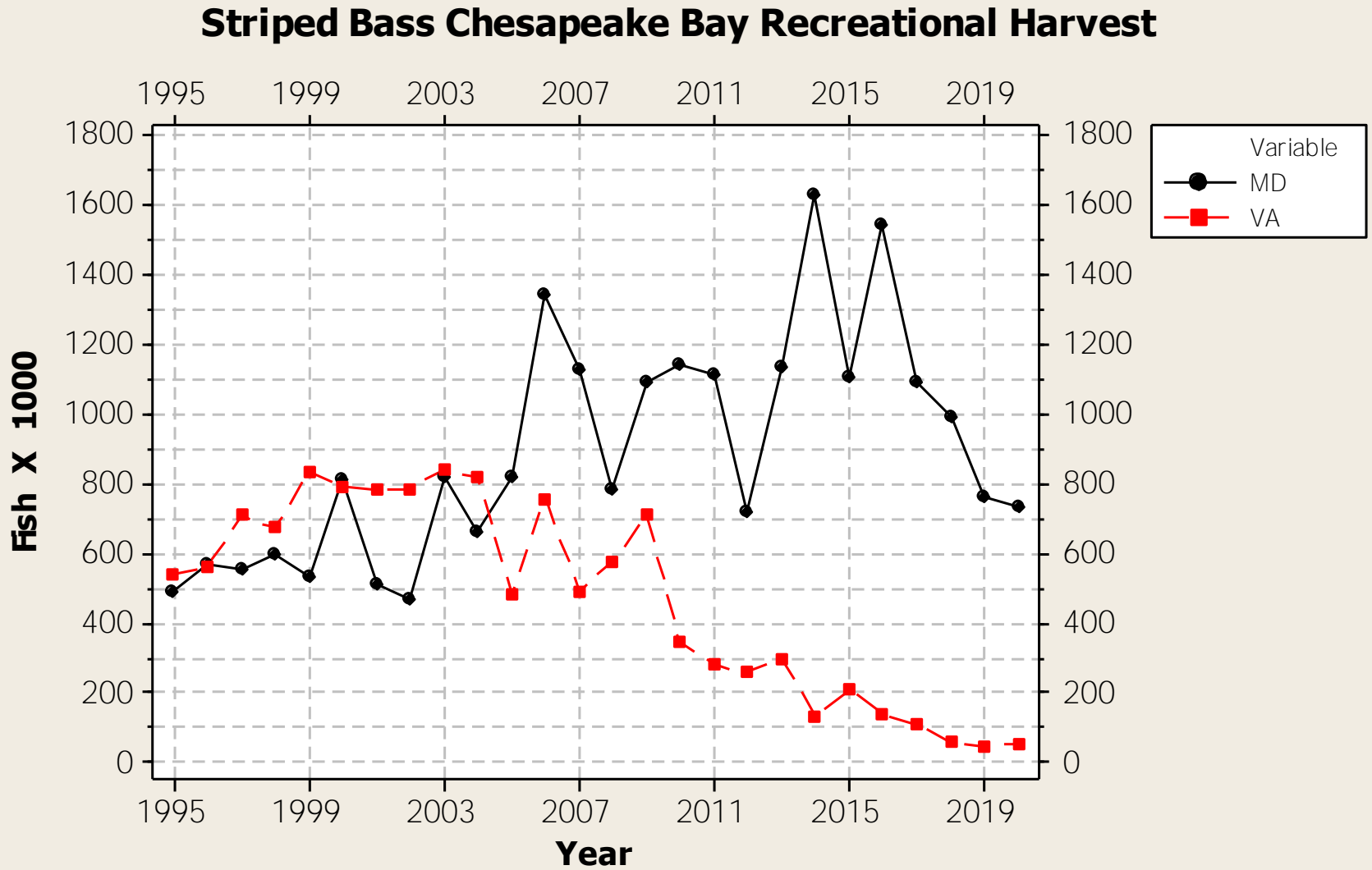
|                       |            | 2023 - 2024 |             |               |
|-----------------------|------------|-------------|-------------|---------------|
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| Other States          | 24.80%     | 57,920      | 127,691,314 | 277,589,813   |
| * .46 pounds per fish |            |             |             |               |

# Striped Bass Chesapeake Bay Commercial Harvest and Discards Trends



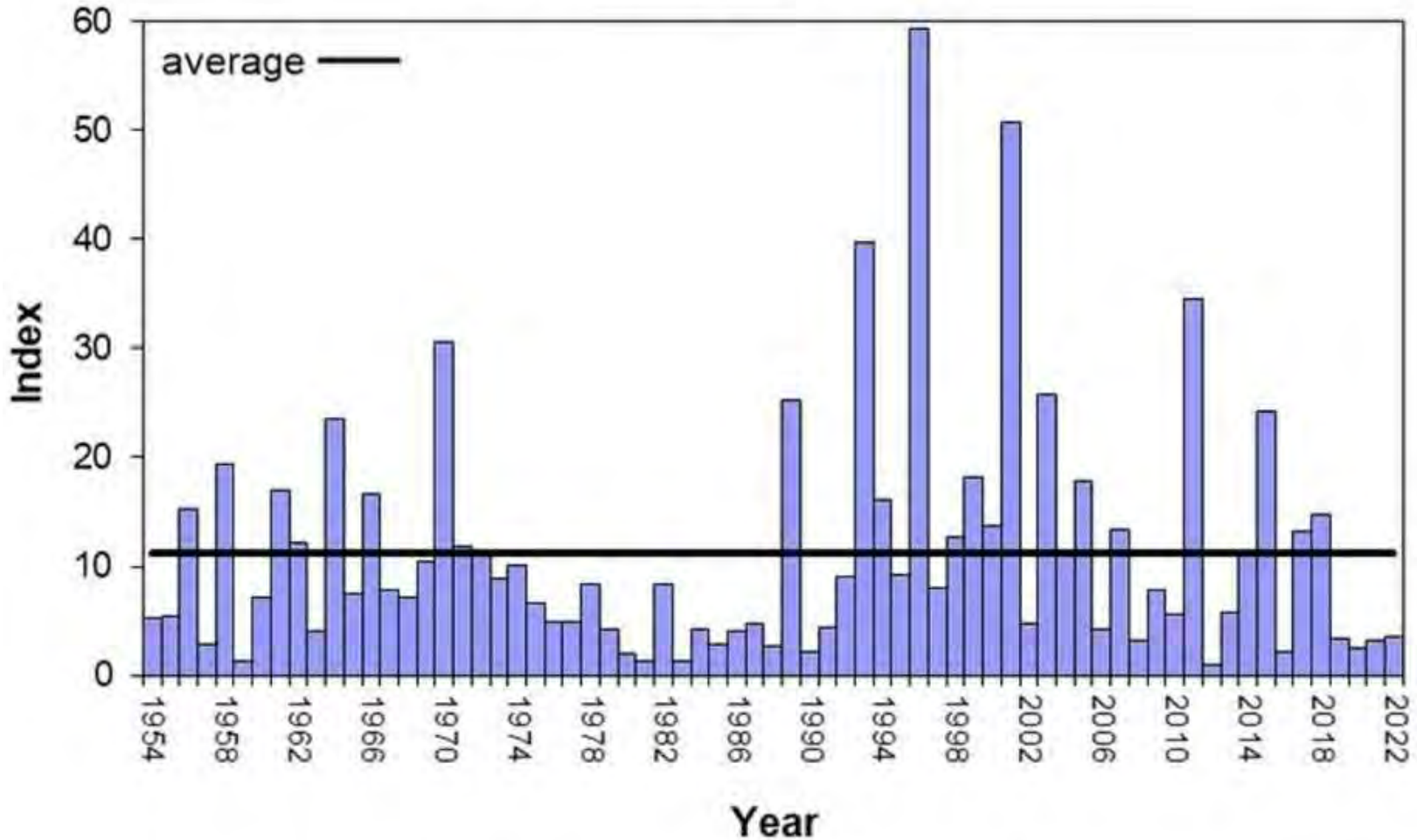


# Striped Bass Chesapeake Bay Recreational Harvest Trend



# 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/>

# Striped Bass Economic Impact to Maryland (2016)

**Commercial GDP: \$17,109,700**

**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**

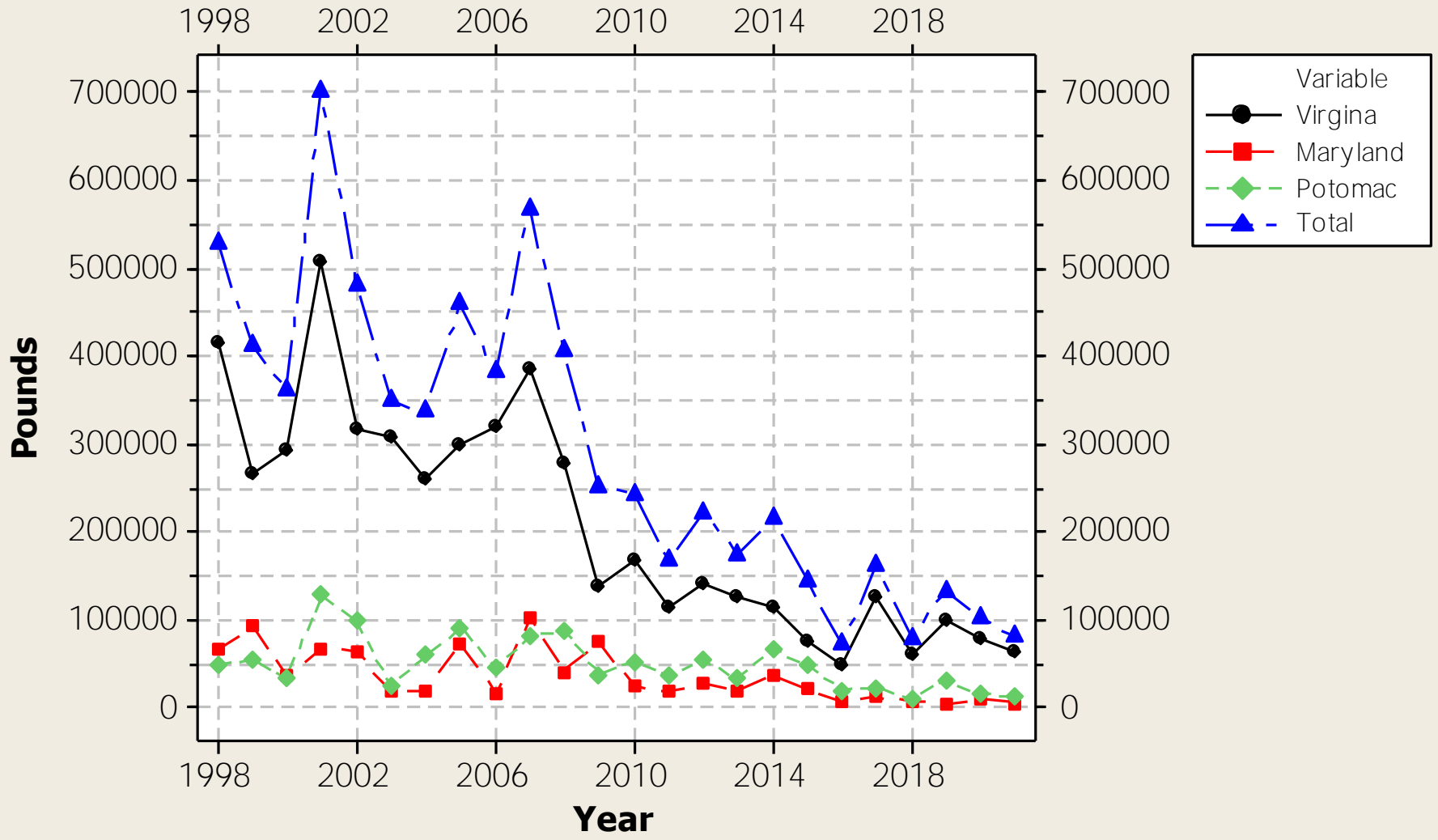
## Comparisons Between the Fisheries

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%  |

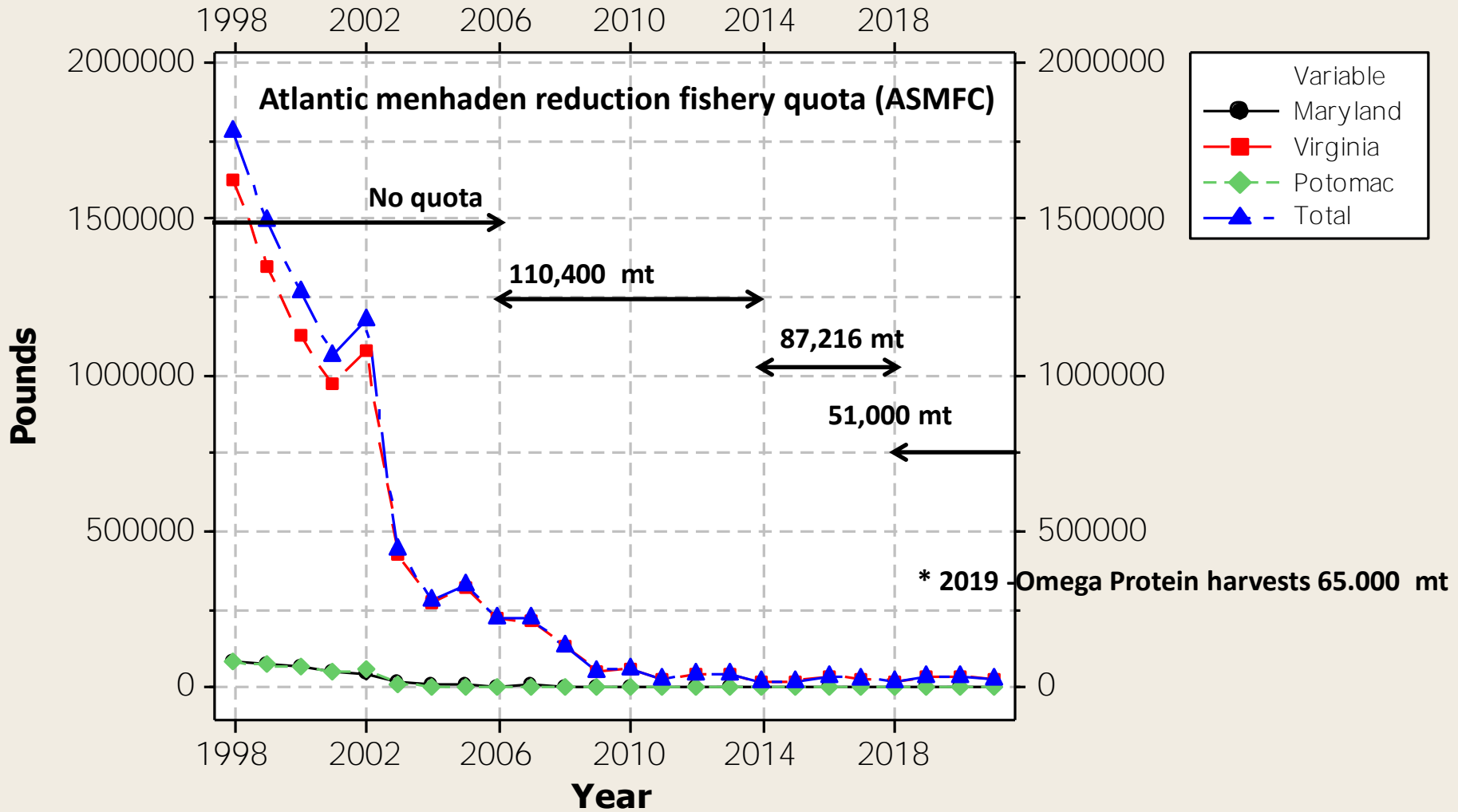
Ref: The Economic Contributions of Recreational and Commercial Striped Bass Fishing, Southwick Associates, 4/12/19

# Bluefish Commercial Harvest in the Chesapeake Bay



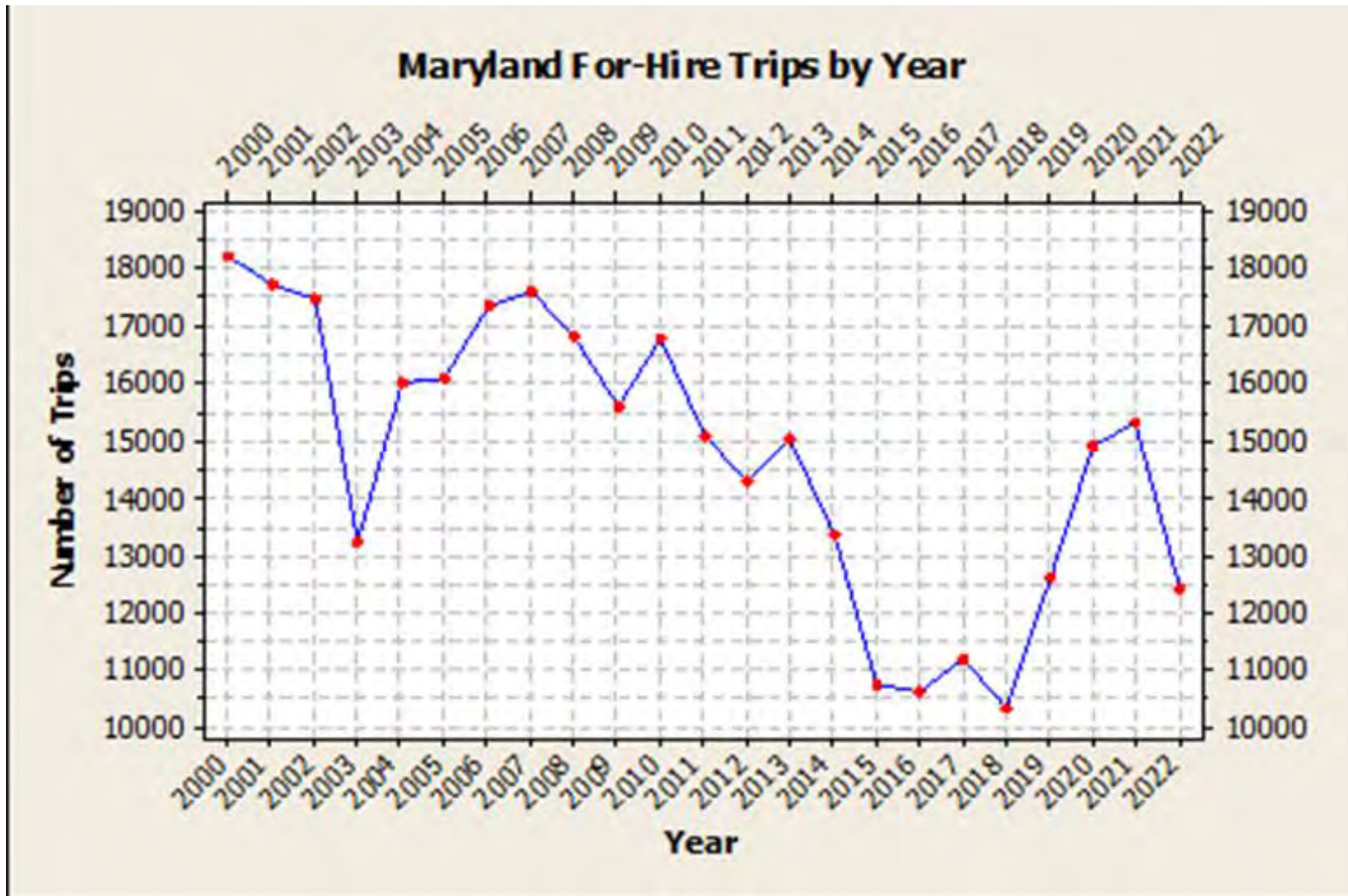
References: MD DNR, VMRC, PRFC

# Weakfish Commercial Harvest in the Chesapeake Bay



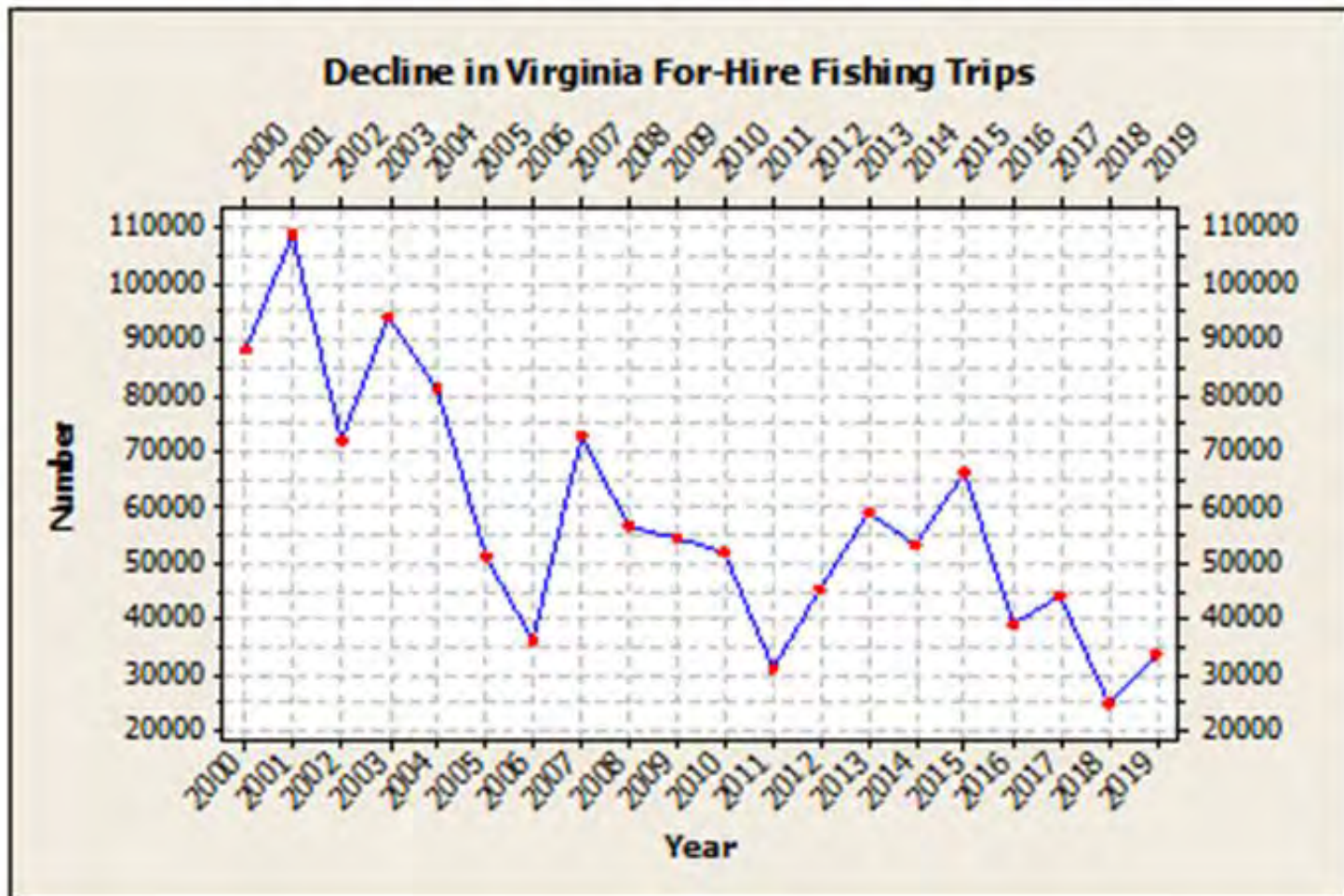
References: MD DNR, VMRC, PRFC, ASMFC

# Impact on Recreational Fishing



Ref: Connie Lewis, MD DNR, 9/6/23

# Decline in Virginia For-Hire Fishing Trips



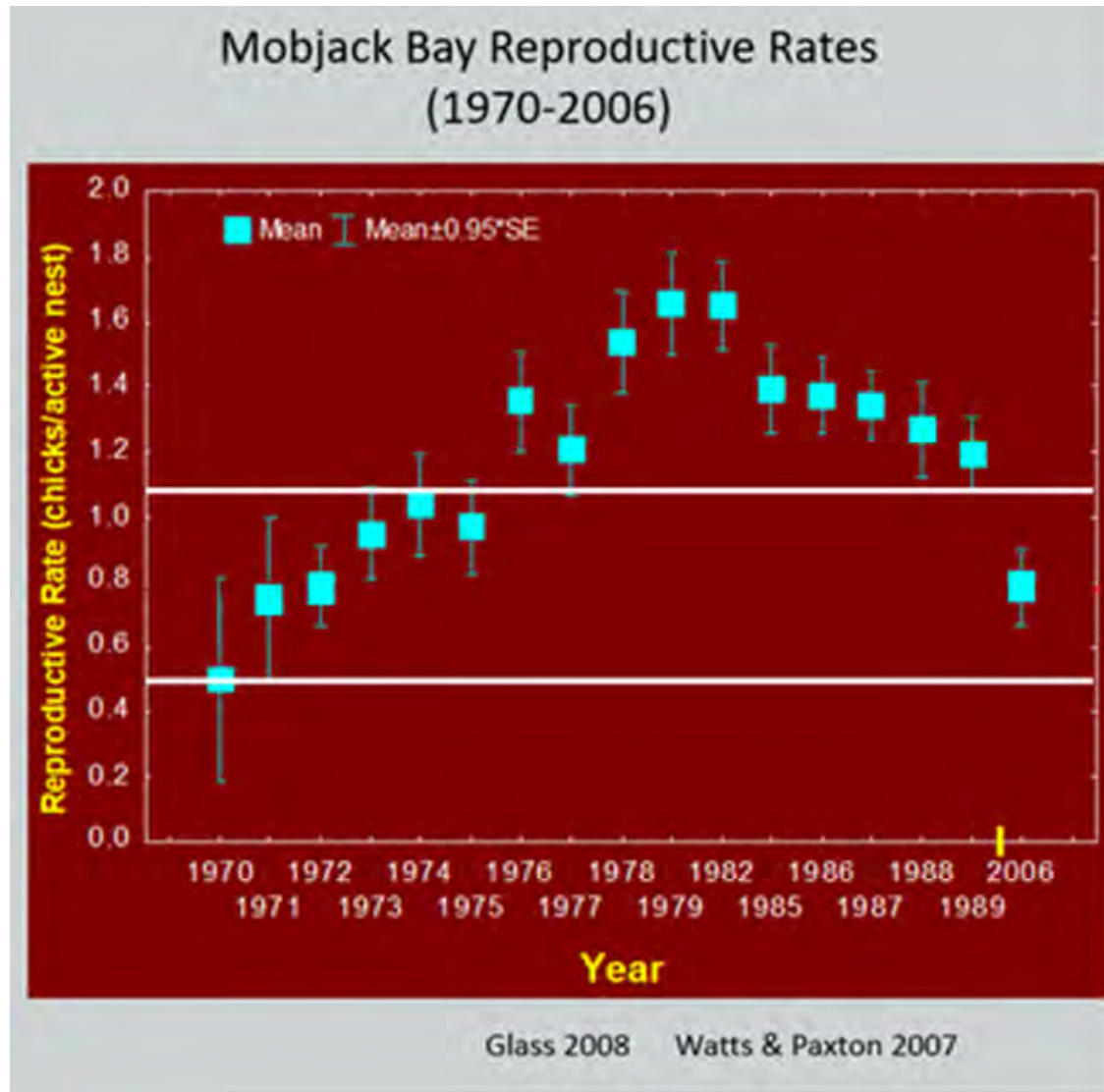
VMRC, Stephanie Inverson-Cason 1/10/23



# Osprey Feeding on Atlantic Menhaden



# Osprey Reproductive Rate (Chicks/Active Nest)



## **Dr. Bryan Watts**

### **College of William and Mary**

**According to Dr. Bryan Watts of the College of William and Mary reductions in menhaden stocks have caused osprey reproductive productivity to decline to below DDT-era rates. This is based on 50 years of research. Dr. Watts provided sworn testimony before the Virginia Marine Resources Commission on 8/22/23. He stated the following:**

**“The reason we decided to finally to begin to make statements about this issue is that we had moved from several 100 chicks starving in the nests to now 1,000s of chicks starving in the nests in the lower Bay.”**

**He went on to state “If you look at the relationship between reproductive rates over the last 40 years and the Atlantic menhaden relative abundance index, they are directly related.”**

**<https://www.youtube.com/watch?v=hf58Z9SLNlg> (14:43)**

**Dr. Bryan Watts**  
**College of William and Mary**

| <b>Osprey<br/>Reproductive Rate</b> | <b>Chicks/Active Nest</b> |
|-------------------------------------|---------------------------|
| <b>Requirement</b>                  | <b>1.15</b>               |
| <b>1970</b>                         | <b>0.50</b>               |
| <b>1980</b>                         | <b>2.00</b>               |
| <b>2006</b>                         | <b>0.75</b>               |
| <b>2021</b>                         | <b>0.30</b>               |
| <b>2023</b>                         | <b>0.10</b>               |

<https://www.youtube.com/watch?v=hf58Z9SLNlg> (14:43).

# Osprey Reproductive Performance Data



## Food Supplementation Increases Reproductive Performance of Ospreys



### | Results |

#### 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>

# 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**

# Support for Proposed Recommendation

First, below is an excerpt from the minutes of the Maryland Department of Natural Resources Tidal and Coastal Recreational Fisheries Committee meeting of 6/29/23. This committee represents thousands of recreational fishermen across the State of Maryland:

*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*

Second, both New York and New Jersey have greatly improved its striped bass recreational fishery due to ending Atlantic menhaden reduction fishing in their waters.



# New York Experience – 3/8/21

FWD: Menhaden

From: George Scocca [george@nyangler.com](mailto:george@nyangler.com)

To: Tom [foragematters@aol.com](mailto: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](http://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](http://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/>

# Backup

# 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)

# 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 |            |             |             |             |

# 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](https://asmfc.org/uploads/file//5a4c02e1AtlanticMenhadenAmendment3_Nov2017.pdf) page v

**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

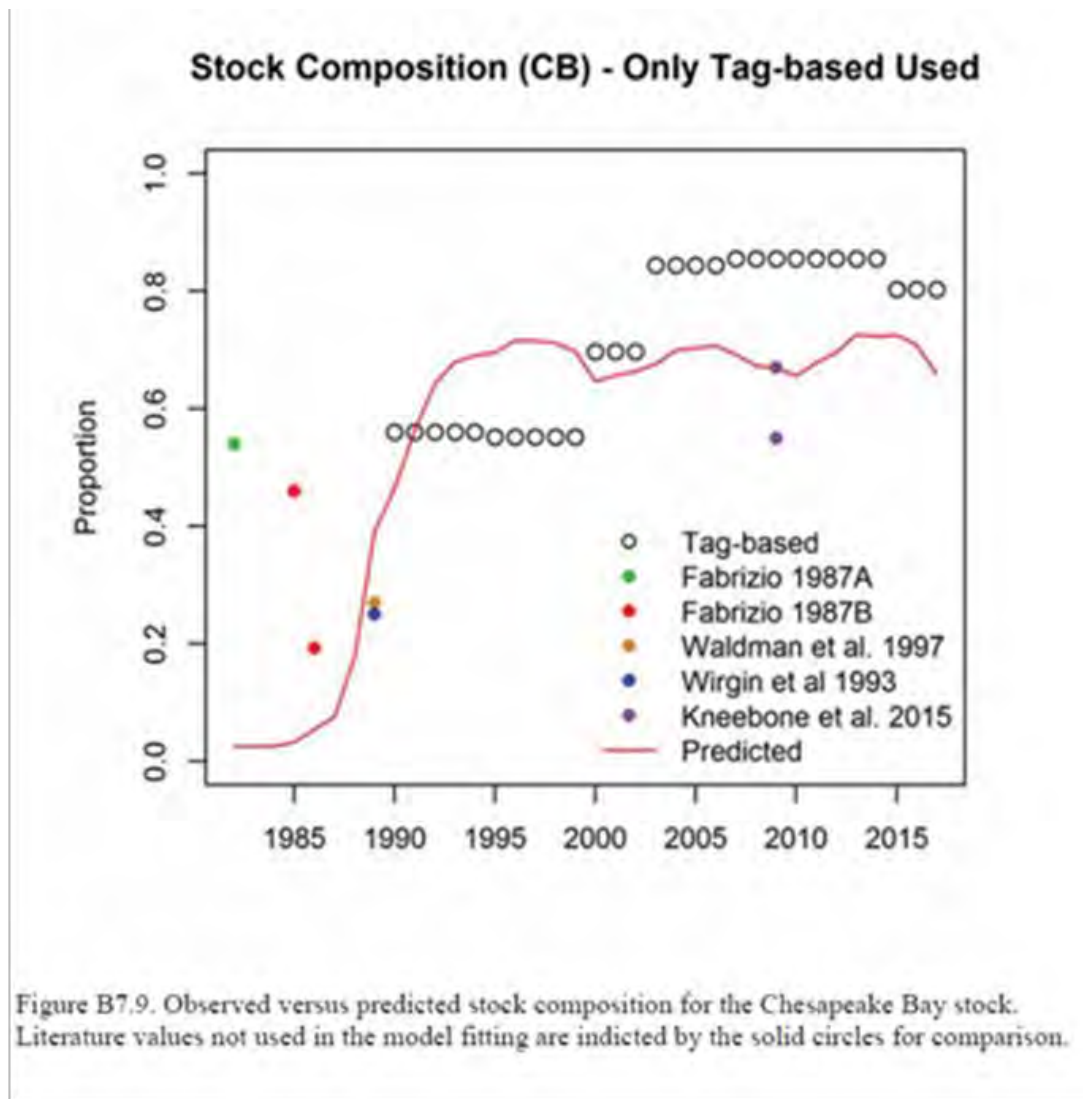
**“A suite of five key predator and prey species were identified from diet data and other considerations (referred to as ERP focal species). Atlantic striped bass, bluefish, spiny dogfish, and weakfish were identified as key predator species of Atlantic menhaden” page iii**

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

pages iii



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



# 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

## 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





# Atlantic States Marine Fisheries Commission


1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201  
 703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

## MEMORANDUM

**TO:** Atlantic Menhaden Management Board  
**FROM:** Ecological Reference Point Work Group and Atlantic Menhaden Technical Committee  
**DATE:** April 26, 2021  
**SUBJECT:** Atlantic Menhaden Spatial Model Needs

At the 2021 Winter Meeting, the Atlantic Menhaden Management Board tasked the Ecological Reference Point Work Group (ERP WG) and Atlantic Menhaden Technical Committee (TC) to provide additional detail regarding the research recommendation in the 2019 benchmark stock assessment to “develop a spatially-explicit model.” Specifically, the Board requested information on what data would be needed, a timeline for development and implementation, and if it would resolve questions regarding management of menhaden in the Chesapeake Bay.

The ERP WG and TC discussed potential approaches for developing a spatially-explicit model for Atlantic menhaden. These approaches cover a range of spatial complexity, data needs, and timelines, and provide different levels of information to support management. In this memo, the ERP WG and TC provide an initial outline of potential approaches, including the data and modeling development needs, timelines, and expected management information produced, and highlight areas where Board input is needed. The ERP WG and TC stress that the needs and timelines listed here are based on the group’s current understanding of what is feasible and may change once model development and data analysis are underway. The approach the group chooses will depend on management goals, as well as data and funding availability.

| Attributes   | Approach  |
|--|---|
|  Coarse spatial scale, minimal additional data requirements | Coastwide Beaufort Assessment Model (BAM) + coastwide Northwest Atlantic Coastal Shelf Model of Intermediate Complexity for Ecosystems (NWACS-MICE) + <u>supplemental Bay information</u> |
|  | Coarse spatial BAM + coastwide NWACS-MICE ERPs  |
|  | Coarse spatial BAM + coarse spatial NWACS-MICE ERPs   |
|  | Detailed spatial BAM + detailed spatial ERPs<br><br>(NWACS-MICE or alternative detailed spatial multispecies model)   |

## **1. Coastwide BAM and NWACS-MICE with supplemental Bay information**

These approaches would use the existing BAM plus NWACS-MICE approach to develop coastwide ERPs for Atlantic menhaden to produce a Total Allowable Catch (TAC) that takes into account Atlantic menhaden's role as a forage fish on a coastwide basis, as is done now, but would also provide supplemental information on the Chesapeake Bay.

### **a. Supplemental Bay Atlantic menhaden abundance information**

**Approach:** Supplemental information on absolute Atlantic menhaden abundance in the Chesapeake Bay, such as from an aerial survey, could be used to determine what proportion of the TAC could be taken from the Chesapeake Bay in order to keep exploitation in the Bay at an acceptable level. This simpler, escapement-based approach could be an efficient way to develop information to inform the Chesapeake Bay Cap; however, it would not provide broader spatial information and therefore would not provide advice for regional allocation discussions. In addition, the ERPs developed would be on the coastwide scale, and thus would not include consideration of predator-prey interactions or needs on a finer spatial scale. The ERP WG and TC also noted the uncertainty introduced by combining two different methods of abundance estimation (the BAM and the fishery-independent Bay method), and the lack of information on seasonal migration rates into and out of the Bay.

**Data & development needs:** This approach would not require additional model development, but would require a significant investment in a robust source of information on absolute abundance in the Chesapeake Bay, which is currently does not exist. It may be possible to use a shorter time series of abundance in this framework than the 10 years that the TC requires for indices of relative abundance within the BAM; however, this will depend on review of the data after collection. An absolute abundance survey would likely require 1-2 years of gear calibration and pilot studies, plus a minimum of 3 years data, in order to evaluate interannual variability and uncertainty in the abundance estimates from the survey, meaning this approach could potentially be taken to peer review within 5-7 years of initiating the survey. However, if interannual variability is high, more years of data would be needed before the approach is ready for management use. Although shorter time series might be sufficient for the initial analysis, the survey would need to be conducted on a regular basis in order to provide management advice in subsequent years.

### **b. Supplemental Bay multispecies indicators**

**Approach:** Supplemental information such as the state of major predators (striped bass, blue fish, birds) abundance and body fat condition for the Bay could be used as ecosystem indicators to inform management control rules in parallel with the single species BAM and MICE models. Indicators would likely provide qualitative rather than quantitative advice on the Bay cap.

**Data & development needs:** Ecosystem indicators could be developed from existing datasets, but would require some work to synthesize different data sources and develop a meaningful control rule or traffic light approach to inform management.

## **2. Coarse spatial model approaches**

These approaches would provide information on a coarse spatial scale, e.g., North, Mid, and South Atlantic plus a Chesapeake Bay region. However, it is important to note that, due to data limitations, the Chesapeake Bay region would include the coastal waters of Maryland and Virginia. Additional analysis of the tagging data would be required to determine the significance of including ocean waters and whether or not this information could be used to inform the Bay Cap. Both of these approaches would take approximately 5-7 year to complete, though this could change depending on funding and data availability.

### **a. Coarse spatial BAM with coastwide NWACS-MICE ERPs**

**Approach:** This approach would refine the BAM to include spatial dynamics at a coarse scale and produce regional estimates of biomass, while the NWACS-MICE model would provide coastwide ERPs. The BAM plus NWACS-MICE would be used to develop a coastwide TAC, as is done now. An escapement-based approach could be used to determine what proportion of the TAC could be taken from each region. Regions would be defined to match management needs and the existing information on migration rates. Again, in the coarse approaches the Chesapeake Bay region would include Maryland and Virginia coastal waters due to its inclusion in the Bay region in the historical tagging study. The coastwide ERPs would not include the ecosystem considerations on a finer spatial scale. Currently, genetic and tagging data indicate Atlantic menhaden comprise a single stock on the Atlantic coast, and the BAM includes some consideration of spatial dynamics with the fleets-as-areas approach. Incorporating spatial structure could provide some improvements to our understanding of the stock, including differences in recruitment and life history characteristics.

**Data & development needs:** Catch-at-age data are already available on a coarse regional basis. Existing fishery-independent indices could be assigned to or developed at the regional level. The existing information on migration rates between large scale regions is not differentiated by age, and so the model would assume that all ages share the same migration patterns. This would introduce additional uncertainty in the spatial model. Information on the proportion of total recruitment that comes from each region could also be a limitation for this model. This approach could be attempted with the existing datasets, but would require investment of personnel time and effort. This approach would likely be ready for peer review in 5-7 years, but that frame could be longer if existing data are not adequate.

### **b. Coarse spatial BAM with coarse spatial NWACS-MICE ERPs**

**Approach:** This approach would build on the coarse spatial BAM approach described above, but combine it with a coarse spatial NWACS-MICE. To develop ERPs that take into account spatial dynamics in predator-prey interactions, a spatially-explicit multispecies model is necessary. The most straightforward approach would be to combine a spatially-explicit version of the NWACS-MICE model with a spatially-explicit version of the BAM. Both models would have a similar coarse spatial scale determined by management needs and data availability. Again, note that the Chesapeake Bay region would include Maryland and Virginia coastal waters. This approach could be used to provide advice on both the Chesapeake Bay Cap and broader regional allocation discussions. For example, it would be possible to run scenarios with differing levels of

fishing in the Chesapeake Bay region to estimate specific impacts on predators that use the region.

**Data & development needs:** A spatially-explicit multispecies model is more data intensive than the spatially-explicit BAM. To develop a coarse NWACS-MICE spatial model, we would need estimates of dispersal rates for all modeled species, information on seasonal spawning, recruitment, and migration patterns, and also information on spatial fishing effort for all fishing fleets in the model. In absence of actual data, expert opinion and rules-of-thumb can be used to parameterize the spatial model. For calibration and validation of the spatial model, we would need reliable species distribution maps that are seasonally resolved, region-specific trends in abundance and catch, fishing effort maps, and region-specific food habit data. The scale of the existing diet data is a weakness in current data availability in developing ERPs that account for finer scale ecosystem dynamics, especially for non-fish predators. Investment in enhanced diet data collection from new or existing fishery-independent sampling programs at the state or federal level for the species in the NWACS-MICE model would benefit these models. This approach could be attempted with the existing datasets, but would require investment of personnel time and effort. This approach would likely be ready for peer review in 5-7 years; however, that frame could be longer if existing data are not adequate or shorter if resources are made available and more time can be allocated to model development.

### 3. Complex Spatial Modeling Approaches

These approaches would further refine the spatial scale. If the data were available, these approaches could provide information on the Chesapeake Bay specifically (i.e., not including ocean waters) and other regions beyond the coarse spatial scale. Both of these approaches would likely take at least 10 years, though this could change depending on funding and data availability.

#### a. Refined spatial BAM with NWACS-MICE ERPs

**Approach:** This approach would develop a more refined spatial BAM, which would be able to provide information on the Chesapeake Bay specifically (separate from MD and VA ocean waters) and other regions beyond the coarse spatial scale described above. It could be used with a coastwide NWACS-MICE or a refined spatial NWACS-MICE, depending on data availability. Depending on which NWACS-MICE approach was used, this approach would provide information similar to the escapement-based approaches or the coarse NWACS-MICE approach, respectively, but on a more refined spatial scale.

**Data & development needs:** In order to provide information on a true Chesapeake Bay region, or other regions beyond the coarse spatial scale described above, the BAM would require more fine-scale information on migration rates at age between the regions of interest. This would require a new comprehensive tagging study to provide that information. If complementary data on seasonal spatial distribution maps and trends in abundance and catch were available for the NWACS-MICE model, ERPs could be developed on a similar scale to the BAM's regional structure. If not, coastwide ERPs could be used in conjunction with the more refined BAM model. The refined spatial ERPs require significant investment in movement studies as well as in

diet data and model development. This approach would not be feasible until the necessary movement data are available.

#### **b. Detailed spatial BAM and detailed spatial ERPs**

##### **Detailed spatial BAM and detailed spatial ERPs**

**Approach:** The most complex approach would be to develop a fully-realized fine-scale spatial multispecies or ecosystem model for Atlantic menhaden. This could be achieved with NWACS-MICE, or another model such as the multi-species statistical catch-at-age model developed for the 2019 ERP Benchmark Assessment. A fully realized NWACS-MICE or other spatial model would use a much finer spatial resolution (on the order of 10-minute squares) that represented habitat gradients and jurisdictional boundaries. The model could be driven by static and/or spatial-temporal habitat maps, for example from satellite data or oceanographic model. This approach could simulate a broader range of environmental and policy options, such as warming sea temperatures and species range expansion into the northern region. Higher spatial resolution in the model would allow for better representation of spatial fishing effort in and out of the Bay.

**Data & development needs:** The disadvantage of this approach is that it is far more computationally demanding and requires information on species-habitat interactions that may not be available for some species. Typically, the habitat preference functions are derived from survey data. Assembling habitat maps, combining survey datasets, and estimating species preference functions for the different habitat types adds considerable time to model development. For species/life stages that are not captured in any surveys, expert opinion and online data repositories such as AquaMaps can be used instead. Validating the high-resolution spatial MICE model could be done by comparing region-specific time series (similar to the coarse scale model), comparing predicted and observed species distribution maps, or on a point-by-point basis. Higher resolution movement and diet data would significantly enhance model development and result in more reliable ERP estimates. Spatially-explicit statistical catch-at-age models do exist (i.e., Stock Synthesis and others); however, they do not exist in a multispecies model construct at this point, so would require software development. This approach would not be feasible until the necessary spatial data are available.

##### **Immediate Funding Needs**

The ERP WG and the TC indicated that some form of a coarsely structured spatial model was possible to develop for the next benchmark assessment if the Board was willing to accept a longer time frame for the next benchmark (2027-2028 instead of 2025). The approach that the groups pursue will depend on management goals (see 'Management input needs' below), data availability, and development resources. Table 1 provides a comparison of the approaches based on advice provided, data needs, and timeline.

The major areas that would require or benefit from funding to address data or model limitations are summarized below. In addition, the ERP WG and TC noted that timeline for model development could be shortened somewhat with funding for dedicated modelers.

| Approach  | Major Funding Need   |
|---|--|
| Coastwide model with supplemental Bay information | 3-5+ years of reliable absolute abundance estimates for the Chesapeake Bay   |
| Coarse spatial ERPs                               | Spatially and seasonally explicit diet data and spatial distributions for key predator and prey species; additional model development  |
| Refined spatial ERPs                              | Spatially- and seasonally-explicit diet data for key predator and prey species; fine-scale information on migration rates between regions by age; additional model development |

**Management input needs**

The TC and ERP WG need guidance from the Board on specific goals and priorities to determine a path forward. The ERP WG and TC pose the following questions to the Board:

- What is the primary goal for spatially-explicit modeling? (e.g., advice on Chesapeake Bay Cap, regional allocation advice, enhance accuracy of coastwide ERPs, something else)
- Are there secondary goals?
- Are the ecosystem management objectives for the Chesapeake Bay the same as those used to develop the coastwide ERPs?
- What tradeoffs is the Board willing to make between the spatial scale/detail of the modeling and the timeline for the next benchmark?
- Would the Board be satisfied with a regional approach that separates MD and VA from the rest of the coast if modeling the Chesapeake Bay separately is not feasible for the next benchmark?

For example, the primary goal could be to provide advice on the Chesapeake Bay Cap by the next benchmark assessment, and the secondary goal could be to provide information to inform regional allocations. In this case, if there were challenges with developing a model to provide regional allocation information in the next benchmark timeframe, the group could switch to an approach that would only provide advice on the Chesapeake Bay Cap. Alternatively, if the Board prioritized regional allocation in addition to the Bay Cap and indicated that they were willing to wait longer for results, the group could delay completion of the benchmark assessment in order to complete that approach.

The TC and ERP WG will need direction from the Board as soon as possible (no later than Annual Meeting) in order to pursue a spatially-explicit modeling as part of the next benchmark stock assessment and follow the current assessment schedule.

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.