

Atlantic States Marine Fisheries Commission

American Eel Management Board

January 23, 2024

4:00 – 5:30 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 (*K. Kuhn*) 4:00 p.m.
2. Board Consent 4:00 p.m.
 - Approval of Agenda
 - Approval of Proceedings from October 2023
3. Public Comment 4:05 p.m.
4. Consider Approval of Draft Addendum VI on Maine’s Glass Eel Quota for Public Comment (*C. Starks*) **Action** 4:15 p.m.
5. Consider Approval of Draft Addendum VII on Yellow Eel Coastwide Cap and Monitoring Requirements for Public Comment (*C. Starks*) **Action** 4:45 p.m.
6. Consider Approval of Fishery Management Plan Review and State Compliance Reports for the 2022 Fishing Year (*C. Starks*) **Action** 5:20 p.m.
7. Review and Populate Advisory Panel Membership (*T. Berger*) **Action** 5:25 p.m.
8. Other Business/Adjourn 5:30 p.m.

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

MEETING OVERVIEW

American Eel Management Board

January 23, 2024

4:00 – 5:30 p.m.

Hybrid Meeting

Chair: Kris Kuhn (PA) Assumed Chairmanship: 10/23	Technical Committee Chair: Danielle Carty (SC)	Law Enforcement Committee Representative: Rob Beal (ME)
Vice Chair: VACANT	Advisory Panel Chair: Mari-Beth DeLucia (TNC)	Previous Board Meeting: October 19, 2023
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, PRFC, VA, NC, SC, GA, FL, D.C, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from October 2023

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

4. Consider Draft Addendum VI on Maine’s Glass Eel Quota for Public Comment (4:15-4:45 p.m.) Action

Background

- In August 2023, the Board initiated Draft Addendum VI to address the quota for Maine’s glass eel fishery for the 2025 fishing year and beyond. The current quota expires at the end of 2024.
- The Plan Development Team met several times to develop the Draft Addendum for Public Comment. Draft Addendum VI considers options for Maine’s commercial glass eel quota level and duration (**Briefing Materials**).

Presentations

- Draft Addendum VI on Maine’s Glass Eel Quota for Public Comment by C. Starks

Board Actions for Consideration

- Approve Draft Addendum VI for Public Comment

5. Consider Draft Addendum VII on Yellow Eel Management and Monitoring Requirements for Public Comment (4:45-5:25 p.m.) Action

Background

- In response to the stock assessment findings that the American eel stock is depleted to historically low levels, and recommendation to reduce yellow eel fishing mortality, the Board initiated an addendum to consider changes to the coastwide cap for yellow eel harvest.
- The PDT met several times to develop the Draft Addendum for Public Comment. The Draft Addendum includes options that consider reducing the coastwide cap for commercial yellow eel harvest using the *I_{TARGET}* tool recommended in the assessment, and the management response if the cap is exceeded (**Briefing Materials**).
- Draft Addendum VII also considers options to modify monitoring and harvester reporting requirements consistent with stock assessment and Technical Committee recommendations (**Briefing Materials**).

Presentations

- Overview of Draft Addendum VII for Public Comment by C. Starks

Board Actions for Consideration

- Approve Draft Addendum VII for Public Comment

6. Consider Fishery Management Plan Review and State Compliance Reports for the 2022 Fishing Year (5:20-5:25 p.m.) Action

Background

- State Compliance Reports were due on September 1, 2023.
- The Plan Review Team reviewed each state report and compiled the annual FMP Review (**Briefing Materials**).
- New Hampshire, Massachusetts, Pennsylvania, District of Columbia, and Georgia have requested and meet the requirements for *de minimis* for their yellow eel fisheries. Florida requested but does not qualify for *de minimis* as the state landings in 2022 exceed 1% of the coastwide yellow eel landings.

Presentations

- Fishery Management Plan Review for the 2022 Fishing Year for American Eel by C. Starks

Board Actions for Consideration

- Approve Fishery Management Plan Review, State Compliance Reports, and *de minimis* requests

7. Review and Populate Advisory Panel Membership (5:25-5:30 p.m.) Action

Background

- Sara Rademaker, an eel aquaculturist from Maine, has been nominated to serve on the Advisory Panel (**Briefing Materials**).

Board Actions for Consideration at the Meeting

- Approve Advisory Panel nomination

8. Other Business/Adjourn

American Eel

Activity level: Low

Committee Overlap Score: Medium (SAS overlaps with BERP, Atlantic herring, horseshoe crab)

Committee Task List

- TC –July 2024 review of Maine’s aquaculture proposal
- TC – September 1st: Annual compliance reports due

TC Members: Danielle Carty (SC, TC Chair), Bradford Chase (MA), Caitlin Craig (NY), Casey Clark (ME), Chris Adriance (DC), Chris Wright (NOAA), Ingrid Braun (PRFC), Jennifer Pyle (NJ), Jordan Zimmerman (DE), Troy Tuckey (VIMS), Jim Page (GA), Keith Whiteford (MD), Kevin Molongoski (USGS), Kimberly Bonvechio (FL), Mike Porta (PA), Patrick McGee (RI), Robert Atwood (NH), Sheila Eyles (USFWS), Tim Wildman (CT), Todd Mathes (NC), Caitlin Starks (ASMFC)

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

**Beaufort Hotel
Beaufort, North Carolina
Hybrid Meeting**

October 19, 2023

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

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INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of August 1, 2023** by consent (Page 1).
3. **Move to adjourn** by consent (8).

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ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)	Kris Kuhn, PA, proxy for T. Schaeffer (AA)
Stephen Train, ME (GA)	Loren Lustig, PA (GA)
Rep. Allison Hepler, ME (LA)	John Clark, DE (AA)
Cheri Patterson, NH (AA)	Roy Miller, DE (GA)
Doug Grout, NH (GA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)	Lynn Fegley, MD (AA, Acting)
Dan McKiernan, MA (AA)	David Sikorski, MD, proxy for Del. Stein (LA)
Raymond Kane, MA (GA)	Shanna Madsen, VA, proxy for J. Green (AA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Phil Edwards, RI, proxy for J. McNamee (AA)	Chad Thomas, NC, proxy for Rep. Wray (LA)
David Borden, RI (GA)	Malcolm Rhodes, SC (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Ben Dyar, SC, proxy for Sen. Cromer (LA)
Justin Davis, CT (AA)	Doug Haymans, GA (AA)
Robert LaFrance, CT, proxy for B. Hyatt (GA)	Spud Woodward, GA (GA)
Craig Miner, CT, proxy for Rep. Gresko, CT (LA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Jesse Hornstein, NY, proxy for M. Gary (AA)	Dan Ryan, DC, proxy for R. Cloyd
Emerson Hasbrouck, NY (GA)	Ingrid Braun, PRFC, proxy for M. Gary
Joe Cimino, NJ (AA)	Chris Wright, NMFS
Jeff Kaelin, NJ (GA)	Rick Jacobson, US FWS
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)	

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

Ex-Officio Members

Mari-Beth Delucia, Advisory Panel Chair	Rob Beal, Law Enforcement Committee Rep.
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Staff

Bob Beal	Jeff Kipp	Emilie Franke
Toni Kerns	Tracy Bauer	James Boyle
Tina Berger	Caitlin Starks	Kristen Anstead
Madeline Musante	Katie Drew	Chelsea Tuohy

Guests

Debra Abercrombie, US FWS	Margaret Conroy, DE DNREC	Pat Geer, VMRC
Max Appelman, NOAA	Caitlin Craig, NYS DEC	Lewis Gillingham, VMRC
Pat Augustine	Dustin Delano, NEFSA	Joseph Grist, VMRC
Richard Balouskus, RI DEM	Julie Evans	Pat Keliher, ME (AA)
Carolyn Belcher, GA DNR	Sheila Eyler, US FWS	John Maniscalco, NYS DEC
Jessica Best, NYS DEC	Cynthia Ferrio, NOAA	Todd Mathes, NC DEQ
Alan Bianchi, NC DMF	James Fletcher, United National	Joshua McGilly, VMRC
William Brantley, NC DEQ	Fishermen's Assn.	Patrick Moran, MA
Jeffrey Brust, NJ DEP	Tony Friedrich, ASGA	Environmental Police
Haley Clinton, NC DEQ	Marty Gary, NY (AA)	Allison Murphy, NOAA

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Guests (continued)

Thomas Newman
John Nielsen, Sly Fishing
Outfitters
Emily Paribello, NYS DEC
Jeffrey Pierce, MEFA
Jennifer Pyle, NJ DEP
Jill Ramsey, VMRC

Kathy Rawls, NC (AA)
Harry Rickabaugh, MD DNR
Jason Rock, NC DMF
Kirby Rootes-Murdy, BOEM
Mike Ruccio, NOAA
Alexandra Schwaab, AFWA
Somers Smott, VMRC

Scott Travers, RI Saltwater
Anglers Assn.
Keith Whiteford, MD DNR
Darrell Young, MEFA
Daniel Zapf, NC DEQ
Jordan Zimmerman, DE DFW

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The American Eel Management Board of the Atlantic States Marine Fisheries Commission convened in the Rachel Carson Ballroom via hybrid meeting, in-person and webinar; Thursday, October 19, 2023, and was called to order at 8:30 a.m. by Chair Phillip A. Edwards III.

CALL TO ORDER

CHAIR PHILLIP A. EDWARDS III: I would like to call to order the American Eel Management Board meeting. My name is Phil Edwards; I'm the Administrative Proxy for Rhode Island. Joining me today from the Commission is Caitlin Starks and Kristen Anstead. Also joining me today is Major Robert Beal from Enforcement, and Mari-Beth DeLucia representing the Advisory Panel from the Nature Conservancy.

APPROVAL OF AGENDA

CHAIR EDWARDS: The first item on our agenda is the Approval of the Agenda. Are there any proposed changes or modifications? If so, please raise your hands. Anything online? Seeing none; the agenda is approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR EDWARDS: Moving on to the approval of the proceedings from August of 2023, which was in your materials. Are there any corrections or edits? Seeing none; it is approved by consent.

PUBLIC COMMENT

CHAIR EDWARDS: Next up is public comment. We have one person signed up for public comment, Jeff Pierce.

MR. JEFFREY PIERCE: Chairman Edwards, members of the American Eel Board, my name is Jeffrey Pierce. I'm here on the behalf of the Maine Elver Fishermen's Association, that sent meeting notes and information for you to review. In July we provided the rationale for reviewing and increasing the glass eel quota for fishermen in Maine waters.

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At that time, we provided a summary of restoration activities. We were on the mainstem of the Penobscot River, completed since 2012. It selected some of their fish passage improvements that have taken place in other waterways in the state of Maine since 2012. Please know, there has been many other fish passage improvements in the region during this time, but they are not shown on this table.

We plan on submitting further summaries that will help qualify these projects, the summaries attached include dam removals, fish construction and passage improvement that have impacted 380 miles of rivers and streams and over 35,000 acres of lake. American eels at various stages of their life benefit from these projects. Thank you for reviewing this information, and we hope to be able to use the conservation credits that were set forth in Addendum IV. Thank you.

CHAIR EDWARDS: Thank you, Jeffrey for your public comment. Is there any other public comment that is not on the agenda? Anything online? Okay. We'll move to Agenda Item Number 4.

PROGRESS UPDATE ON DEVELOPMENT OF DRAFT ADDENDA TO ADDRESS YELLOW EEL COMMERCIAL QUOTA AND MAINE GLASS EEL COMMERCIAL QUOTA

CHAIR EDWARDS: Caitlin Starks will provide us with a progress update on the development of Draft Addenda to address the yellow eel commercial quota, and the Maine glass eel commercial quota.

MS. CAITLIN STARKS: This will just be a short update on what the PDT has been working on since the last meeting. Starting off with the background. In August, the Board approved the recent American Eel Benchmark Stock Assessment for management use, and the assessment found that the American eel stock is depleted, and recommended that yellow eel catch be reduced.

At that same meeting, the Board initiated two addenda. The first was in response to the stock assessment findings and recommendation, and it

addresses the coastwide catch of yellow eel. The second is to address Maine’s glass eel quota, because the current quota expires after 2024. These are the motions that initiated these two addenda.

For yellow eel the Board specifically asked the PDT to consider options that use the ITARGET tool that was used in the assessment to recommend various coastwide caps. I’m going to start off with the development of the Draft Addendum for Maine’s glass eel quota, since it’s a little faster. But the PDT has met once to discuss the development of the Addendum, and potential management options to include.

The PDT all agreed that the status quo of 9,688 pounds is a valid option to be considered, and should be included, and one PDT member felt that an option should also be included to consider reducing Maine’s glass eel quota, because the assessment indicates that the stock is depleted and the Board is considering reducing the catch of yellow eel. The PDT also talked about options for how long the Maine glass eel quota should stay in place, and whether there should be a sunset clause or not.

One suggestion was that the quota should be reevaluated when there is a new stock assessment. Because there was only one meeting so far, the PDT has not made any more specific recommendations, but is planning to further review the Addendum V provisions that are relevant to glass eel, and determine if the current addendum should consider any improvements to those, such as the reporting requirements and the allowance for additional restoration projects. This is a potential timeline for the next steps of the development of the glass eel Addendum.

I think it’s feasible to get a draft document to the Board at the winter meeting, so the Board could consider that Draft Addendum for public comment. If approved at that meeting, hearings and the public comment period could take place in February or early March, and the

Board could then review the public comment, and consider the Addendum for final approval at the Spring 2024 Commission meeting.

If the Addendum is approved at that meeting, then it would give adequate time for the new quota to be implemented before 2025. Moving on to the yellow eel Draft Addendum. The PDT for this action met twice in September, and they’ve started to draft potential management options for yellow eel.

Status quo will be the first option, and the PDT also recommended that one option for the coastwide cap be based on the ITARGET configurations that was recommended in the stock assessment, and that a second option for the coastwide cap to be based on using the ITARGET tool with the later reference period, which is 1988 through 1999. Just as a reminder, when using ITARGET there are three variables or “knobs” that can be adjusted to configure the tool, and these are the reference period, the multiplier and the threshold.

The reference period is meant to be a time period where the population is stable or at a desirable abundance level. The multiplier determines the level of abundance that management is aiming to achieve. If the multiplier is set to 1, then that means you’re aiming to achieve the same abundance from the reference period.

If you set the multiplier to 1.25 that means you’re aiming to achieve an abundance that is 25 percent higher than what it was during the reference period. Then the threshold value is a proportion of the ITARGET value that depends on the goals of the fishery. A threshold of 0.5 is less conservative, and would generally result in higher catch caps, whereas a threshold of 0.8 was recommended by the New England Fishery Science Center as a more conservative value.

These are the two options that the PDT is recommending for inclusion in the Addendum at this point. The top option is what was recommended in the assessment, in terms of the ITARGET configuration, so it uses the reference period of 1974 through 1987. That is the higher

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abundance regime that was identified in the stock assessment, and it uses a multiplier value of 1.25, meaning it aims to achieve an abundance 25 percent greater than the abundance during those years, and a threshold value of 0.8, and with those values the ITARGET recommends that the catch in 2020 should not have exceeded 202,453 pounds.

So, 2020 is the last year of data in the assessment, and that is why we're using this year from ITARGET. The bottom row is then the second option that the PDT recommended, and this one uses the later reference period 1988 to 1999, a multiplier of 1.5, and a threshold of 0.5.

That resulted in a recommended catch cap of 509,780 pounds. Then to provide a better picture of how those two options are working, this is the graph of the yellow eel abundance index, which is the dotted gray line and their landings, which is the black line, and the two reference periods are shown in the shaded areas with the blue one being the earlier reference period, where the abundance was higher, and the orange area is the later reference period when the abundance was lower.

These two reference periods were based on distinct regimes that were identified in the assessment. For that first option that I just showed you, it uses the abundance levels in the blue shaded areas as a reference, and it's aiming to achieve a 25 percent increase from that. For the second option, it uses the abundance levels in the orange area, and is aiming to achieve a 50 percent increase from that level.

Then in addition to those options, the PDT also made some general recommendations for the Draft Addendum. First, they recommend that in each option it be clear what abundance level it's aiming to achieve. This would be done by explaining the relationship of that multiplier and reference period. The PDT also recommends that the Addendum consider

additional options for what the management response would be if the catch cap is exceeded, in addition to status quo from Addendum V. Then lastly, when the catch cap is reevaluated in the future, it's recommended that whatever ITARGET configuration is selected by the Board, that should not be changed, so we have a solid baseline to compare to, and instead additional years of landings and index data could just be added and run through ITARGET to update the catch cap recommendation.

To help the PDT further develop the Addendum options, they are looking for some input from the Board in a few specific areas. First, they want to know what abundance level the Board is looking to achieve, so is it 25 percent higher than the higher abundance regime, or 50 percent higher than the lower abundance regime, or something else?

Does the Board want to reconsider using state by state quotas to control landings, and if not, how would the states then control landings so that the cap is not exceeded? The PDT noted that Maryland's landings alone are close to some of those ITARGET recommended catch caps, so this warrants some consideration by the Board.

Then, are there limits around what catch caps the Board is willing to consider, and if the catch cap is exceeded, does the Board want to stick with the same process that was established in Addendum V, or consider other options for paying back quota? Then lastly, how often should the catch cap be reevaluated?

On this topic the PDT did recommend that it should be at least three years from when it's implemented, no less time. Then last here, similar to glass eel, this is a timeline outlining the fastest possible schedule for moving this Addendum forward. This would involve considering the Draft Addendum for public comment at the 2024 winter meeting, and then holding public hearings and a comment period during February and March.

If that goes through, then the Board could consider the public comments at the spring meeting, and consider final approval of the Addendum. The

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Board could then set the implementation date, but this would probably allow the states enough time to implement any changes by 2025. With that I can take any questions.

CHAIR EDWARDS: A great update, questions for Caitlin. Craig.

MR. CRAIG D. PUGH: Effort values, how are they considered in this? I don't see any information about that. That seems to be a huge question since the 1980s effort has dropped off. I know here lately dropped off even more. One would be bait resources and Number 2 would be marketability. Marketability has fell off lately, especially since COVID, to back to 1980 levels of sales driving the market to the point where fishing for eel is unfeasible.

Then of course, that results in no landings. It doesn't necessarily mean there aren't any fish, it doesn't mean there aren't any eels, it just means that we're not fishing. How does that factor into these findings you have?

MS. STARKS: The PDT has not discussed effort levels as a part of this so far, because the task from the Board was specifically asking to look at using the ITARGET tool to set the catch cap, so that is not something the PDT discussed.

CHAIR EDWARDS: John Clark.

MR. JOHN CLARK: Thanks for the presentation, Caitlin. Just following up on Craig's point. Is there really any pressing need to move ahead with this yellow eel addendum at this point? I've spoke to the largest buyer of eels on the east coast. There is no market anymore for yellow eels. I now a lot of the data we get is actually based on the commercial fishery. It just seems like we're looking for a problem that doesn't exist right now. When the fishery comes back, if it comes back, I mean it seems like this could be postponed until we start seeing more interest in catching eels.

MS. STARKS: I think the Board initiated this Addendum because the stock assessment found that the catch levels, even in the last few years where they've been lower, are too high, in terms of comparing them to the recommended catch that comes out of the ITARGET tool. If we want to change course, then I would need direction from the Board.

CHAIR EDWARDS: John Clark.

MR. CLARK: If I could just follow up. I mean the stock has been depleted, based on the assessments we've done, since we've been, this is what the third benchmark assessment? Each time, or the second, each time it has been we have deficiency in the data. Each time we do it we just have like five more years of deficient data.

I just don't want to see us getting into a situation where we have a population of eels out there that can sustain more, and then we end up taking management actions unnecessarily, when and if a market for eels ever comes back. Anyhow, just putting that out there. I don't see any pressing need to pursue this further at this time.

CHAIR EDWARDS: Lynn Fegley.

MS. LYNN FEGLEY: Thank you, Caitlin, and I apologize, because I am maybe a little bit less prepared than I wanted to be. But I just wanted to ask about the multiplier value and the reference period. Is the PDT planning to use the 1.25 multiplier with the 1988 to 1999 reference period? Was that the one that resulted in a higher cap than what we currently have?

MS. STARKS: There are two options, Madeline if you could put Slide 8 up, that the PDT has discussed. One of those uses the earlier reference period with the 1.25, and the other uses the later reference period with the 1.5 multiplier. However, as with all of our addenda, if these two options were in the document for public comment, then the Board could pick other options between those values.

CHAIR EDWARDS: Lynn.

MS. FEGLEY: Yes, because I think that is going to be important to include, because in my mind, I mean the idea here right, if you're aiming to get higher than some sort of condition you've seen in the past. From my perspective, trying to get ourselves 1.25 the level of that most recent reference period is a really good incremental start.

You know sort of to John's point, you know we've got a lot of market conditions here, and it seems like given the uncertainty around whether management action is really going to exert and enforce at all on changing the trajectory of the stock. One way to go at it is to take your step, take smaller incremental steps. I don't remember what the cap result was when you did 1988 to 1999 with a 1.25 multiplier. But I would love to see that in the document.

MS. STARKS: Thanks, Lynn, we can add that.

CHAIR EDWARDS: Dan McKiernan.

MR. DANIEL MCKIERNAN: I would like to follow upon the comments coming from the Delaware delegation concerning effort. I don't know where the answer lies, maybe it's from the TC. Is it possible to describe the reduction in effort? Do the states collectively have effort data that could corroborate what they're describing as a serious drop off in effort?

CHAIR EDWARDS: Kristen.

DR. KRISTEN ANSTEAD: Several states submitted commercial CPUEs and we put them in the appendix of the assessment, and they are not entirely fresh in my mind, but I believe most of them were declining, with the exception of Maryland. But we don't have extensive effort data.

MR. MCKIERNAN: If I could follow up. There is another species board, the Horseshoe Crab Board that I think could really use the holistic

view of the use of that organism as bait, and it would be really valuable to crossover. Now there is a third species, which is the whelk, that uses the horseshoe crabs as bait.

At some point I think we need to kind of rise up above just the single species challenges, and maybe ask the states to describe the effort levels of these fisheries that use the controversial horseshoe crab. I'll bring that up at the policy board, but thank you for that.

CHAIR EDWARDS: Rick Jacobson.

MR. RICK JACOBSON: In many fisheries I can understand taking an incremental approach, for instance applying a 1.25 multiplier to a lower abundance reference period of '88 to '99. But in this case, where we have a species that has been considered for a listing under ESA here in the United States. It has been listed European eels in Europe, it's considered under CITES, and in the absence of a real active market and fishery, it seems counterintuitive to explore an incremental approach when we have an opportunity to aim for a higher target. I just question the wisdom of including the 1.25 multiplier for the '88 to '99 period.

CHAIR EDWARDS: Shanna.

MS. SHANNA MADSEN: I'm going to go back to question time. I don't know that we've moved on to comments. Caitlin, can you remind us what, so you're asking us a question about whether or not we want to use the same process established in Addendum V, if we exceed the cap. Can you remind us what the process is for exceeding the cap from Addendum V?

MS. STARKS: Under Addendum V, which I actually have a slide on this so I'll put it up. Only states withwith, so if the cap is exceeded, then the Board would initiate an addendum to reduce landings to or below the cap, and a PDT could consider actions to reduce harvest back to the cap. But only the states with greater than 1 percent of landings, in the years when the management trigger is tripped,

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would be responsible for reducing their landings to achieve the coastwide cap in the subsequent year.

States with greater than 1 percent of landings would work collectively to achieve an equitable reduction to the coastwide cap. There is a tree in Addendum V that gives all of the details for exactly how each step would work, depending on when the overage is and how much the overage is.

CHAIR EDWARDS: Shanna.

MS. MADSEN: Just a quick follow up to that. Another question that you guys have asked us that I just want a little bit of clarification on is, if we want to reconsider the use of state-by-state quotas, can you kind of remind us? I know that this has come up previously. I just want to make sure that my understanding is correct. Last time we talked about this, I think the states were concerned about administrative burden. Is that right on why we did not want to look into doing state by state quotas?

MS. STARKS: I believe that is accurate.

CHAIR EDWARDS: Are there any other questions for Caitlin? Are there any questions online? John Clark.

MR. CLARK: Not so much a question, I think Dan was asking about effort, and we've kept catch per unit effort in Delaware since we started the plan. We have seen changes over time, but a lot of it was related to when female horseshoe crabs were no longer available to use as bait. Then the other things happened related to effort, it's an open license in Delaware. A lot of the older people that, what do you call yourself, Craig, young/old?

MR. PUGH: New old guy.

MR. CLARK: Yes, the new old guys have stopped dealing, some young people will get into it or new to it. They don't have good bait,

they don't really know what they're doing, and the catch won't be as good. There has been some change there, but overall, it really hasn't changed that much.

CHAIR EDWARDS: Are there any other questions? Caitlin, do you have what you need to bring back to the Plan Development Team? Shanna.

MS. MADSEN: Yes, so if we're going to move into comment period, and it seems like you've been given some tasking from some of the other states. Something that I would like to see is the first reference period with the 1.25 multiplier, but I would like to see the threshold at 0.5. That kind of seems to be closest to what the assessment had suggested that we look into, but I'm guessing that it probably falls within the two options that you've put before us.

However, I think it's important for us to not just kind of pick between the two options, but to understand why we're taking those options. One suggestion that I would give to the PDT is to maybe try to run through kind of these various scenarios. I know you guys don't want to give up, you know you don't want to do a ton of crazy scenarios, but I think that seeing how those levels vary, and what thresholds, time periods, multipliers they are associated with would make good sense for all of us.

MS. STARKS: Just to respond to that. I put a slide up with all of the sensitivity runs that were done for the assessment, and we are considering these. You can see in this table how the recommended catch cap differs, based on changing the threshold value. Those first three rows, if you look at that. That is the earlier reference period with a 1.25 base multiplier.

Changing the threshold value gets you a pretty significant range of different catch caps. I believe the SAS recommended using that threshold value to adjust the ITARGET tool, rather than the reference period and multiplier, but the PDT did want to look at using that closer reference period from 1988 to 1999.

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

CHAIR EDWARDS: Shanna.

MS. MADSEN: Just a quick follow up. Thank you, so much, Caitlin, I think that this is really helpful. One thing that I would recommend, maybe to the PDT is, I like seeing this range of options. However, I think it's really important when this document ends up going out to the public, or even ends up coming back to the Board, that it has some justification and reasons for, like you just said, this is what the SAS has recommended that we use, in order to vary these catch caps. I would love to just see some of that in the document when it comes back to us.

CHAIR EDWARDS: Are there any other comments from the Board for Caitlin to bring back to the Plan Development Team? John Clark.

MR. CLARK: Sorry, Mr. Chair, I'm just repeating what I say in a lot of ways, but it seems like we want to have fun with numbers here, and get to an option that is closer to the cap we have now, which begs the question, why don't we just put this all on hold, is my comment.

CHAIR EDWARDS: Are there any other comments or questions? Seeing no other comments or questions, we're going to move on to Agenda Item Number 5, the Advisory Panel Report by Mari-Beth DeLucia.

ADVISORY PANEL REPORT

MS. MARI-BETH DeLUCIA: Good morning, everybody. I'm just going to give a brief overview of the Advisory Panel report, and I guess one comment I really want to make is there was only three members on the call, so it's a small AP, and I'll mention more about that in a minute. Myself, Mitch Feigenbaum, and Richard Stoughton from South Carolina were on the call, as well as our chairman. On that call, Kristen gave an overview of the stock assessment, and Caitlin did an update to the Addendum on the call. Most of the comments

that are going to follow are usually one AP members comments, not necessarily the whole AP agreeing with each other.

Basically, the staff recommends that the states look at the membership of the AP, and see if we can get some more participation. I know when I first started this almost six years ago, we had about 10 or 15 people around the table, and now calls are two or three people, which isn't really an effective AP.

One AP member felt that the stock assessment results are heavily driven by the fishery dependent data, which we've talked about already this morning, and a low catch can be influencing the results. Another AP member felt this is not enough data to call the stock depleted. One of the choices that we did agree, the entire AP agreed on, was that the young of year surveys, you know are really important.

But we have a lot of them, and a lot of them don't seem to be showing us anything. Maybe the TC could evaluate and identify ones that are more meaningful, and kind of focused our resources on those, not so much quantity but the quality young of year surveys. There was a suggestion that some genetic work be done, so that we can look at the spawning stock, or how reproductive the stock is.

A suggestion was made that the yellow eel addendum should include an option for no change, I think Mr. Clark has suggested that as well this morning. It seems as if the status quo seems effective, and the catch is not going to increase due to the market, or the lack of a market. Even though the price for eels have gone up worldwide over the last five or six years, the demand is being supplied by European aquaculture farms.

That seems to be what is driving the lack of a market here in the states, as well as COVID and a lot of the issues we've had over the last few years. It is clear, it seems like the low harvest does not equate to low abundance necessarily, and it's just decreased effort. I think there are a lot of folks that would like to see some effort, and that was a strong

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suggestion from the AP, put into some of the analyses.

Back to the AP, I've been the Chair for the last six years. I can't remember who asked me to be the Chair, but it was supposed to be for two years, which was fine. But the Advisors that were on the call would like to elect a new Chair. Caitlin mentioned that they understand that, but there is a lack of participation, so that is a challenge.

As I mentioned, participation has been nearly nonexistent in the last two years, and there are two or three calls, you now often it's Mitch and myself, we kind of sometimes negate each other on the call. Last time there was only two commercial fishermen on the call, and it definitely wasn't, it was two people from Pennsylvania and one from South Carolina, so it's a very small group on the call. That's all I have, any questions?

CHAIR EDWARDS: Thank you, Mari-Beth. Are there any questions for Mari-Beth? Online? Okay, Other Business. Is there any other business to be brought before this Board? I would just like to add, this is the end of my term as Chair, and I would like to welcome Kris Kuhn from Pennsylvania; he will be the Chair in 2024.

ADJOURNMENT

CHAIR EDWARDS: Could I have a motion to adjourn this meeting, John Clark, could I have a second, Shanna? Thank you, this meeting is adjourned.

(Whereupon the meeting adjourned at 9:30 a.m. on October 19, 2023)

"Enhancing Eel Stock Assessment Methods through Collaborative Efforts with the Eel Industry."

"At present, the status of the eel resource in North America is still classified as either depleted or unknown. I appeal to the members of the A.S.M.F.C. to take a step back and contribute to elevating our data collection efforts to the next level. Due to insufficient funding for eel population studies, I propose a collaborative partnership with the industry to enhance our understanding of the eel population through the use of IP technology for data collection" and a more efficient monitoring of the adult eel population through more sophisticated trapping methods at pre-approved locations.

"I would like to acknowledging the success of one of the A.S.M.F.C. policies.

The A.S.M.F.C. implemented a minimum eel size of 9 inches, resulting in a remarkable 50% reduction in piece count harvesting. To put it simply, harvesting 200 tons of eels today would equate to the same piece count as harvesting 100 tons in 1998. By enforcing the 9-inch minimum size, the eel fishing piece count quota has effectively been halved. The cumulative impact of this measure alone is evident in the increased abundance of baby eel recruitment in Maine and Canada over the last few years."

"Is compromised eel data leading to a misunderstanding of the coastal eel population?"

Upstream Eel Passage Data.

The true value of this data lies in the fixed locations of dams and the consistency in collection methods, minimizing the introduction of human error and ensuring the integrity of documented trends.

However, there are challenges:

Solutions for upstream eel migration across dams are technically complicated, with many non-eel-related factors influencing the location of an eel ladder. Even with the best intentions, upstream migrating eels face the challenge of accessing the eel ladder, especially in locations with a robust coastal eel habitat and population, where only a few eels may be able or willing to migrate **(1)**.

The default compromised data indicator, particularly in areas with a large coastal eel habitat, is significant. The majority of the coastal eel population may never intend to go upstream in the first place. What we measure here is the seed stock data for the inland eel population, not an accurate representation of the health of the coastal eel population. Using this acquired data to assess the health of the coastal eel population perpetuates the illusion of a distressed coastal eel population" **(2)**.

Baby Eel Recruitment Data:

The baby eel recruitment data from Maine and South Carolina's eel harvests offers valuable insights, but caution must be exercised due to inherent biases arising from incomparable fishing efforts. As a result, a nuanced interpretation is necessary to accurately grasp the significance of this data **(3)**.

Present Status of Baby/Elver Eel Recruitment Data:

Currently, the baby/elver eel recruitment data remains largely absent, presenting a significant gap in our understanding. This void exists because there has been a lack of consistent and cohesive baby/elver eel recruitment surveys that could truly contribute to comprehending the resources. What is crucial is the

implementation of data collection at fixed locations over an extended period, recognizing that baby/elver eel recruitment occurs over a prolonged duration.

The fraud of using adult eel landing data as an eel population health indicator.

The key points and conclusion showing the fraud of such an assumption can be summarized as follow:

Inefficiency of Eel Trapping:

If eels where an invasive species needed to be wiped out an eel trap would be the very last tool in our tool box because it is inefficient and unreliable for harvesting eels. The ineffectiveness depends on various factors such as natural feeds, fishing bait used, eel trap design, limited size of funnel. **The inefficiency of the eel trapping method in a natural rich environment dictates the viability of eel exploitation not the presents or abundance of the eel resources.**

Eels are not scavengers but selective eaters with a preference for live bait, in a rich environment the effectiveness of an eel trap is reduced to a minimum and once the bait spoils the effectiveness is zero.

What is needed for data collection purpose is permission for industry to use a more effective technology at pre-approved locations along the East Coast reflecting the real health of the eel population not like in the present a kind of lottery mechanism method the right technology exists and would give ASMFC members instead of the present distorted a true picture of the eel population.

Fishermen's long-term Investment

Over the last decades the eel market has shifted, with a declined demand has become economically challenging, with marginal returns on investment, incentive to reinvest hasn't been there.

Prices of the most efficient eel baits like horseshoe crab and razor clams have risen since the nineties by 500% to 700%, if the eel prices had increased at the same rate the eel market price today would be around \$ 15 /Lbs. at these market prices we would have seen much higher landings.

Eel trap design by default exclude a % of the eel population in favor of conservation.

Not all eel trap designs are created equal some are good for eel production but exclude the larger sizes however all designs are limited in producing the largest eels because of the funnel size legal limits.

Catfish hoop nets with large funnels allows the largest eels to enter, in the past, N.C. and Louisiana catfish fishermen producing volume of not silver large females too big in size to enter an eel trap.

The fact that catfish hoop nets allowed the capture of the largest eels in volume in the coastal waters challenges the assumption that commercial eel traps are representative of the entire eel population, especially regarding larger not being silver eel individuals.

Deserted eel harvesting territories:

The inefficiency of eel trapping in a rich environment and live eel collection logistics over a certain distance, can decide the economic viability of eel fishing hence 90% of the coastal eel population is today a by default eel sanctuary.

This includes the often-overlooked eel territory in the Gulf of Mexico, drawing from my experience collaborating with local fishermen in Louisiana, Mississippi, Alabama, and the Florida Panhandle, I've gained a deep appreciation for the vast potential of eel resources in this region. The coastal eel populations here play a pivotal role in sustaining a healthy eel population in North America. It is crucial to recognize that their contribution has been significantly underestimated, and optimism regarding a substantial eel population is well-founded.

Aquaculture Policies & Inland Eel Population:

In Europe, eel aquaculture plays a crucial role in addressing the challenges of the eel population by incorporating the restocking of inland waters with farmed juvenile eels. In the past, the successful restocking of juvenile eels from my RAS eel-farm in Virginia has demonstrated the potential of this approach. Although the restocking concept remains relevant, it may require adaptation under a different structure to become a significant contributing force for the inland eel population.

A.S.M.F.C. deserves commendation for putting forward policies regarding eel aquaculture. However, the industry, with the exception of Maine, faces significant barriers **(4)**. One notable challenge is the lack of existing baby eel fisheries, leading to a deficiency in local data on baby eel recruitment numbers or trends. Addressing these barriers is crucial for the sustainable development of eel aquaculture and its positive impact on the inland eel population.

Proposal for Aquaculture Quota and Integrated Data Collection Fishery:

Given the absence of eel aquaculture in all member states except Maine, this proposal suggests integrating aquaculture quotas and data collection fishery quotas to enhance resource management. The integrated approach aims to:

1) Year-Round Baby Eel/Elver Data Collection:

Implement year-round baby eel/elver data collection using user-friendly and efficient IP technology **(5)** at pre-approved locations in participating states.

Utilize the collected data to inform management decisions.

2) Restocking and Resource Improvement:

Require the industry to restock juvenile eels of 3 to 5 grams, contributing to resource enhancement.

Grant access to industry in exchange for their commitment to improving resources.

3) Infrastructure Development:

Establish the necessary infrastructure for the supply of baby eels to support future candidates in the aquaculture industry.

4) Qualified Aquaculture Applicants:

When a qualified aquaculture applicant enters, they become the beneficiary of the data collection fishery.

Ensure that year-round baby eel/elver data collection continues under the aquaculture operation.

Law Enforcement Efficiency:

Alleviate law enforcement burden by deploying tamper-free equipment at pre-approved locations.

5) Market Allocation and Ownership:

In the absence of eel aquaculture in participating states, market the allotted quota on the open market during the baby eel season.

Document and release collections beyond the established quota and continue outside the season.

Service aquaculture operations through the data collection fishery, but ownership of the collection permit should reside independently **(6)**.

6) Achieving Year-Round Data and Industry Development:

Implementing the integrated data collection fishery will address the urgent need for year-round baby eel/elver recruitment data along the East Coast **(7)**.

Serve as a foundational step for the future eel aquaculture industry, making restocking inland waters a matter of policy funded by the industry and simultaneously enhancing resources.

This comprehensive approach seeks to synergize aquaculture and data collection efforts, paving the way for sustainable resource management and the development of a thriving eel aquaculture industry.

Conclusion:

The current data pool perpetuates the illusion of a distressed coastal eel population, despite evidence to the contrary—such as the abundance of baby eel recruitment observed in both the USA and Canada over the past few years.

Needed is collaboration with industry shifting the eel data collection mechanism into a collective effort to demonstrate year-round baby eel recruitment/elver and adult eel population trends. The latter coupled with strategic restocking efforts, would provide the A.S.M.F.C. with new tools and comprehensive data crucial for effective management—an outcome that benefits both resources and industry, creating a win-win scenario.

I sincerely hope that the comments and proposals presented are received with an open mind. Please accept my advance gratitude for your time and consideration.

Willy Bokelaar / emergo22@hotmail.com

Exhibition #1: The Challenge of Upstream Passage

The journey for eels to achieve an upstream passage is fraught with challenges. To embark on this journey, they must locate the entrance of an eel ladder strategically positioned in what is often the most unnatural and predator-laden environment. We task them not only to enter this passage but also to ascend it—sometimes at a degree angle so steep that only the smallest of eels are both able and willing to undertake this arduous ascent.

Exhibition #2: Eel Opportunism and Coastal Population Dynamics

Eels are inherently opportunistic creatures. In locations with a robust coastal population, the brackish waters offer a wealth of feeding opportunities, far surpassing what the inland waters can provide. This abundance sustains a dense coastal eel population. The evidence is apparent in the brackish waters bordering the ocean, especially in the Southeastern USA, where shrimp houses discharging shrimp heads attract a mix of conger and predominantly female *Anguilla* eels to eel traps.

Past experiences strongly suggest that the numbers recorded in upstream eel ladders represent, at best, a mere single-digit percentage of the eel population present in nearby tributaries. Therefore, drawing conclusions based solely on eel passage data at locations with substantial coastal eel habitats is crucial, primarily for the benefit of understanding the health and dynamics of the inland eel seed stock.

Exhibition #3: Rethinking Resource Distress

Imagine if every member state replicated the successful and equitable quota fishing efforts observed in Maine. Would we still conclude that the resource is in distress? It's essential to recognize that most member states boast a robust and healthy baby eel recruitment, readily able to meet Maine like quotas. (Disclaimer: While not claiming uniformity in baby eel resources across all states, the assertion here is that they possess more than presently acknowledged.)

The crucial missing piece is a robust mechanism for consistently measuring coastal baby eel recruitment data over an extended period at fixed locations. Such a mechanism would serve to monitor trends, providing a more comprehensive and accurate understanding of the abundance and health of baby eel populations along the coast.

Exhibition #4: Empowering Eel Aquaculture in the USA

The use of hormones to feminize eels stands as a critical practice in the eel farming process in Asia, a technique currently prohibited in the USA. This restriction places American eel aquaculture at a competitive disadvantage. Until eel feminization becomes feasible through either technological advancements or a shift in policies, the industry faces challenges.

Implementing strategic steppingstones, such as establishing a data collection fishery to produce essential baby eel data, and fostering collaboration between government entities or NGOs and the aquaculture industry for juvenile restocking, could prove transformative. This collaborative effort holds the potential to rapidly cultivate a healthy inland eel population in a matter of years, as opposed to the extended timeline of decades. Additionally, the indirect constructive consequence of the data collection fishery's established infrastructure further enhances the prospects for sustainable eel aquaculture in the USA.

Exhibition #5: Revolutionizing Eel Data Collection

Introducing a patented and compact technology—a highly efficient baby eel and elver harvesting trap, an innovative upstream elver passage solution, and an independent collection device designed to be tamper and poaching-proof. This user-friendly device requires no specialized fishing skills, allowing it to be placed and operational within a matter of minutes. It is capable of functioning in the most challenging environments, surpassing the accessibility limitations of traditional fyke-nets.

Transforming any fixed location, such as private or public docks, marinas, and waterfront properties, into a 24/7/365 collection station becomes a feasible reality with this technology. Member states will face no challenges in identifying suitable locations to execute the data collection fishery efficiently. Additionally, this versatile device can operate on either solar or deep cycle battery power, featuring a 12-volt bilge pump for enhanced functionality.



Baby eel / elver trap shown here on dry land normally it would be submerged.

Exhibition #6: Ensuring Active Engagement in Aquaculture Baby Eel Collection

Addressing issues such as those observed in North Carolina, where aquaculture baby eel collection permits are granted but licensees remain inactive, is essential. Implementing effective measures to ensure permit holders actively engage in the intended activities is crucial for the success and integrity of the data baby eel collection program.

Exhibition #7: Unveiling the Prolonged Phenomenon of Baby Eel Recruitment

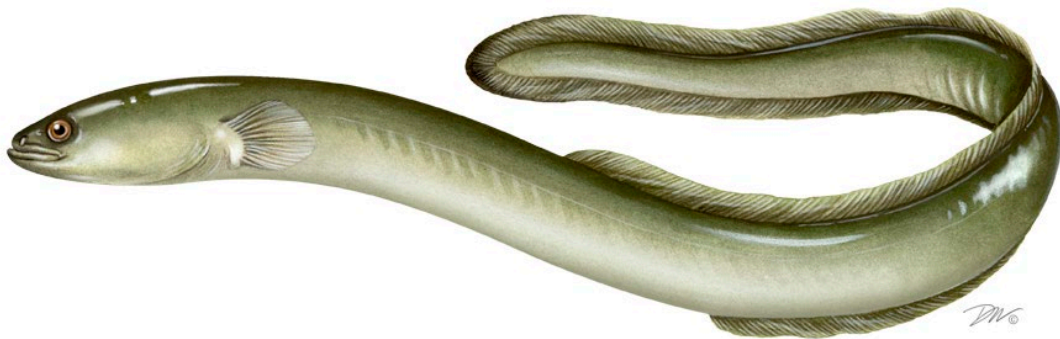
Baby eel recruitment, far from occurring over a brief period, unfolds as a prolonged migration extending over a much longer timeframe. In the Caribbean, the harvesting of baby eels takes place year-round, with a peak during a 5-month period. However, the reality is that recruitment happens consistently throughout the entire year. This pattern is mirrored in the USA, though the documentation and research on this phenomenon are currently insufficient.

Late-season baby eel migration coincides with warm water temperatures, marking the onset of feeding; regardless of their geographic location resulting of juvenile eels migrate upstream from the ocean. Simultaneously, pigmented baby eels can be observed upstream inland during late fall—an intriguing occurrence that, while not fully understood, undeniably takes place. This underscores the pressing need for a comprehensive data collection fishery to shed light on these events enhancing our understanding.

Atlantic States Marine Fisheries Commission

**DRAFT ADDENDUM VI TO THE INTERSTATE FISHERY
MANAGEMENT PLAN FOR AMERICAN EEL**

Commercial Glass/Elver Eel Management



This draft document was developed for Management Board review and discussion. This document is not intended to solicit public comment as part of the Commission/State formal public input process. Comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. If approved, a public comment period will be established to solicit input on the issues contained in the document.

January 2024



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Public Comment Process and Proposed Timeline

In August 2023, the American Eel Management Board initiated the development of an addendum to the Interstate Fishery Management Plan (FMP) to address the Maine commercial quota for glass eel starting in the 2025 fishing season. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of American eel, the addendum process and timeline, and a statement of the problem. This document also provides management options for public consideration and comment.

The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is **XX, XX, 2024 at 11:59 p.m.** Comments may be submitted at state public hearings or by mail or email. If you have any questions or would like to submit comment, please use the contact information below.

Mail: Caitlin Starks, Senior FMP Coordinator
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Email: comments@asmfc.org
(Subject: Draft Addendum VI
Phone: (703) 842-0740

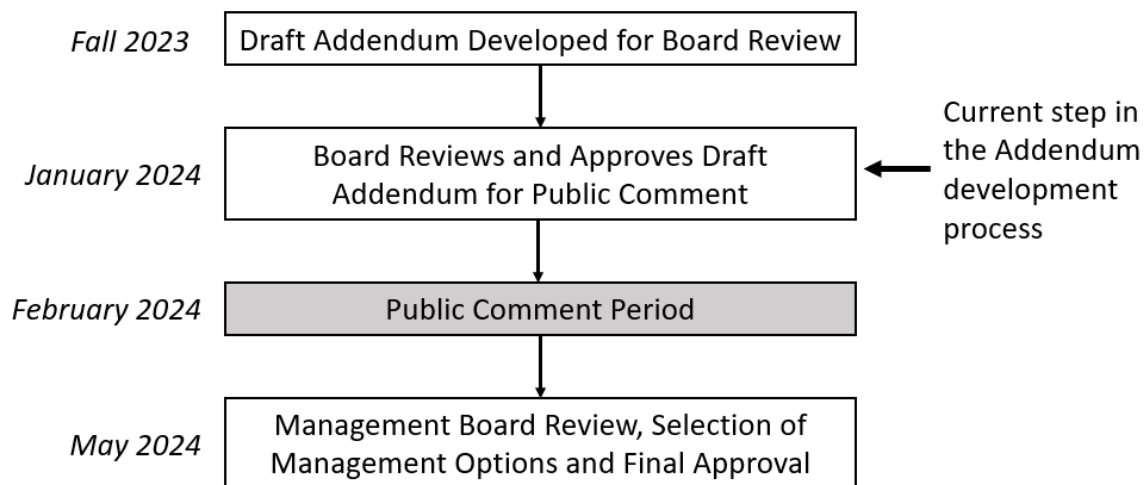


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DRAFT

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1.0 Introduction

The Atlantic States Marine Fisheries Commission (Commission) has coordinated interstate management of American eel (*Anguilla rostrata*) from 0-3 miles offshore since 2000. American eel is currently managed under the Interstate Fishery Management Plan (FMP) and Addenda I-V to the FMP. Management authority in the exclusive economic zone (EEZ) from 3-200 miles from shore lies with NOAA Fisheries. The management unit is defined as the portion of the American eel population occurring in the territorial seas and inland waters along the Atlantic coast from Maine to Florida.

The Commission's American Eel Management Board (Board) approved the following motion on August 1, 2023:

Move to initiate an addendum to address the Maine glass eel quota.

This Draft Addendum proposes options for commercial quota provisions for Maine's glass eel fishery including quota level and duration.

2.0 Overview

2.1 Statement of Problem

Addendum V, approved in August 2018, examined Maine's glass/elver eel quota based on updated information but made no changes to the state's quota of 9,688 pounds. The Addendum specified Maine's 9,688 pound glass eel quota be set for three years (starting in 2019; from 2019-2021), and could be revisited before year four (2022). At that point, the quota of 9,688 pounds could be extended for an additional three years (2022-2024) without requiring a new addendum. Fishing beyond 2024 would need to be addressed through a new addendum.

Therefore, Maine's current glass eel quota of 9,688 pounds expires after 2024, and a new addendum is required to establish a quota for the 2025 fishing season and beyond.

2.2 Background

American eel inhabit fresh, brackish, and coastal waters along the Atlantic, from the southern tip of Greenland to Brazil. American eel eggs are spawned and hatch in the Sargasso Sea. After hatching, leptocephali (the larval stage) are transported to the coasts of North America and the upper portions of South America by ocean currents. Leptocephali then transform into glass eels via metamorphosis. In most areas, glass eel enter nearshore waters and begin to migrate up-river, although there have been reports of leptocephali found in freshwater in Florida. Glass eels settle in fresh, brackish, and marine waters, where they undergo pigmentation, reaching the elver life stage. Elvers subsequently mature into the yellow eel phase, most by the age of two years.

The Commission's American Eel Board first convened in November 1995 and finalized the FMP for American Eel in November 1999. The goal of the FMP is to conserve and protect the

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American eel resource to ensure its continued role in its ecosystems while providing the opportunity for commercial, recreational, scientific, and educational uses. The FMP requires a minimum recreational size and possession limit and a state license for recreational harvesters to sell eels. The FMP requires that states and jurisdictions maintain existing or more conservative American eel commercial fishery regulations for all life stages, including minimum size limits. Each state is responsible for implementing management measures within its jurisdiction to ensure the sustainability of its American eel population.

Since the FMP was approved in 1999, it has been modified four times. Addendum IV (2014) specified an annual glass eel commercial quota for Maine of 9,688 pounds for the 2015-2017 fishing seasons, and that it be re-evaluated after 3 years (prior to the start of the 2018 fishing season). In October 2017, the Board specified a glass eel commercial quota for Maine of 9,688 pounds for the 2018 fishing season. Addendum V (2018) examined Maine's glass/elver eel quota based on updated information but made no changes to the state's quota. In 2021 the Board extended the quota of 9,688 pounds through 2024.

Addendum V also maintained other provisions of Addendum IV relevant to the glass eel/elver fishery. Overages of any state's commercial glass/elver eel quota would require that state or jurisdiction to deduct their entire overage from their quota the following year, on a pound for pound basis. Any state or jurisdiction with a commercial glass eel fishery harvesting at least 750 pounds is required to implement daily trip-level reporting with daily electronic accounting to the state for both harvesters and dealers. Additionally, any state or jurisdiction with a commercial glass eel fishery harvesting at least 750 pounds must implement a fishery-independent life cycle survey covering glass/elver, yellow, and silver eels within at least one river system. Any state or jurisdiction can request an allowance for commercial harvest of glass eels based on stock enhancement programs implemented after January 1, 2011, subject to TC review and Board approval. To qualify for the allowance the state must demonstrate that the stock enhancement program has resulted in a measurable increase in glass eel passage and/or survival.

2.3 Description of the Fishery

2.3.1 Glass Eel/Elver Fishery

Life stage glass and elver eel harvest along the Atlantic coast is prohibited in all states except Maine and South Carolina. Prior to the implementation of the FMP, Maine was the only state compiling glass eel and elver fishery catch statistics. Under the FMP, all states are now required to submit fishery-dependent information. In recent years, Maine was the only state reporting substantial glass eel or elver harvest.

Maine Glass Eel/Elver Fishery

Since the implementation of the 9,688 pound Maine glass eel quota in 2015, landings have tracked closely with the quota. Since 2016, landings have remained above 94% of the quota, but have not exceeded it.

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Table 1. Maine's Glass/Elver Eel Landings in pounds 2007-2022 (Source: Maine DMR)

Year	Landings	Value	Year	Landings	Value
2007	3,714	\$1,287,479	2015	5,259	\$11,422,831
2008	6,951	\$1,486,353	2016	9,400	\$13,446,828
2009	5,199	\$519,569	2017	9,343	\$12,166,417
2010	3,158	\$584,851	2018	9,194	\$21,753,350
2011	8,585	\$7,653,332	2019	9,620	\$20,119,194
2012	21,611	\$40,384,618	2020	9,652	\$5,067,521
2013	18,080	\$32,931,077	2021	9,106	\$16,681,103
2014	9,690	\$8,474,302	2022*	9,429	\$20,163,965

*Preliminary landings

In 2012, Maine’s glass eel landings hit an all-time high of 21,610 pounds with a landed value of over \$38 million. This huge spike in price per pound created a gold rush mentality that brought with it poaching problems that most thought Maine could not overcome, and there was a call to close the fishery all together. Over the next two years, the Maine Department of Marine Resources (ME DMR) responded by instituting a voluntary reduction in harvest of 35% from the 18,076 pounds that was landed in 2013. This established the first glass eel quota for Maine at 11,749 pounds. With the implementation of Addendum IV, the elver quota was cut another 11%, reducing Maine’s glass eel quota to 9,688 pounds. Since the implementation of the 9,688 pound glass eel quota, landings have tracked closely with the quota with the exception of 2015 where a late spring with ice and high water contributed to a drop in landings down to 5,260 pounds.

In 2013, Maine instituted individual fishing quotas, and penalties were moved from civil to criminal and included a “two-strike” provision where a harvester license would be permanently revoked. Also in 2013, ME DMR developed a swipe card program that allows dealers to enter daily landings data and allows ME DMR to analyze that data within 24 hours of receipt; it also serves as a fishery management tool to implement an individual fishing quota (IFQ) for harvesters. The program was expanded in 2015 to include dealer-to-dealer transactions. Using the swipe card program, ME DMR has effectively tracked the overall quota by closely monitoring the IFQs of over 1,000 harvesters, which includes quota for the four indigenous tribes and non-tribal quota. In 2022 and 2023 over 5,500 daily landings reports did not need to be key-entered as a result of the swipe card program, which has reduced the burden on ME DMR staff. The swipe card program has also shown to be reliable with no card failures reported in the last 3 years (2020 to 2023).

In addition, the number of fishery-related infractions reported by the ME Marine Patrol dropped from over 200 in 2013 to under 20 in 2014 through 2016. Elver related violations have

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continued to remain low in 2016 through 2023. The addition of the dealer-to-dealer swipe card program allows the ME DMR to track the glass eels from initial purchase to export out of the state. For a dealer to export out of Maine, they are required to have a separate “export” license and ME Marine Patrol must be present to weigh the shipment. ME Marine Patrol will also weigh the glass eels at the dealer facilities and report that verified amount along with the amount the swipe card program indicates should be at the facility. ME Marine Patrol can also remove any dead loss to reconcile the dealer’s inventory.

Given the high market value, poaching of glass eels and elvers remains a serious concern in several states. Enforcement of the regulations is challenging due to the nature of the fishery (very mobile, nighttime operation, and high value for product). Cooperation between the State’s enforcement agencies and the U.S. Fish and Wildlife Service remains a high priority. This cooperation resulted in several convictions for violation of the Lacey Act in 2013 through 2016. From 2016 through 2023, the number of federal investigations and violations followed the same decreasing trend as fishery-related infractions.

Aquaculture

Addendum IV to the FMP also allows approved Aquaculture Plans from states and jurisdictions to harvest up to 200 pounds of glass/elver eel annually from within their state waters for use in domestic aquaculture activities. Aquaculture Plans have been approved each year for Maine starting in 2018 for the 2019 fishing season.

2.4 Status of the Stock

The last peer reviewed and accepted benchmark stock assessment was approved for management use in 2023. The Assessment and Peer Review Reports indicate the American eel stock is depleted and has likely been experiencing overfishing in the last few decades. The stock assessment recommended a drastic reduction to the yellow eel coastwide cap to between 21% and 33% of the current cap.

The abundance indices developed and used in the 2023 assessment are more robust and better defined than previous assessments. State-mandated young-of-year (YOY) surveys have been in operation for twenty years or more in some cases. From Maine to Florida, 25 surveys were developed into individual indices of relative abundance and then combined into a coastwide YOY index using a multivariate auto-regressive state-space (MARSS) model. A declining trend in coastwide YOY abundance was observed from 1987-2020. Ten elver indices were developed from multiple surveys from Maine to Virginia that were combined into a coastwide index using the MARSS model. The coastwide index indicated no trend in elvers from 1999-2020. There were also 14 yellow eel indices developed from multiple surveys from New Hampshire to South Carolina that were combined into a coastwide index using the MARSS model. There was a declining trend in coastwide yellow eel abundance from 1974-2020.

Additional analyses provide convergent results indicating the stock has decreased over the monitored time series. The Mann-Kendall test detected significant trends in 6 of the 26 YOY indices; of these two (33%) were increasing (Maine and New York) and four (67%) decreasing.

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For elver, two of nine indices had significant Mann-Kendall detected trends with one increasing and one decreasing (both in Virginia). For the yellow eel indices, the Mann-Kendall test detected significant trends in 7 of the 15 Yellow Eel indices; of these two (29%) were increasing and five (71%) decreasing. The Traffic Light method also showed similar results for both YOY and yellow eel indices, indicating green values for the 1980s, changing to orange, then to red by the end of the time series.

2.4.1 Maine Eel Lifecycle Monitoring

In 2011, the glass eel life stage was identified as a unique opportunity to assess the annual recruitment of each year's cohort, because glass eels result from the previous year's spawning activity and are all the same age. In order to assess the annual variation in recruitment of American eel, Addendum III (2011) required that each member state conduct an annual survey of YOY abundance. In 2018, Addendum V further required: *“Any state or jurisdiction with a commercial glass eel fishery must implement a fishery-independent life cycle survey covering glass/elver, yellow, and silver eels within at least one river system. If possible and appropriate, the survey should be implemented in the river system where the glass eel survey (as required under Addendum III) is being conducted to take advantage of the long-term glass eel survey data collection.”* Maine's YOY survey has been running since 2001 and the yellow and silver eel surveys since 2018. Each year ME DMR staff summarize the results of the YOY, yellow, and silver eel lifecycle surveys into a compliance report. The methods and a summary of results are described below.

Methods

Fishery-independent monitoring for young-of-year eels at West Harbor Pond in Maine has been carried out continuously since 2001. Each year eel ramps with collection traps are installed at the site in early spring, typically in March, and are checked daily throughout the run, which typically ends in late June. Glass eels and elvers are separated and enumerated before being released into the pond.

Monitoring of yellow and silver eels was initiated in 2018. The survey was initially on Cobbosseecontee Stream, but ME DMR moved the surveys to West Harbor Pond in 2019. Monitoring for yellow eels includes sampling with baited eel pots beginning in July and continuing through September of each year. Each time the pots are checked all eels are removed, measured for length and weight, tagged with a PIT tag if they are not already tagged, and released. Monitoring for silver eels includes daily checking of a fyke net set at the outlet of West Harbor Pond. The fyke net is set starting in September and continues until December. All eels are removed from the fyke net each day, scanned for a PIT tag, a subsample is measured for length and weight, and released downstream.

Results

A total of 942,327 glass eels were captured during 2022. The catch of glass eels in 2022 far exceeded any previous catches and was more than seven times the average of 127,591 since 2001. Preliminary data from 2023 indicate a total of 307,216 glass eels were captured in 2023, more than double the average, which continues a trend five of the last seven years significantly

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exceeding average annual catch since 2001 (Figure 1). A total of 4,356 elvers were also captured in the trap boxes during 2022, which was the second largest catch of elvers from 2001 through 2022. Preliminary data from 2023 report a total of 6,344 elvers were captured in trap boxes, which is the highest amount to date.

A total of 459 yellow eels were caught in baited pots in West Harbor Pond at least once in 2022, with many being caught multiple times (up to 4 recaptures). Of the yellow eels caught in 2022, 51 were tagged in 2018, 77 were tagged in 2019, 92 were tagged in 2020, 123 were tagged in 2021, and 116 eels were untagged when captured in 2022 and received a PIT tag before release. 1,019 yellow eels have been caught, tagged, and released into West Harbor Pond as of December 2022.

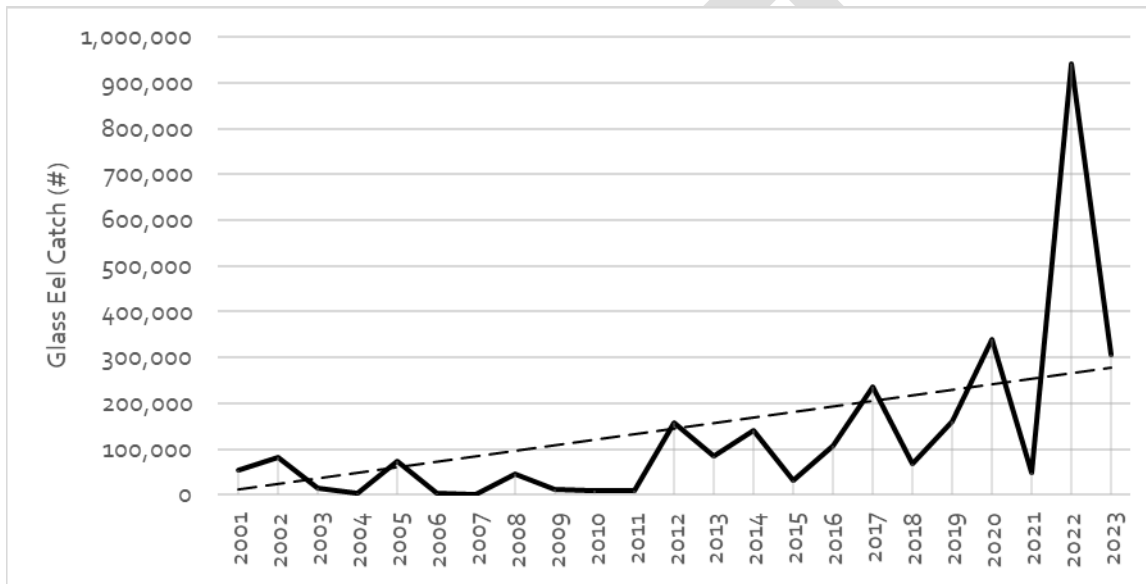


Figure 1. Glass eel capture at West Harbor Pond Maine as part of the ME DMR Eel Lifecycle study (solid line). The linear trendline, with the intercept set to zero and an R^2 value of 0.5009, shows an increase over time (dashed line).

In 2022 a total of 269 eels were caught in the fyke net set at the outlet of West Harbor Pond, all of which were silver phase. Including the 2022 season, 5,888 silver eels have been captured and released at the site since 2018 and the annual average catch is 1,178. In 2022, length ranged from 24.8 cm to 102.6 cm TL, with an average of 34.6 cm TL, and weight ranged from 25.7 g to 2600 g, with an average of 119.7g. These lengths and weights did not differ significantly from previous years.

2.4.2 Maine Glass/Elver Eel Index

In addition to the in-season reporting of landings that allows for the close management of the Glass/Elver eel fishery in Maine, ME DMR also requires each harvester to report gear type, location, and set time for each gear type. These data were analyzed to produce a catch-per-unit-effort (CPUE) index for the Glass/Elver Eel fishery, which adds additional context to the proposed management options. Data from 2016-2022 were reviewed and a subset of that data

was included in this analysis. Due to the difference between fyke nets and dip nets, in terms of the method for fishing each and the impact on set times, dip nets were excluded from the analysis to standardize the results. In addition, harvesters had the option to report set times in minutes, hours, days, and weeks. However, only those harvesters that reported in hours were included in the analysis due to irregularities in reporting in other units of time (e.g., reporting of: '0 days'; '1300 days'). With the exclusions described above, the remaining data accounted for the majority of harvesters in all years. For example, harvesters that reported both the use of fyke nets and set times in hours accounted for 75.5% of harvesters in 2022.

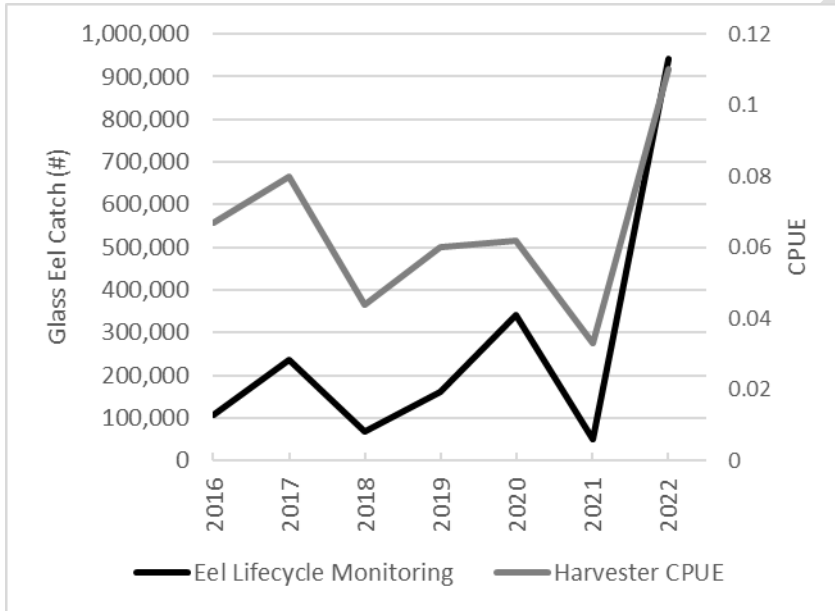


Figure 2. Glass eel capture at West Harbor Pond Maine as part of the ME DMR Eel Lifecycle study (black line) and CPUE of Harvesters from 2016-2022 (gray line).

The CPUE for catches in fyke nets in the Glass/Elver fishery, expressed as pounds caught per one hour unit, ranged from 0.033 to 0.110 from 2016 to 2022 with an average of 0.065. The CPUE was greatest in 2022, at nearly double the average, but otherwise the CPUE decreased slightly from 2016-2021. In addition, the CPUE for harvesters is closely correlated to the glass eel capture at West Harbor Pond as part of the Maine Eel Lifecycle Monitoring program (Figure 2).

3.0 Proposed Management Options

The following options were developed from the Board motion from August 2023.

When the Board takes final action on the addendum, there is the opportunity to select any measure within the range of options that went out for public comment, including combining options across issues.

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3.1 Maine Glass Eel Quota

Selection of one of the following options would determine the annual quota level for the Maine commercial glass eel fishery, starting in the 2025 fishing year.

Option 1. Status quo

Under this option, the annual quota for Maine's commercial glass eel fishery would remain at 9,688 pounds.

Option 2. Reduce Maine's glass eel quota by 21.8%

Under this option, the annual quota for Maine's commercial glass eel fishery would be reduced by 21.8%, resulting in an annual quota of 7,576 pounds. This reduction is being considered in light of the recent stock assessment results indicating the coastwide stock of American eel is depleted. The reduction of 21.8% is equal to the smallest percent reduction that is being considered for the yellow eel coastwide cap. Given glass eel experience a higher natural mortality rate than yellow eel, glass eel harvest is expected to have a lower relative impact to the coastwide population than the yellow eel harvest and so a lesser reduction may be warranted to the glass eel quota than to the yellow eel quota.

3.2 Timeframe for Maine Glass Eel Quota

Selection of one of the following options would determine the number of years the Maine quota would remain in place once it is implemented, and whether or not an addendum would be required to maintain the same quota for subsequent years.

Option 1: No sunset

Under this option, the commercial quota selected for Maine's glass eel fishery in section 3.1 will remain in place until modified through an addendum or amendment to the FMP.

Option 2: Three years

Under this option, the quota selected for Maine's glass eel fishery in section 3.1 may remain in place for up to three years (2025-2027). Prior to the 2028 fishing year, the Board must initiate an action to establish Maine's glass eel commercial quota for 2028 and beyond. If a change to the quota is desired before 2028, the Board must initiate an addendum or amendment to modify the FMP.

Option 3: Three years, with the ability to extend via Board action

Under this option, the quota selected for Maine's glass eel fishery in section 3.1 may remain in place for three years (2025-2027). If no change to Maine's quota is desired, the Board may extend the selected quota for up to three years at a time via Board action, until this provision is modified by an addendum or amendment to the FMP. If a change to the quota is desired for 2028 or earlier, the Board must initiate an addendum or amendment to establish Maine's glass eel commercial quota.

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4.0 Compliance

If the existing American Eel FMP is revised by approval of this Draft Addendum, the American Eel Management Board will designate implementation deadlines for the addendum provisions.

5.0 References

Atlantic States Marine Fisheries Commission (ASMFC). 2000. Interstate Fishery Management Plan for American Eel (*Anguilla rostrata*). Washington D.C. NOAA Oceanic and Atmospheric Administration Award No. NA97 FGO 0034 and NA07 FGO 024.

ASMFC. 2014. Addendum IV to the Interstate Management Plan for American Eel. Arlington, VA.

ASMFC. 2018. Addendum V to the Interstate Management Plan for American Eel. Arlington, VA.

ASMFC. 2023. American Eel Benchmark Stock Assessment and Peer Review Reports. Arlington, VA.

DRAFT



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American Eel Glass Eel Plan Development Team Meeting Summary

Webinar
September 14, 2023

Plan Development Team Members: Brad Chase (MA), Casey Clark (ME), Robert Atwood (NH), Dani Carty (SC), Margaret Conroy (DE) Caitlin Starks (ASMFC)

The American Eel Plan Development Team (PDT) for glass eel met via webinar to begin developing a draft addendum to address the quota for Maine's glass eel fishery. Maine's glass eel quota has been set at 9,688 pounds since 2015. However, a new addendum is needed to establish a quota for the 2025 fishing year and beyond.

Staff reviewed the current management program, the general outline for the addendum, and then the PDT discussed potential management options. All PDT members supported the status quo option. One PDT member would like to see an option included to reduce Maine's glass eel quota, because the assessment indicates the stock is depleted and the Board initiated an action to reduce fishing mortality at the yellow eel life stage.

Other PDT members mentioned that in Maine and Massachusetts glass eel numbers have been relatively high in recent years. Increased CPUE in the Maine fishery and in the life cycle survey have been observed. South Carolina also saw a peak in the glass eel CPUE in 2022.

The PDT decided to investigate the current glass eel provisions further to identify any improvements that could be made through this addendum. In particular they will look into the success of the reporting requirements, the provision for allowing glass eel harvest based on restoration efforts, and the duration of the Maine glass eel quota. They discussed that the reevaluation of the quota could be linked to the stock assessment.

Staff assigned writing tasks to PDT members.



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American Eel Glass Eel Plan Development Team Meeting Summary

Webinar
November 15, 2023

Plan Development Team Members: Brad Chase (MA), Casey Clark (ME), Robert Atwood (NH), Dani Carty (SC), Margaret Conroy (DE) Caitlin Starks (ASMFC)

Additional Attendees: Megan Ware (ME DMR)

The American Eel Plan Development Team (PDT) for glass eel met via webinar to continue the development of a draft addendum to address the quota for Maine's glass eel fishery. Staff gave an overview of the draft addendum document, including the background information, statement of the problem, fishery description, stock status, and draft management options.

For quota options the PDT members agreed to include two options: a status quo quota of 9,688 pounds, and an option to decrease Maine's glass eel quota by 21.8%. The PDT members support the status quo option given recent positive trends observed in Maine's fishery dependent and fishery independent monitoring data. They also noted that the assessment did not recommend a reduction of fishing mortality on the glass eel life stage as it did for yellow eel. The second option to decrease the Maine quota is provided so the Board has an opportunity to consider a reduction in the fishery based on the coastwide stock status being depleted, and the stock assessment results showing a declining trend in coastwide young-of-year (YOY) abundance from 1987-2020. The PDT could not identify a technical method that could be used to determine an appropriate reduction level to the Maine glass eel fishery. Therefore, the PDT chose to consider a reduction of 21.8%, which is analogous to the lowest reduction being considered for the yellow eel coastwide cap. The PDT noted that reductions to the glass eel fishery may not need to be as large as those taken for yellow eel because the glass eel life stage experiences a much higher natural mortality rate, which could mean that glass eel harvest has a smaller relative impact on the population than yellow eel harvest. Other reduction levels could be discussed and recommended by the Board for inclusion in the draft addendum for public comment if desired.

The PDT also discussed options for the duration of the Maine glass eel quota. Three options were considered: 1) an option where the Maine quota remains in place until changed through a new addendum or amendment; 2) an option allowing the quota to stay in place for three years, after which a new addendum would be required to reestablish the quota; and 3) an option allowing the quota to stay in place for three years, and to be extended for additional years if maintained at the same level. The PDT agreed that all three options should be considered for

public comment. However, the PDT members expressed a preference for the second option because they feel the quota should be reevaluated every few years.

The PDT discussed the other current glass eel provisions, including the reporting requirements, the provision for allowing glass eel harvest based on restoration efforts, and the aquaculture allowance. Casey Clark commented on Maine's experience with reporting, and noted that there have been very few enforcement issues in the last few years while the state has been using the swipe card system for reporting landings. He also commented that the aquaculture provision is working well for Maine at this time. Given the states have not expressed concerns with these provisions, and no proposals have been submitted for additional aquaculture efforts outside of Maine nor for glass eel allowances for restoration, the PDT agreed that changes to these provisions are not needed at this time. If these conditions change in the future the Technical Committee could provide further guidance on state proposals.

Staff will update the document based on this discussion and send it to the PDT for final edits. The PDT will finalize the document for consideration at the Board meeting in January.

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM VII TO THE AMERICAN EEL FISHERY MANAGEMENT PLAN FOR PUBLIC COMMENT

Commercial Yellow Eel Management and Monitoring Requirements



This draft document was developed for Management Board review and discussion.

This document is not intended to solicit public comment as part of the Commission/State formal public input process. Comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. If approved, a public comment period will be established to solicit input on the issues contained in the document.

January 2024



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Public Comment Process and Proposed Timeline

In August 2023, the American Eel Management Board initiated the development of an addendum to the Interstate Fishery Management Plan (FMP) initiated an addendum to consider changes to the coastwide yellow eel harvest cap. The results of the recent benchmark stock assessment indicate the stock is at or near historically low levels due to a combination of historical overfishing, habitat loss, food web alterations, predation, turbine mortality, environmental changes, and toxins, contaminants, and disease. The benchmark assessment proposed a new tool for setting the coastwide cap based on abundance indices and catch. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of American eel, the addendum process and timeline, and a statement of the problem. This document also provides management options for public consideration and comment.

The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is **XX, XXX, 2024 at 11:59 p.m.** Comments may be submitted at state public hearings or by mail or email. If you have any questions or would like to submit comments, please use the contact information below.

Mail: Caitlin Starks, Senior FMP Coordinator
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1050 North Highland Street, Suite 200A-N
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Email: comments@asmfc.org
(Subject: Draft Addendum VII)
Phone: (703) 842-0740

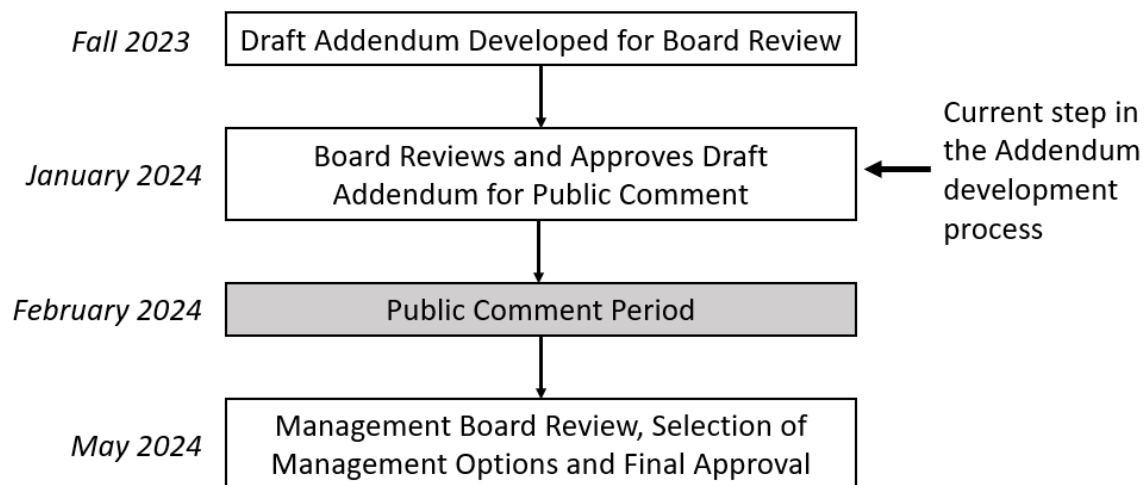


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1.0 Introduction

The Atlantic States Marine Fisheries Commission (Commission) has coordinated interstate management of American eel (*Anguilla rostrata*) from 0-3 miles offshore since 2000. American eel is currently managed under the Interstate Fishery Management Plan (FMP) and Addenda I-V to the FMP. Management authority in the exclusive economic zone (EEZ) from 3-200 miles from shore lies with NOAA Fisheries. The management unit is defined as the portion of the American eel population occurring in the territorial seas and inland waters along the Atlantic coast from Maine to Florida.

The Commission's American Eel Management Board (Board) approved the following motions on August 1, 2023:

Move to draft an addendum to consider using I_{TARGET} to recommend various catch caps, but not use I_{TARGET} to set biological reference points or stock status.

This Draft Addendum proposes options for coastwide commercial landings caps for yellow eel, and alternative management responses if the coastwide cap is exceeded. The objective of Addendum VII is to recommend a coastwide cap using the I_{TARGET} tool from the stock assessment based on abundance indices and catch to reduce coastwide landings of yellow eel. The addendum also considers options to modify the biological sampling requirements of the annual YOY survey, and the harvester catch per unit effort (CPUE) reporting requirements.

2.0 Overview

2.1 Statement of Problem

The Commission established the FMP for American Eel in November 1999, which has since been modified through five addenda. The FMP goal and objectives highlight the conservation, protection, and enhancement of American eel abundance in its current range as priorities for management. In response to the 2012 American Eel Benchmark Stock Assessment recommendation to reduce mortality on all life stages, the Board adopted Addendum IV. Addendum IV (2014) established a coastwide harvest cap of 907,671 pounds of yellow eel, reduced Maine's glass eel quota to 9,688 pounds, and allowed for the continuation of New York's silver eel weir fishery in the Delaware River. Addendum V was approved in 2018, which increased the yellow eel coastwide cap to 916,473 pounds starting in 2019 to reflect a correction in the historical harvest data. It also adjusted the process for reducing total landings to the coastwide cap when the cap has been exceeded.

The coastwide cap was intended to control fishing mortality on the coastwide population of eel at the yellow eel life stage. Because the assessment could not establish biological reference points for American eel, historical harvest was used as the basis for setting the coastwide cap. The cap was set at a level equivalent to the average annual harvest between 1998 and 2010. The selected cap was greater than the Technical Committee's recommendation at the time, which was to establish a cap equivalent to a 12% reduction from the 1998-2010 average landings.

Despite these management changes, the 2023 benchmark stock assessment found that the yellow eel population remains depleted, and was at lower levels than the previous assessment. The assessment and peer review recommend reducing fishing mortality on the yellow eel life stage, while also recognizing that stock status is affected by other factors including historical overfishing, habitat loss due to damming mainstems and tributaries of rivers, mortality from passing through hydroelectric turbines, pollution, possibly parasites and disease, climate change, and other unexplained factors at sea. Similar to previous assessments, a statistical model could not be developed for the species to determine stock status or give management advice. However, the assessment explored several index-based methods and recommended a new tool called I_{TARGET} for management use to provide advice on coastwide catch. I_{TARGET} is an index-based method that needs only catch and abundance data to provide management advice on coastwide landings.

2.2 Background

Since its implementation in 2000, the Commission's FMP for American Eel has aimed to conserve and protect the American eel resource to ensure its continued role in its ecosystems while providing the opportunity for commercial, recreational, scientific, and educational uses. The FMP requires all states and jurisdictions to implement an annual young-of-year (YOY) abundance survey to monitor annual recruitment of each year's cohort. In addition, the FMP requires a minimum recreational size and possession limit and a state license for recreational harvesters to sell eels. The FMP requires that states and jurisdictions maintain existing or more conservative American eel commercial fishery regulations for all life stages, including minimum size limits. Each state is responsible for implementing management measures within its jurisdiction to ensure the sustainability of its American eel population.

Because of the unique life history of American eel, separate management measures have been developed to address fisheries targeting each life state (i.e., glass eel, yellow eel, and silver eel). Management measures for yellow eel, which is the primary life stage harvested by commercial and recreational fishermen, have been modified through Addendum I (2006), Addendum III (2013), Addendum IV (2013), and Addendum V (2018). Addendum I established a mandatory catch and effort monitoring program for American eel, requiring trip-level landing and effort data by state. Addendum III made changes to the commercial yellow eel fishery, specifically increasing the yellow eel size limit from 6 to 9 inches, and requiring a $\frac{1}{2}$ by $\frac{1}{2}$ minimum mesh size in commercial yellow eel pots. Responding to the 2012 Benchmark American Eel Stock Assessment, which found the American eel population in U.S. waters to be depleted, Addendum IV set goals of reducing overall mortality and maximizing the conservation benefit for American eel stocks (ASMFC 2014). The Addendum established a coastwide commercial harvest cap for yellow eel of 907,671 pounds to limit fishing mortality. The coastwide cap was implemented starting in the 2015 fishing year and established two management triggers: (1) if the coastwide cap is exceeded by more than 10% in a given year, or (2) the coastwide cap is exceeded for two consecutive years regardless of the percent overage. If either trigger were met, states would implement state-specific allocations based on average landings from 1998-2010 with allocation percentages derived from 2011-2013.

Following the implementation of Addendum IV states expressed some concerns about the management program, including 1) the lack of information available to determine what changes in landings would be necessary to affect fishing mortality rates and spawning stock status, 2) the administrative burden on the states associated with moving to state-specific quotas, and 3) the difficulty of achieving an equitable allocation of this resource given the variation in availability and market demand for eels along the Atlantic coast. To address concerns about state allocations the Board approved Addendum V, which established a new commercial coastwide landings cap for the yellow eel fishery based on corrected landings data, developed new management triggers, and modified the allocation process that would occur if the coastwide cap were exceeded by more than 10% of the coastwide cap for two consecutive years (ASMFC 2018).

2.4 Status of the Stock

The 2023 Benchmark Stock Assessment and Peer Review indicates the American eel stock remains depleted at or near historically low levels due to a combination of historical overfishing, habitat loss, food web alterations, predation, turbine mortality, environmental changes, toxins and contaminants, and disease (ASMFC 2023), consistent with the results of the 2012 and 2017 stock assessments. Despite the large number of surveys and studies available for use, the American eel stock is still considered data-poor. Additionally, eels have an extremely complex life history that is difficult to describe using traditional stock assessment models. The 2023 assessment explored additional approaches for assessing American eel that were suggested in past stock assessments including a delay-difference model, traffic light analysis and surplus production models, and developing an egg-per-recruit model, but overfished and overfishing determinations still could not be made due to data limitations. However, the 2023 stock assessment found that the yellow eel population has declined since the previous assessment (2017), and recommended reducing yellow eel harvest. Unlike previous assessments, the 2023 assessment and peer review identified a tool to provide management advice without requiring an assessment model, which is being considered for management use through this draft addendum.

The Commission's assessments only consider the portion of the stock residing in US coastal waters, but there have been efforts to characterize the stock in other regions. In 2003, declarations from the International Eel Symposium (AFS 2003, Quebec City, Quebec, Canada) and the Great Lakes Fisheries Commission (GLFC) highlighted concerns regarding the health of eel stocks worldwide. In 2010, Fisheries and Oceans Canada (DFO) conducted a stock assessment on American eels in Canadian waters and found that region-specific status indices showed abundance is very low in comparison to levels in the 1980s for the Lake Ontario and upper St. Lawrence River stock, and is either unchanged or increasing in the Atlantic Provinces.

2.3 Description of the Yellow Eel Fishery

2.3.1 Coastwide Description

Yellow eel fisheries exist in all Atlantic Coast states and jurisdictions with the exception of Pennsylvania and the District of Columbia. American eels are harvested for food, bait, and export markets. Yellow eel landings have varied considerably over the years due to a

combination of market trends and availability. These fluctuations are evident both within states and jurisdictions, as well as at a regional level. American eel landings ranged from over 3 million pounds in the 1970s to early 1980s to around 1 million pounds or less since the late 1990s (Figure 1). Since 2014, when the coastwide cap for yellow eel was adopted under Addendum IV, total coastwide landings have generally experienced a steady decline to a time series low of 263,892 pounds in 2020. Landings in 2021 and 2022 increased slightly, but still remain near all-time low levels.

Fishery participants have noted that recent declines in landings have primarily been related to market demand; demand for wild-caught American eel from the US for European food markets has decreased in recent years due to increased aquaculture in Europe. Additionally, demand for domestic bait in 2020 was negatively impacted by COVID-19 restrictions. A smaller proportion of US yellow eel landings typically goes to the domestic bait market, and landings are not expected to increase significantly from current levels in the near future.

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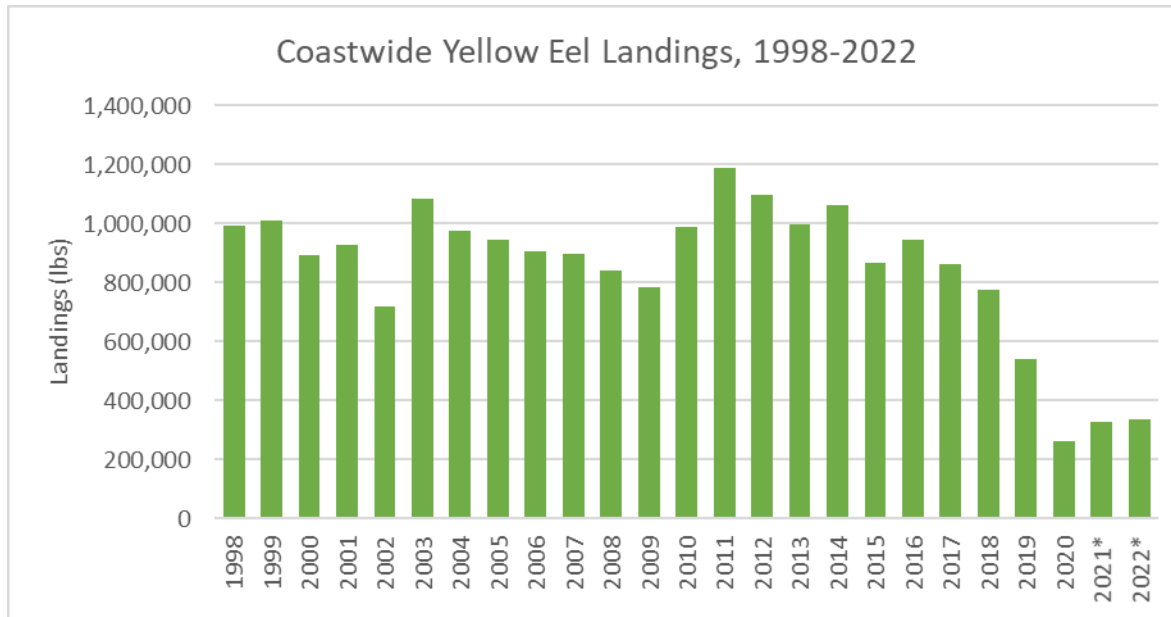


Figure 1. Yellow Eel Coastwide Landings 1998-2022. *2021 and 2022 data are considered preliminary.

Table 1. State-by-state Yellow Eel Landings: 2014-2023. Source: Atlantic Coastal Cooperative Statistics Program, 2023, and state compliance reports. *2021 and 2022 data are considered preliminary.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL	Total
2014	7,578	Time series average < 400 pounds	3,903	2,353	1,390	38,143	91,225	62,388	619,935	49,293	109,537	60,755	Time series average < 400 pounds	Time series average < 400 pounds	14,092	1,060,725
2015	4,142		2,213	1,538	2,271	50,194	88,828	44,708	493,043	31,588	86,715	57,791			5,632	868,663
2016	6,811		1,705	2,651	2,445	36,371	67,422	44,558	583,578	58,223	96,336	39,911			6,034	946,045
2017	6,358		592	2,968	905	41,732	77,499	29,945	541,270	33,555	97,328	24,752			7,456	864,360
2018	2,832		375	3,988	3,268	39,218	69,679	31,378	514,226	31,151	57,281	18,058			4,659	776,112
2019	2,567		1,577	4,056	5,275	33,039	76,241	13,628	331,878	27,111	34,247	8,140			1,542	539,301
2020	7,012		84	1,425	2,783	16,411	23,742	1,942	159,816	24,971	21,916	3,291			499	263,892
2021*	457		C	1,863	3,255	16,097	26,273	4,433	204,701	10,439	46,345	5,705			9,050	328,618
2022*	877		0	605	3,755	16,570	52,585	2,967	187,810	12,814	36,525	4,202			6,073	317,456

2.3.2 State-by-state Descriptions

All states are subject to the FMP requirements for a yellow eel minimum size limit of 9 inches and a ½ by ½ minimum mesh size in commercial yellow eel pots. The yellow eel fishery in Maine occurs in both inland and tidal waters. Yellow eel fisheries in southern Maine are primarily coastal pot fisheries managed under a license requirement, minimum size limit, and gear and mesh size restrictions. Yellow eel are taken by a very small number of harvesters (four to five annually) for use as bait. Reported landings have been under 10,000 pounds annually since 2013, and were below 1,000 pounds in 2022.

The New Hampshire fishery has diminished significantly since the early 2000s. Commercial harvest of yellow eel in Massachusetts occurs only in coastal waters; commercial permitting for inland harvest was eliminated in 2013. Massachusetts allows eel harvest by nets, pots, spears, or angling. The commercial fishery is now mainly conducted using baited pots with over 200 permits issued and reported harvest under 2,000 pounds since 2015. Reporting of activity under commercial permits is mandatory, however, underreporting of eels harvested for commercial striped bass fishing bait is expected.

Small-scale, commercial eel fisheries occur in Rhode Island and are mainly conducted in coastal rivers and embayments with pots during May through November. Connecticut has a similar small-scale, seasonal pot fishery for yellow eel in the tidal portions of the Connecticut and Housatonic rivers. All New England states presently require commercial fishing licenses to harvest eels and maintain trip-level reporting.

Licensed eel fishing in New York occurs primarily in the Hudson River, the upper Delaware River (Blake 1982), and in the coastal marine district. A slot limit (greater than 9 inches and less than 14 inches to limit PCB exposure) exists for eels fished in the tidal Hudson River, strictly for use as bait or for sale as bait only. Due to PCB contamination of the main stem, commercial fisheries have been closed on the freshwater portions of the Hudson River and its tributaries since 1976. The fishery in the New York portion of the Delaware River consists primarily of silver eels collected in a weir fishery. New Jersey fishery regulations require a commercial license when using more than two pots or selling catch. Mandatory trip level reporting is required for every month of the year a license is possessed, even if no fishing occurs. Eel pot diameter may not exceed 16" if cylindrical or 201 square inches in cross section if any other configuration.

The Delaware eel commercial fishery exclusively uses baited pots equipped with one half inch by one half inch mesh. Delaware mandated catch reporting in 1999 and more detailed effort reporting in 2007. The fishery occurs primarily in the tidal tributaries of Delaware Bay although a small proportion of annual harvest may occur in the Atlantic coastal or "Inland Bays" in some years. American eels are sold for both food and bait, dependent upon market demand. Historically, total annual landings in Delaware were consistently greater than 100,000 pounds and ranked in the top three in value for the State among all Delaware commercial fisheries. A suite of variables (bait supply, market demand, aging out of the most knowledgeable eel fishers) has contributed to recent low annual landings for Delaware.

Maryland, Virginia, and Potomac River Fisheries Commission primarily have pot fisheries for American eels in the Chesapeake Bay. Maryland required eel fisherman to be licensed in 1981 and effort reporting began in 1990. Over 99% of all eel harvest in Maryland occurs with the use of eel pots, and all harvest occurs in tidal waters. Average annual landings and effort have declined 50% and 60%, respectively, from 2018 levels. However, catch per unit effort (CPUE, pounds per pot) in recent years is at the highest levels since effort reporting began in 1990.

Large eels are generally exported whereas small eels are used for bait in the crab trotline fishery, except in Virginia. Almost all of the eel harvest in Virginia is done using eel pots as the main gear. Virginia formerly had a voluntary buyer reporting system that was replaced by a mandatory harvester reporting system for all species in 1993. Most of Virginia's American eel are sold locally for bait with no harvest being exported for sale in recent years. Eel harvesters can sell their eels directly to consumers or to businesses with a VMRC issued eel self-market permit. Some eel harvesters also buy and sell eels from other harvesters and are required to have a seafood buyer permit and an eel buyer permit; monthly reporting of the weights of any purchased eels is required. The Potomac River Fisheries Commission has had harvester reporting since 1964, and has collected eel pot effort since 1988.

North Carolina has a coastal pot fishery with fluctuating effort depending on market demands. While a standard commercial fishing license is required for participation in the commercial eel pot fishery, a permit is not, but a notification letter must be provided as part of the mandatory reporting system. Most commercial yellow eel landings in North Carolina occur in October and November, but there is also a small fishery in the spring. Most landings come from the Albemarle Sound area, with additional landings reported from the Pamlico Sound and southern waterbodies under the jurisdiction of North Carolina Division of Marine Fisheries. No catch records are maintained for freshwater inland waters, and the sale of eels harvested from these waters is prohibited. Trip-level commercial landings are required to document all transfers of fish sold from coastal waters from the fishermen to the dealer. Data reported on these forms include transaction date, area fished, gear used, species landed, and fishermen and dealer information. In 2007, to comply with Addendum I, an eel pot logbook program was implemented at the individual commercial fisherman level to collect additional information not reported on trip tickets including pot soak time, the number of pots fished, and landings (pounds) per pot. Annual yellow eel landings in North Carolina historically were greater than 100,000 pounds; however, market demand and attrition of the most knowledgeable eel fishers has contributed to recent low annual landings.

South Carolina instituted a permitting system in 1998 to document total eel gear and commercial landings. Traps or pots used to capture yellow or silver eels must be permitted by water area fished. Restrictions include specific water designations, possession and size limits. Permit conditions outline fishing closure from 1 September through 31 December and immediate by-catch release. Mandatory reporting of effort and catch is required by the 10th of each month. Since 1999, a total of 583.80 pounds of eels were reported.

American eel fishing in Georgia was restricted to coastal waters prior to 1980 but has since expanded to approved inland waters, including portions of the following rivers: Savannah River, Ogeechee River, Altamaha River, Oconee River, Ocmulgee River, Satilla River, and St. Marys River. Landings data are available for Georgia, and as of April 1, 2018, effort data are available due to commercial eel fishermen being required to possess an eel endorsement stamp in addition to a commercial fishing license. Florida's commercial eel pot fishery is operated under a permit system; the recreational fishery has a 25 fish/angler/day bag limit.

2.3.3 Catch per Unit Effort

Fishery-dependent CPUE data are available for some states prior to the mandatory catch and effort reporting required by Addendum I, but these data were not considered indicative of trends in the stock as a whole in the 2023 stock assessment (ASMFC 2023). Fishery-dependent CPUE is almost exclusively composed of positive trips only; trip reports with zero eels caught are rare because most agencies don't require reports of zero catches. While the CPUE indices provided by individual states do not tend to agree and are not useful for assessing trends in the coastwide stock, they may be useful for understanding fishery trends within each state.

The Connecticut commercial CPUE index was calculated for yellow eels from the pot fishery (Figure 2). The index has fluctuated up and down with no clear trend.

The New York commercial CPUE is an arithmetic mean of pounds per pot per hour fished, based on data from VTR monthly harvester reports (Figure 3). With only five years of data, there is no clear trend in the index.

The New Jersey index generally declined until 2015 then exhibited an upward trend (Figure 4), though it is possible it overestimates CPUE since there were very few trips reported with zero catch.

Delaware considers its American eel catch and effort records since 1999 fairly accurate, and the CPUE in the Delaware fishery has remained fairly stable since 2003 (Figure 5).

Maryland has calculated a commercial CPUE index for the pot fishery since 1992 (Figure 6). The CPUE index was relatively flat from 1992–2002 and then generally increased until hitting the time series high CPUE in the terminal year.

Virginia's commercial eel pot fishery CPUE has shown a general decline since the beginning of the time series (Figure 7). Only data associated with positive effort are included in the calculations as commercial harvesters only report positive catches to the VMRC.

North Carolina logbook data (which began in 2007) was used for calculating a fishery-dependent index of abundance, which has been fairly stable over time (Figure 8).

South Carolina Department of Natural Resources has calculated CPUE for the commercial fishery using monthly dealer reports but the data are confidential.

Commercial catch and effort data collection for American eel in Florida began in 2006, and the CPUE index is available for 2007-2019 but shows no clear trend (Figure 9).

The state CPUE data have not been used in the stock assessment as originally intended when the reporting requirement was established under Addendum I. In the 2012 and 2023 benchmark stock assessments, these data were considered but the assessment team decided against their inclusion because they were not considered indicative of trends in the stock as a whole, and differences in baiting practices and bait preference vary geographically which can confound the accuracy and analysis of fishery-dependent CPUE data. The 2023 stock assessment peer review panel also noted that given the variety of fishing gears and fishing areas, the analysis of fishing effort would not be straightforward. The 2023 stock assessment and peer review reports indicate that there is no plan to use the fishery-dependent CPUE data moving forward. As such, this Draft Addendum includes options to make it voluntary for states to collect these CPUE data for American eel.

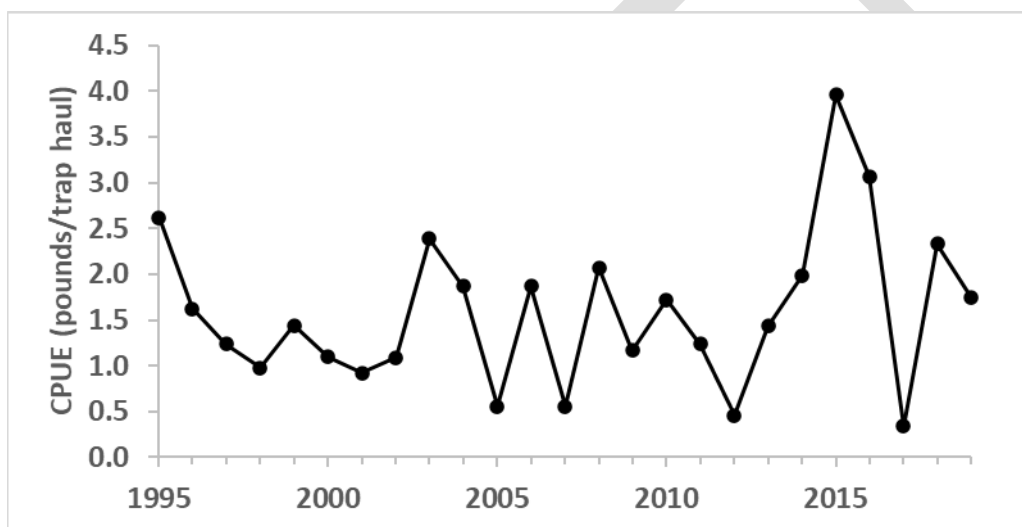


Figure 2. Fishery-dependent catch-per-unit-effort for Connecticut's yellow eel pot fishery. Estimated errors associated with the index were not provided.

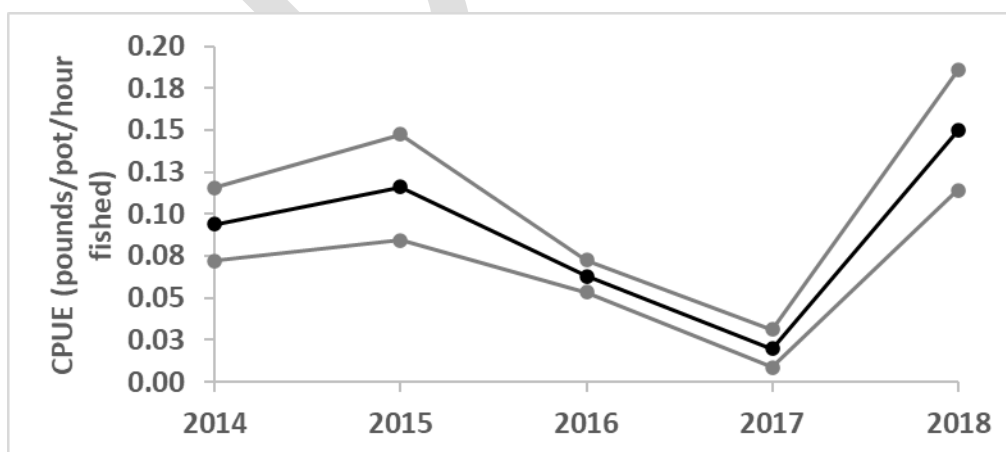


Figure 3. Fishery-dependent catch-per-unit-effort for New York's yellow eel pot fishery. The black line indicates the CPUE and the grey lines indicate 95% confidence intervals.

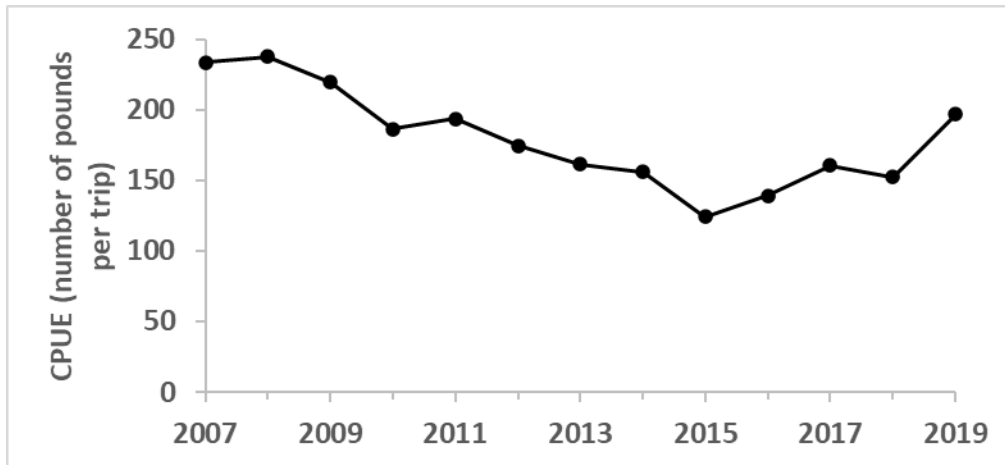


Figure 4. Fishery-dependent catch-per-unit-effort for New Jersey's yellow eel fyke net fishery. Estimated errors associated with the index were not provided.

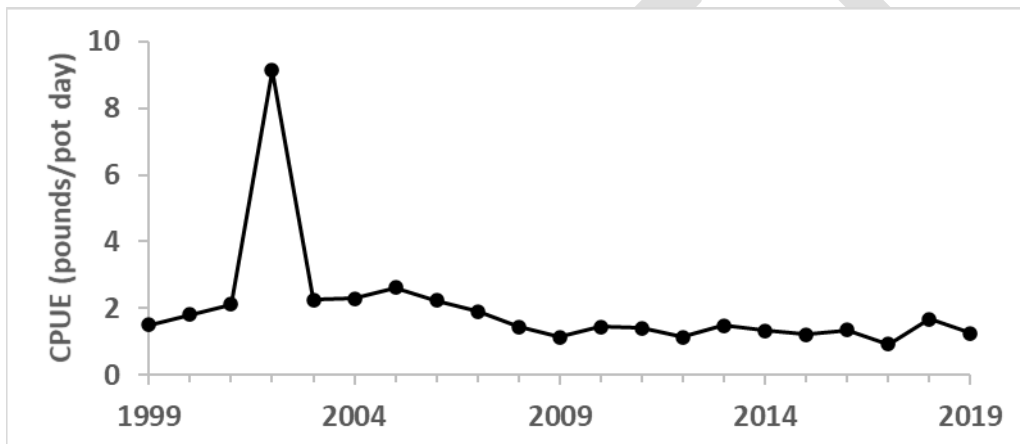


Figure 5. Fishery-dependent catch-per-unit-effort for Delaware's yellow eel pot fishery. Estimated errors associated with the index were not provided.

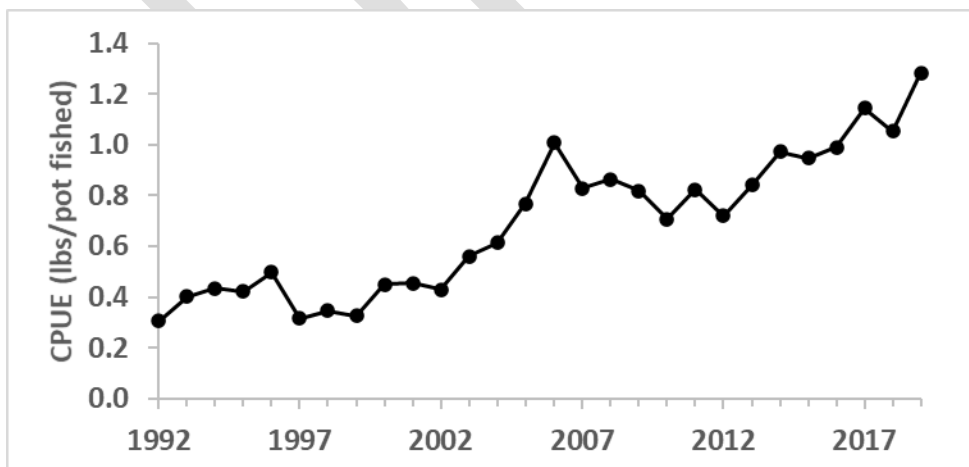


Figure 6. Fishery-dependent catch-per-unit-effort for Maryland's yellow eel pot fishery. Estimated errors associated with the index were not provided.

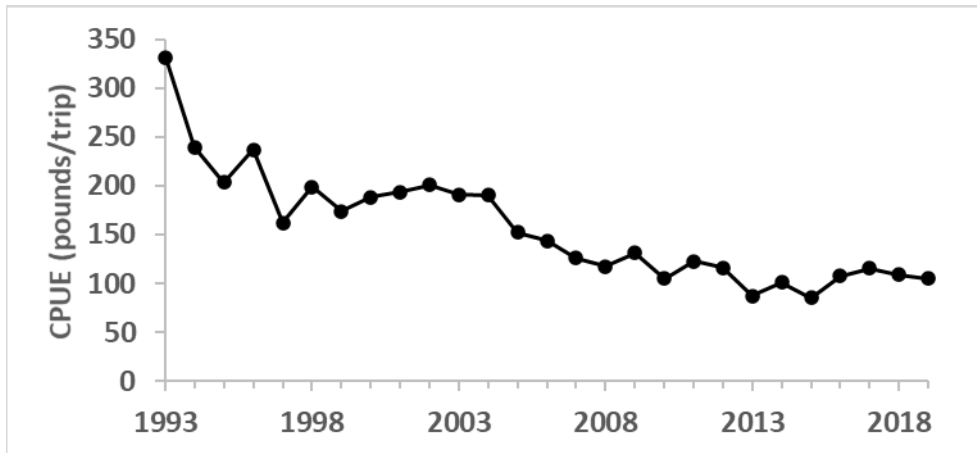


Figure 7. Fishery-dependent catch-per-unit-effort for Virginia's yellow eel pot fishery. Estimated errors associated with the index were not provided.

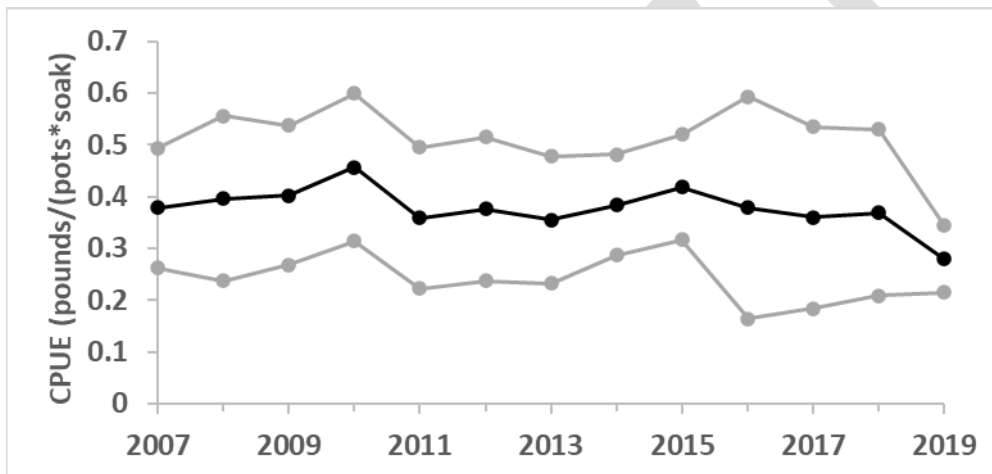


Figure 8. Fishery-dependent catch-per-unit-effort for North Carolina's yellow eel pot fishery. The black line indicates the CPUE and the grey lines indicate 95% confidence intervals.

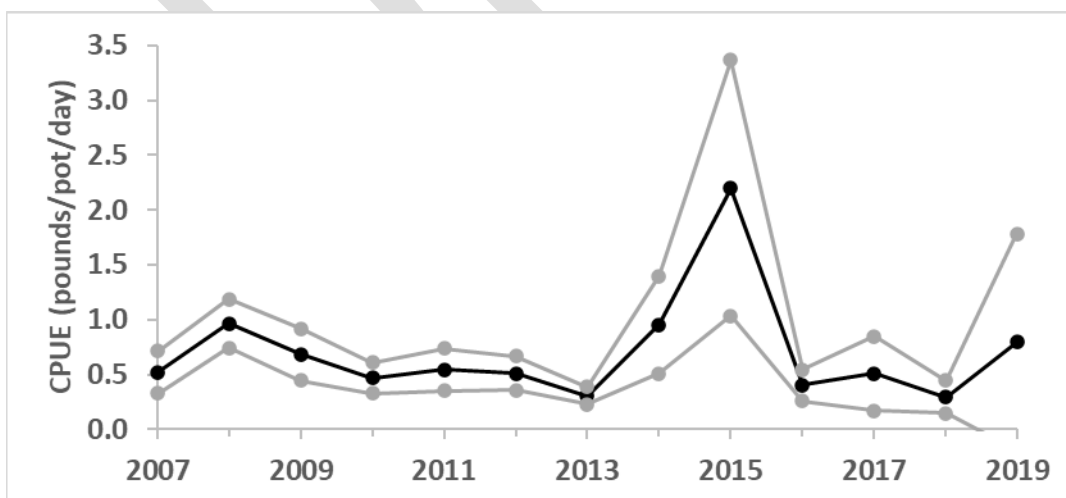


Figure 9. Fishery-dependent catch-per-unit-effort for Florida's yellow eel pot fishery. The black line indicates the CPUE and the grey lines indicate 95% confidence intervals.

3.0 Proposed Management Program

The following options were developed in response to the Board motion from August 2023. The options are organized by issue item.

When the Board takes final action on the addendum, there is the opportunity to select any measure within the range of options that went out for public comment, including combining options across issues. This means when selecting final management measures, the Board may select a coastwide cap that falls within the range of options, i.e., between 202,453 and 916,473 pounds.

3.1 Yellow Eel Coastwide Cap and Management Response to Exceeding the Coastwide Cap

Issue 1: Coastwide Cap

Addendum V established a coastwide cap of 916,473 pounds, which is the coastwide average landings during the years of 1998 through 2010 (based on revised landings information through 2016 as of January 2018). This timeframe was also the period covered by the 2012 benchmark stock assessment.

Alternative options for coastwide caps were developed using I_{TARGET} , an index-based method that provides management advice based on abundance indices and catch information, as well as management goals specified by the Board.

When using I_{TARGET} to recommend a catch cap, there are three parameters that must be specified: the reference period, multiplier, and threshold. The reference period should be a time period where the population is stable or at a desirable abundance level. The multiplier represents the target level of abundance that management is aiming to achieve, and can range from 1 to 1.5. A multiplier of 1 indicates that the target abundance level is equal to the abundance over the reference period, and a multiplier equal to 1.5 indicates that the target is 1.5 times the average index value over the reference period. The threshold value reflects goals of the fishery. If landings exceed the threshold, then future landings are reduced. A threshold of 0.5 is less conservative, whereas a threshold of 0.8 is more conservative. Adjusting these three parameters affects the resulting coastwide catch cap recommendation.

The stock assessment included analyses that identified regimes in the American eel abundance index data. Regimes are time periods where the abundance index data are more similar compared to other time periods. There were three regimes detected in the yellow eel index: a high yellow eel abundance regime in 1974-1987, a low regime in 1988-1999, and an even lower regime in 2000-2020. The first two regimes are included as reference period options in this addendum. A stable period of relative high abundance (1974-1987) was recommended in the stock assessment. The Management Board requested a reference period when more surveys were available (1988-1999) also be evaluated. This reference period reflects lower relative abundance levels, but relative abundance during this period was higher than in recent years (2000-2020).

Figure 10 shows the relative abundance index and catch time series, with the two reference periods identified by the shaded areas.



Figure 10. Yellow eel landings and abundance index, 1974-2020. The high abundance regime (1974-1987) is represented by the dark gray shaded area. The lower abundance regime (1988-1999) is represented by the light gray shaded area.

Option 1: Status Quo

Under this option, the coastwide cap for yellow eel of 916,473 pounds would be maintained. Based on the 2023 stock assessment advice, this option is not recommended.

Option 2: Coastwide Cap set at 202,453 pounds using I_{TARGET} configuration recommended in the 2023 benchmark stock assessment

The coastwide cap for yellow eel would be set at 202,453 pounds, using the following configuration of I_{TARGET} , which was recommended in the 2023 Benchmark Assessment and Peer Review Report:

- Reference Period: 1974-1987
- Multiplier: 1.25
- Threshold: 0.8

The assessment recommended using I_{TARGET} with a reference period of 1974-1987, which represents a stable period of relative high abundance of yellow eel. The stock assessment used a multiplier of 1.25 rather than 1.5, because it recognizes that more factors beyond fishing have influenced the stock and may have changed the carrying capacity for American eel, therefore

higher abundance levels (e.g., 1.5 times the abundance during the higher abundance regime) might not be achievable under current conditions. Thus, this option aims to achieve a relative abundance level that is 1.25 times the average index value from 1974-1987. The abundance index during this reference period is equal to 0.894; thus, the target value is equal to 1.118.

The assessment used a threshold value of 0.8 because it reflects a more conservative approach, and was recommended in the recent research track assessment conducted by the Northeast Fisheries Science Center (NEFSC) that examined methods for providing catch advice in data-limited fisheries.

Option 3: Coastwide Cap set at 518,281 pounds using I_{TARGET}

Under this option, the catch cap is set at 518,281 pounds, which is based on the following configuration of I_{TARGET} :

Reference Period: 1974-1987

Multiplier: 1.25

Threshold: 0.5

This option uses a reference period of 1974-1987 and a multiplier of 1.25, which were recommended in the stock assessment. This option aims to achieve a relative abundance level that is 1.25 times the average index value from 1974-1987, which is the same target value as in Option 2. The threshold value of 0.5 reflects a less conservative approach to managing the fishery to achieve the target abundance than what was recommended in the assessment. This would likely increase the amount of time needed to achieve the target index compared to Option 2.

Option 4: Coastwide Cap set at 509,780 pounds using I_{TARGET}

Under this option, the catch cap is set at 509,780 pounds, which is based on the following configuration of I_{TARGET} :

Reference Period: 1988-1999

Multiplier: 1.5

Threshold: 0.5

This option uses a reference period of 1988-1999, which represents a period of lower abundance, and a multiplier of 1.5. Thus, this option aims to achieve a relative abundance level that is 1.5 times the average index value from 1988-1999. The abundance index during this reference period is equal to 0.544; thus, the target value is equal to 0.816. The abundance target in this option is slightly lower than the abundance target in Options 2 and 3. The threshold value of 0.5 reflects a less conservative approach to managing the fishery to achieve the target abundance.

Option 5: Coastwide Cap set at 716,497 pounds using I_{TARGET}

Under this option, the catch cap is set at 716,497 pounds, which is based on the following configuration of I_{TARGET} :

Reference Period: 1988-1999

Multiplier: 1.25

Threshold: 0.5

This option uses a reference period of 1988-1999, which represents a period of lower abundance, and a multiplier of 1.25. Thus, this option aims to achieve a relative abundance level that is 1.25 times the average index value from 1988-1999. The abundance index during this reference period is equal to 0.544; thus, the target value under this option is equal to 0.680. The abundance target this option aims to achieve is 39% lower than the target recommended in the stock assessment. The threshold value of 0.5 reflects a less conservative approach to managing the fishery to achieve the target abundance.

The PDT does not recommend consideration of this option. The catch cap recommended when using this configuration is more than three times the catch cap that was recommended in the stock assessment (Option 2).

Figure 11 illustrates the difference in the catch caps produced by each of the above configurations of I_{TARGET} , where each line consists of annual data points representing the catch cap that would have been produced with each year as the terminal year of data. The assessment used 2020 as the terminal year, and therefore the catch caps considered in this draft addendum are based on landings and index data through 2020.

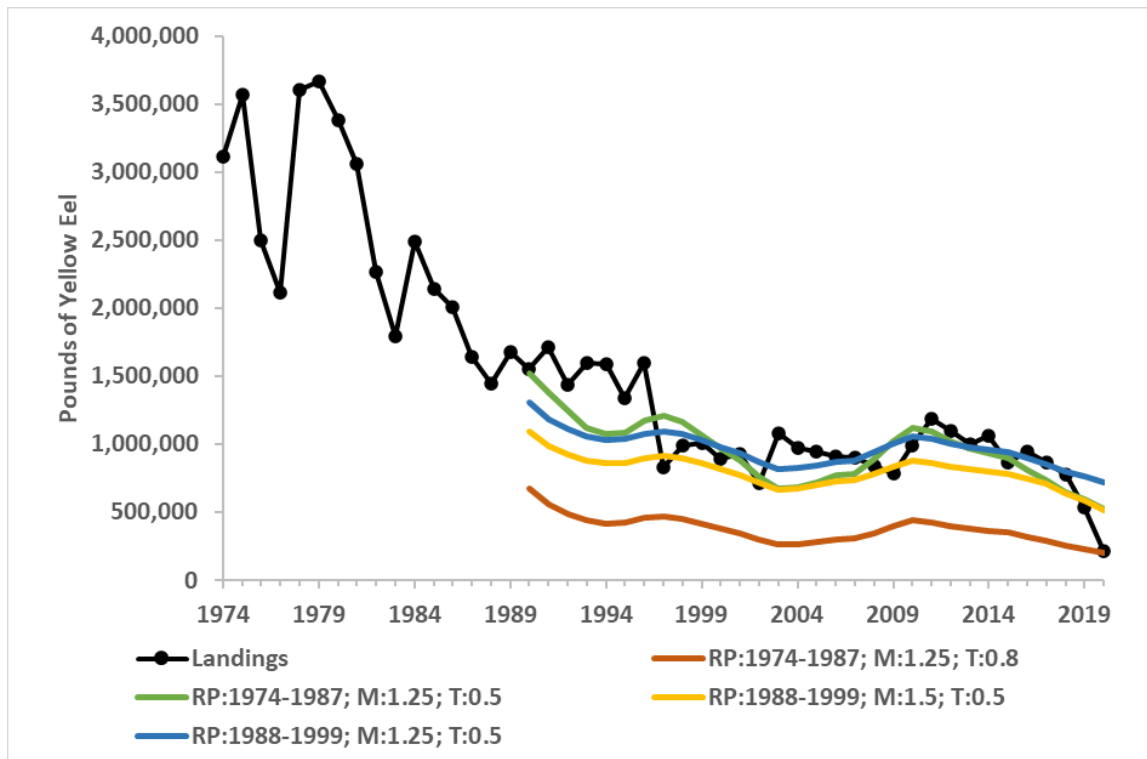


Figure 11. Comparison of catch advice produced by each of the proposed configurations of I_{TARGET} relative to annual coastwide catch. RP=reference period; M=multiplier; T=threshold value. The orange line represents Option 2, the green line represents Option 3, the yellow line represents Option 4, and the blue line represents Option 5.

Issue 2: Management Response to Exceeding the Coastwide Cap

Addendum V established that the coastwide landings are annually evaluated against a two-year management trigger. If the coastwide cap is exceeded by 10% (10% of the coastwide cap = 91,647 pounds; coastwide cap + 10% = 1,008,120 pounds) for two consecutive years, then only states with landings greater than 1% of the coastwide landings, in the year(s) when the management trigger is tripped, will be responsible for reducing their landings to achieve the coastwide cap in the subsequent year. States with landings greater than 1% of the coastwide landings will work collectively to achieve an equitable reduction to the coastwide cap. For states with landings less than 1% of the coastwide landings, if in subsequent years a state's landings exceeds 1% of the coastwide landings after reductions have been applied, that state must reduce their individual state landings in the subsequent year to return to the less than 1% level. More details on the process the Management Board will undertake to respond to overages of the coastwide cap are outlined in the Appendix.

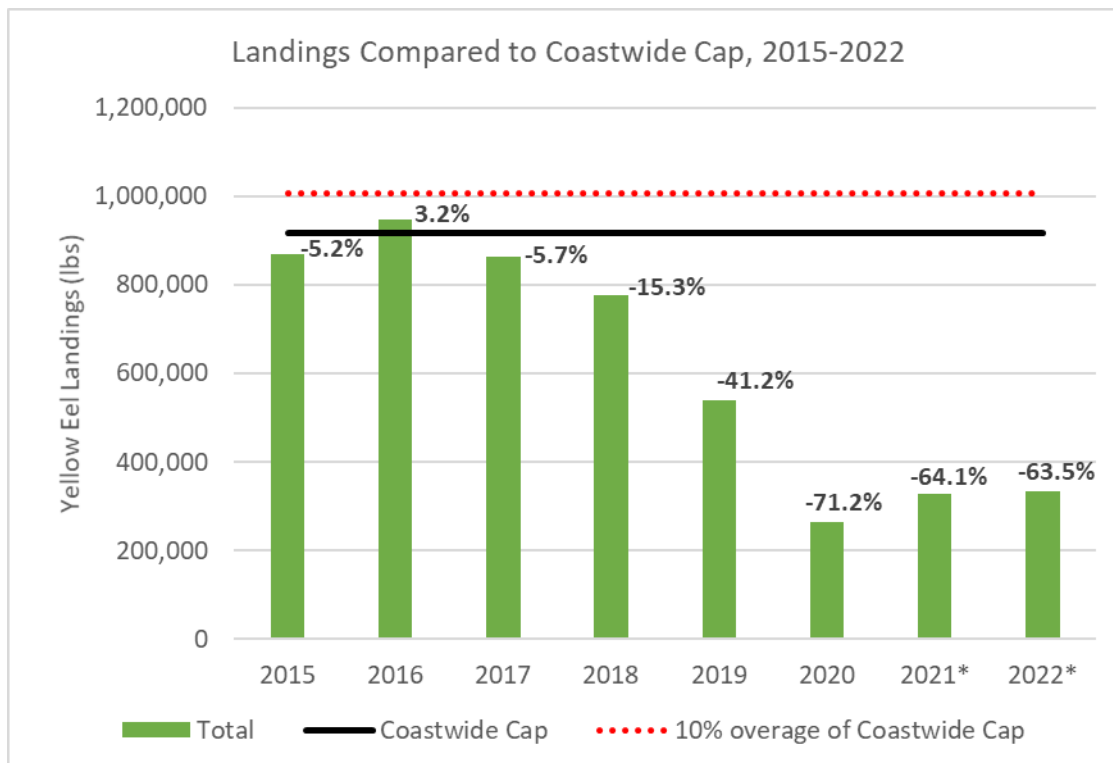


Figure 12. Coastwide yellow eel landings from 2015-2022 compared to the Addendum V coastwide cap and a 10% overage of the cap (the Management Trigger). Percentages above each bar indicate percent above or below the coastwide cap.

Option 1: Status Quo

The management trigger, landings evaluation process, and management response established in Addendum V would remain in place (see Appendix).

Option 2: States with 5% or greater of coastwide landings

This option would modify the management response that would take place if the coastwide cap is exceeded by 10% under the addendum V guidelines. Under this option, only states with landings greater than 5% of the coastwide landings in the year(s) when the management trigger is tripped will be responsible for reducing their landings to achieve the Coastwide Cap in the subsequent year. Those states with landings greater than 5% of the coastwide landings will work collectively to achieve an equitable reduction to the Coastwide Cap. For those states with landings less than 5% of the coastwide landings, if in subsequent years a state’s landings exceeds 5% of the coastwide landings after reductions have been applied, that state must reduce their individual state landings in the subsequent year to return to the <5% level.

For reference, Table 2 shows the percent of the coastwide landings contributed by each state in recent years.

Table 2. Percent of total coastwide yellow eel landings contributed by each state. Shaded cells represent > 5% of the annual coastwide landings.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2014	0.7%		0.4%	0.2%	0.1%	3.6%	8.6%	5.9%	58.4%	4.6%	10.3%	5.7%			1.3%
2015	0.5%		0.3%	0.2%	0.3%	5.8%	10.2%	5.1%	56.8%	3.6%	10.0%	6.7%			0.6%
2016	0.7%		0.2%	0.3%	0.3%	3.8%	7.1%	4.7%	61.7%	6.2%	10.2%	4.2%			0.6%
2017	0.7%	Time series average < 0.1%	0.1%	0.3%	0.1%	4.8%	9.0%	3.5%	62.6%	3.9%	11.3%	2.9%	Time series average < 0.1%	Time series average < 0.1%	0.9%
2018	0.4%		0.0%	0.5%	0.4%	5.1%	9.0%	4.0%	66.3%	4.0%	7.4%	2.3%			0.6%
2019	0.5%		0.3%	0.8%	1.0%	6.1%	14.1%	2.5%	61.5%	5.0%	6.4%	1.5%			0.3%
2020	2.7%		0.0%	0.5%	1.1%	6.2%	9.0%	0.7%	60.6%	9.5%	8.3%	1.2%			0.2%
2021*	0.1%		C	0.6%	1.0%	4.9%	8.0%	1.3%	62.3%	3.2%	14.1%	1.7%			2.8%
2022*	0.3%		C	0.2%	1.1%	8.1%	15.7%	0.9%	56.4%	3.8%	10.6%	1.1%			1.8%

3.2 Timeframe for Yellow Eel Provisions

The following options would determine how long the selected coastwide cap would remain in place before any changes are considered.

Option 1: No sunset date, cap can be updated after three years

Under this option there would be no sunset date for this Addendum. The selected coastwide landings cap for yellow eel would remain in place for three years (2025-2027). After three years, the Board may choose whether to update the coastwide cap with additional years of data, or maintain the same coastwide cap. If the Board chooses to update the cap using the selected I_{TARGET} configuration established in this addendum, this could be done via Board action and a new addendum would not be required. The additional years of data available at that time would be included in the I_{TARGET} model to provide an updated coastwide cap.

The PDT recommends three years as the minimum amount of time that the cap should remain static before being updated. This is because less than three years of additional data from the yellow eel abundance index and the coastwide landings would not be sufficient to evaluate the performance of the cap and provide an updated catch limit.

If a new or different management program is desired than what is specified in the prior sections (e.g., a different configuration of I_{TARGET}), a new addendum would be required.

Option 2: No sunset date, cap can be updated after five years

Under this option there would be no sunset date for this Addendum. The selected coastwide landings cap for yellow eel would remain in place for five years (2025-2029). After five years, the Board may choose whether to update the coastwide cap with additional years of data, or maintain the same coastwide cap. If the Board chooses to update the cap using the selected I_{TARGET} configuration established in this addendum, this could be done via Board action and a new addendum would not be required. The additional years of data available at that time would be included in the I_{TARGET} model to provide an updated coastwide cap.

A time period of five years is provided as an alternative to three years. Five years of additional data from the yellow eel abundance index and the coastwide landings would be more robust for providing an updated catch limit.

If a new or different management program is desired than what is specified in the prior sections (e.g., a different configuration of I_{TARGET}), a new addendum would be required.

3.3 Annual Young-of-Year Abundance Survey

The following options consider modifying the biological sampling requirements of the annual YOY abundance survey established in the FMP.

Option 1: Status Quo

Under this option all requirements for the annual YOY abundance survey established in Section 3.1.1 of the FMP would remain in place. This means states must continue to collect individual lengths and pigment stage of the entire survey catch, or a statistical subsample where the catch of young-of-year is too large.

Option 2: Voluntary biological sampling in the YOY survey

Under this option the requirements of the annual YOY abundance survey established in Section 3.1.1 of the FMP would be modified such that the states would no longer be required to collect individual lengths and pigment stage of the YOY catch. All other survey requirements would remain in place. States may continue to collect biological data voluntarily.

This option is proposed in response to a recommendation from the American Eel Stock Assessment Subcommittee (SAS) and Technical Committee (TC). The SAS and TC recommend that the biological sampling requirement for YOY surveys be made optional, given the lack of trends in pigment, length, and weight within and among sampling sites (ASMFC 2023).

3.4 Catch and Effort Monitoring Program

Addendum I established fishery-dependent monitoring requirements for commercial eel fisheries. Specifically, since 2007 states have been required to implement mandatory reporting of eel catch and effort by either harvesters or dealers as a condition of their permit. The following options consider changing the Addendum I fishery-dependent monitoring requirements.

Option 1: Status Quo

Under this option there would be no change to the current fishery-dependent reporting requirements. Harvesters or dealers would still be required to report trip-level data including soak time, number of units of gear fished, and pounds landed by life stage.

Option 2: Voluntary collection of fishery-dependent catch-per-unit-effort (CPUE) for yellow eel harvest

Under this option states would no longer be required to mandate that harvesters or dealers report trip-level CPUE data (i.e., soak time, number of units of gear fished, and pounds landed)

for yellow eel harvest. If a state wishes to maintain this reporting requirement it may do so voluntarily. All states must continue to report commercial yellow eel catch annually. This option would not modify any fishery-dependent reporting requirements for the glass eel life stage.

4.0 Compliance

If the existing American Eel FMP is revised by approval of this draft addendum, the American Eel Management Board will establish dates by which states will be required to implement the addendum provisions.

5.0 References

Atlantic States Marine Fisheries Commission (ASMFC). 2000. Interstate Fishery Management Plan for American Eel (*Anguilla rostrata*). Washington D.C. NOAA Oceanic and Atmospheric Administration Award No. NA97 FGO 0034 and NA07 FGO 024.

ASMFC. 2012. American Eel Benchmark Stock Assessment. Arlington, VA.

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ASMFC. 2023. American Eel Benchmark Stock Assessment and Peer Review Reports. Arlington, VA.

Blake, L. M. 1982. Commercial fishing for eel in New York State. In K. H. Loftus (ed). Proceedings of the 1980 North American eel conference. Ont. Fish. Tech. Rep. Ser. No. 4. 97pp

Appendix

Policy to Address Coastwide Cap Overages for the Yellow Eel Commercial Fishery

This appendix describes the Board response that was established under Addendum V for in the event that the coastwide cap of 916,473 pounds of American eel is exceeded in a given year. Sections 3.3.2 and 3.3.3 of this Addendum state the following regarding the management trigger and the response:

3.3.2 Yellow Eel Coastwide Cap Management Trigger

Starting in 2019, the coastwide landings are annually evaluated against a two-year management trigger. If the coastwide cap is exceeded by 10% (10% of the coastwide cap = 91,647 pounds; coastwide cap + 10% = 1,008,120 pounds) for two consecutive years, the Board is required to alter the management program as specified below to ensure the objectives of the management program are achieved.

3.3.3 Allocation

The yellow eel fishery is managed without state-specific quotas through adaptive management. If the management trigger is tripped. Only states with landings greater than 1% of the coastwide landings, in the year(s) when the management trigger is tripped, will be responsible for reducing their landings to achieve the coastwide cap in the subsequent year. States with landings greater than 1% of the coastwide landings will work collectively to achieve an equitable reduction to the coastwide cap. For states with landings less than 1% of the coastwide landings, if in subsequent years a state's landings exceeds 1% of the coastwide landings after reductions have been applied, that state must reduce their individual state landings in the following year to return to the less than 1% level¹.

A management objective under this Addendum is to manage landings to the coastwide cap (cap). Annual landings are not finalized until the spring of the following fishing year. Therefore, if an overage occurs, a year lag time will likely occur before full action is taken to reduce harvest to the cap. For example, a cap overage in 2019 would not be determined until 2020, and action would likely be delayed until 2021 since some states do not have authority to act within the same fishing year when the overage is determined.

One way to proactively manage the yellow eel fishery is to closely monitor landings and encourage states to take voluntary action when it is clear an overage has occurred in the previous year. By engaging with states before the management trigger is tripped, but after landings have exceeded the cap, a lengthy addendum process can be avoided and more immediate action can be taken to ensure the fishery is managed to the cap. This proactive approach encourages vigilance and voluntary action in the first year of an overage, and provides opportunity for collaborative, rapid action to prevent an overage in the second

¹ To clarify, reduction measures apply when the management trigger is tripped. States are not held to a landings level until coastwide landings have exceeded the coastwide cap.

consecutive year, thereby preventing the triggering of mandatory management action through an addendum.

Thus, to improve the expediency in reacting to an overage, it is recommended that preliminary commercial yellow eel landings from the ACCSP Data Warehouse be made available for the Board's consideration prior to the ASMFC Spring Meeting, annually. Based on the preliminary data review, if it's determined the cap has likely been exceeded in one year the Board will convene a work group (WG) consisting (at a minimum) of one representative from each state/jurisdiction that harvested more than 1% of the coastwide landings in the year of the overage. The charge of the WG is to consider the overage relative to the decision trees (Figure 1) and determine if and how the Board should recommend voluntary action by those states that harvested more than 1% of the coastwide landings (1% states).

Response Strategy When Cap is exceeded in One Year

Once convened by the Board, the WG will review the magnitude and the pattern of the overage relative to the decision trees (Figures 1-3) to determine the need for voluntary action. "Pattern" refers to whether landings of American eel increased in all states or in some states while harvest decreased in others. "Magnitude" refers to the extent of the overage and, for individual states, the amount of harvest increase relative to the previous year. It will be important for the WG to examine potential reasons for increasing harvest, such as increased effort, increased availability of eels, improved market conditions, etc. Once the Board recommends states decrease landings it will be up to the states to take action.

States may utilize (but are not restricted to) the following voluntary methods to reduce eel harvest as considered by the Board in Draft Addendum II (2007):

- Seasonal restrictions,
- Gear limits, and
- Size limits.

Note: Harvest reductions were not approved by the Board and were not included in Addendum II (2008).

Seasonal restrictions are the simplest method of reducing harvest, but there was strong opposition to the seasonal restrictions from the Advisory Panel when proposed in Draft Addendum II. However, those seasonal closures were designed to increase escapement of silver eels and occurred in the fall during times of maximal fishing effort, so it is conceivable that a seasonal closure could be designed that would reduce harvest without imposing a severe hardship on the fishery. The Board considered a maximum size limit as a method to allow more escapement of silver eels and increase eggs-per-recruit (EPR). A range of size limits were presented in the Draft Addendum ranging from a 19" maximum size limit, which was estimated to increase EPR by 138%, but at a reduction of 40% to the harvest, to a 23" maximum size, which only increased EPR by 3.8% and reduced harvest by less than 10%. A larger minimum size also will reduce harvest if harvest reduction is the sole goal. Size limits could either be enforced by gear modifications or by grading the eels on the water. Gear modifications can impose a

large financial burden on harvesters, depending on the number of pots fished and length limit. If a minimum length is used, eel pots can be modified by installing an escape panel of a mesh size that would only retain eels above the minimum length. If a maximum eel length is used, the funnel(s) on the eel pots can be modified by restricting the circumference. A grader can also be used to comply with length limits at a lower cost to the harvesters than gear modification. Grader bars can be set to pass all eels below a minimum length or to hold all eels above a maximum length. Although the Advisory Panel favored grading for complying with a maximum length limit during the Draft Addendum II deliberations, the Law Enforcement Committee thought on-water enforcement of the length limit by grading would be difficult.

Response Strategy if the Two-Year Management Trigger is Tripped

If a review of landings at the Commission's Spring Meeting indicate the two-year management trigger has been met, the Board will initiate an addendum to reduce landings to or below the cap. A Plan Development Team (PDT) will be convened to draft the addendum (Table 1). The PDT will consider a variety of actions to reduce harvest back to the cap, including but not limited to: (1) an equal percent reduction taken only from the 1% states whose harvest increased in the overage year(s); (2) an equal percent reduction taken from all 1% states regardless of whether their harvest increased or decreased; (3) each 1% state takes a base reduction that is less than the total reduction needed, and the remainder of the reduction is taken only by those 1% states who had substantially increased harvest leading up to the overage year. The PDT should consider the impacts of calculating a reduction in harvest from a single overage year, the 2 years over which the trigger was reached or from a baseline within the last 5 years using a maximum of 3 years that ensures equitable reductions.

Once action is taken to reduce harvest to the cap (either voluntary after the first year of an overage or required after the management trigger is tripped), actions will remain in place until the coastwide harvest returns to a level that is at or below the cap. At this point, states may propose adjustments to the Board recognizing the process will begin again if another year's overage occurs or a management action is enacted.

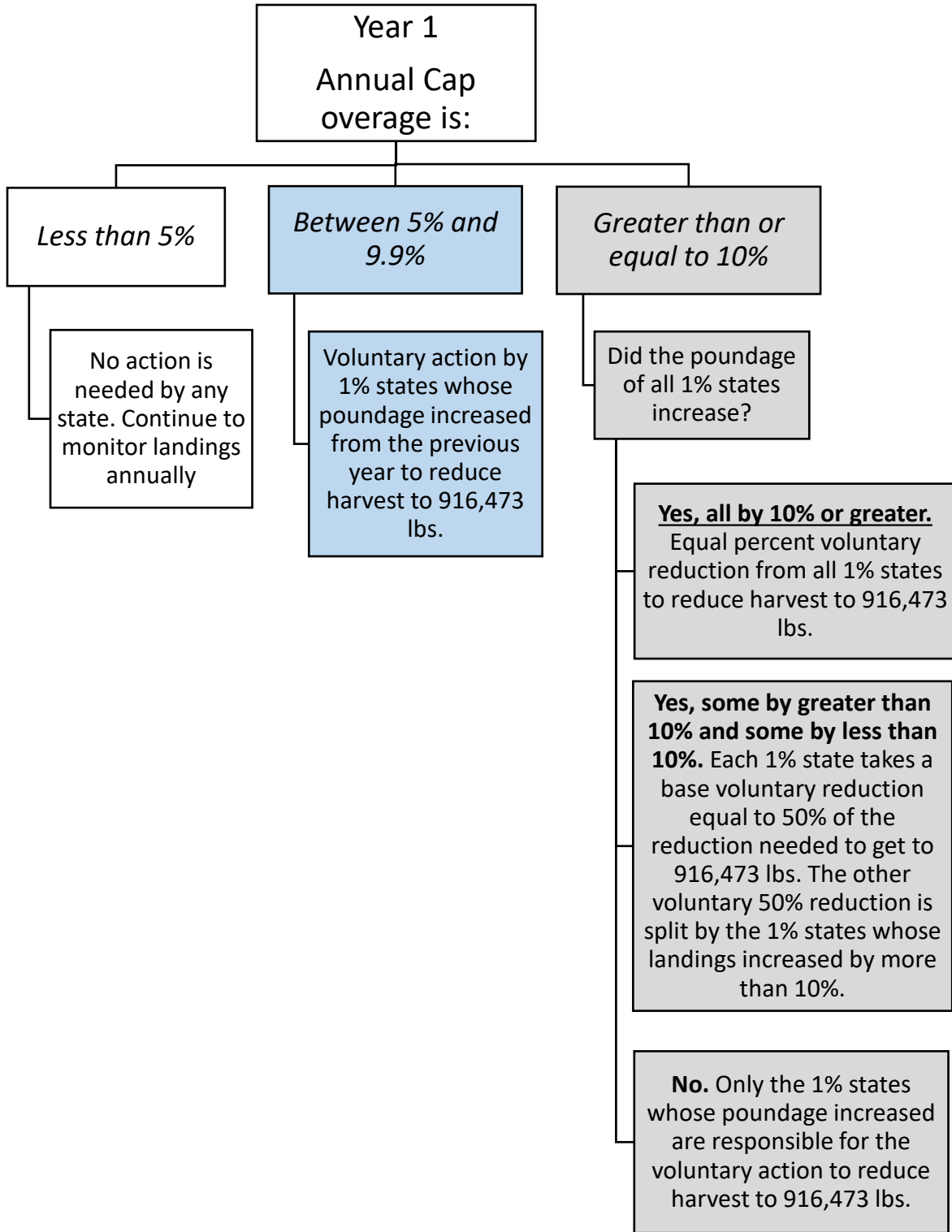


Figure A1. Decision tree for management response to cap overage in Year 1.

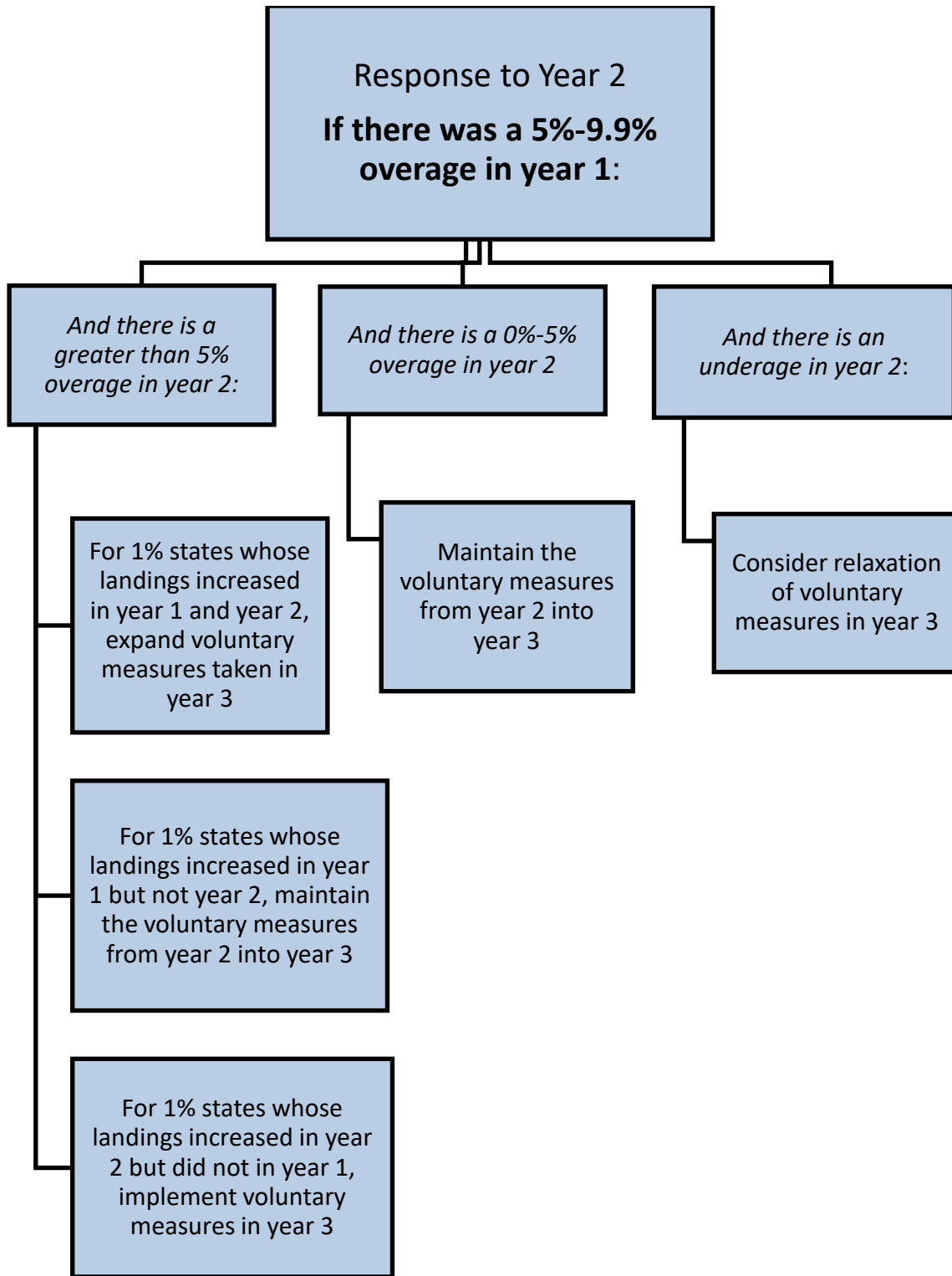


Figure A2. Decision tree for management response in Year 3 if overage is less than 10% in Year 1.

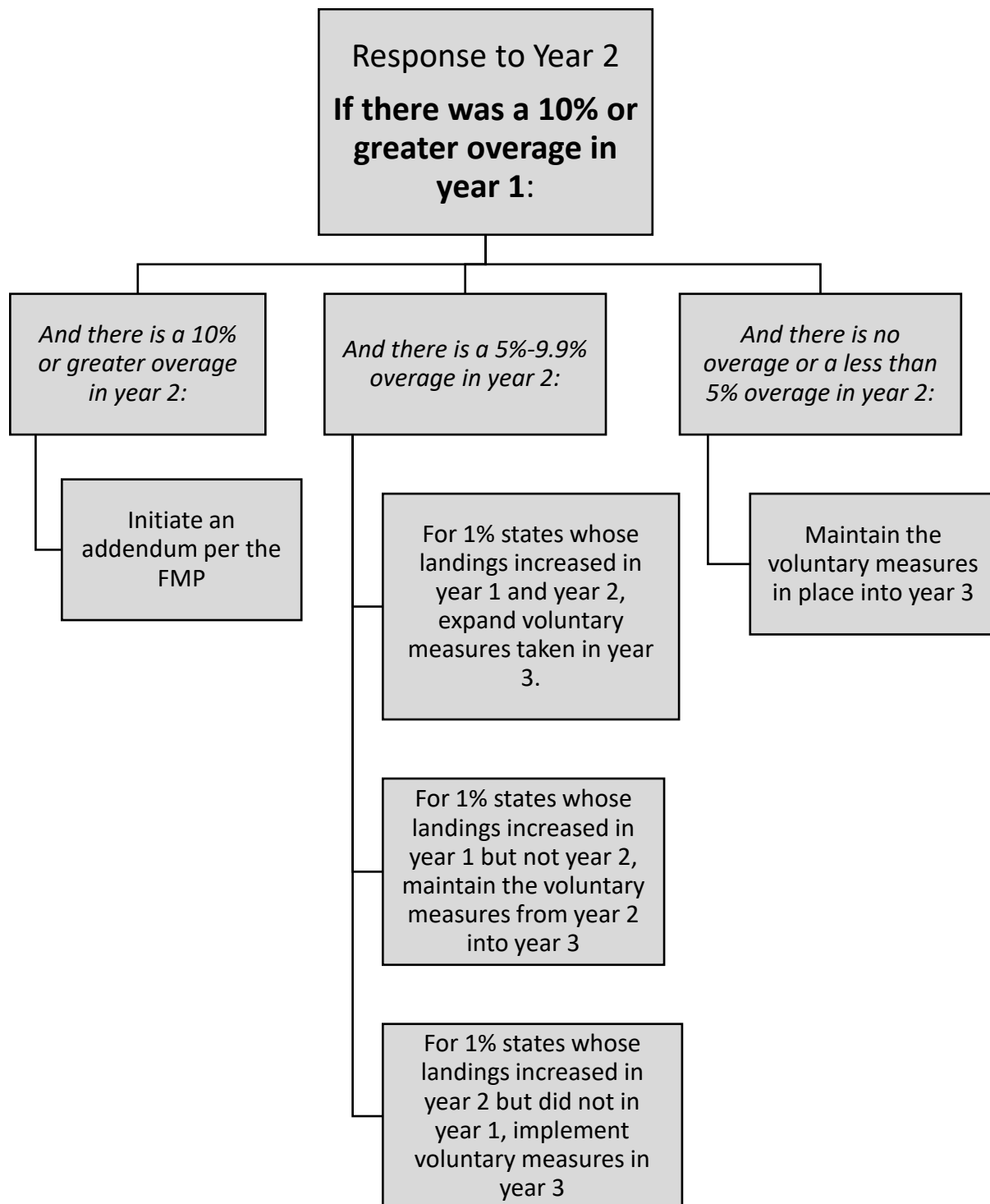


Figure A3. Decision tree for management response in Year 3 if overage is more than 10% in Year 1.



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MEMORANDUM

TO: American Eel Technical Committee
FROM: American Eel Plan Development Team
DATE: December 1, 2023
SUBJECT: Request for Recommendation on Continuation of Addendum I Mandatory American Eel Harvester Trip Level Catch and Effort Monitoring Program

At its November 28, 2023 meeting, The American Eel Plan Development Team (PDT) discussed the mandatory American eel harvester trip level catch and effort monitoring program required under Addendum I. Specifically, the PDT is considering whether or not to include options in the current draft addendum related to discontinuing this requirement. This memo requests the American Eel TC review the fishery-dependent catch-per-unit-effort (CPUE) harvester level reporting requirement in Addendum I, discuss state data collection programs, and provide a recommendation to the PDT regarding continuing this requirement.

Background

Addendum I required states to report harvest data provided as CPUE (by life stage and gear type). To improve future stock assessments, the Stock Assessment Subcommittee (SAS) recommended that states should be required to report effort by gear type including the number of units of gear fished per person per trip, and soak time or fishing time on an annual basis. Addendum III maintained the mandate to collect harvester CPUE data; however, the purpose of the collection shifted from harvester effort to increasing the accuracy of reporting where states and jurisdictions with a commercial yellow eel fishery were required to implement a trip level reporting system for both dealer and harvester reporting. Cross referencing between dealer and harvester trip level reporting was recommended to ensure accuracy. However, at this point fishery-dependent CPUE data have not been used for stock assessment purposes or to inform management and are not meeting the intended purpose.

The information below provides rationale for removing mandatory state fishery-dependent CPUE harvester level reporting required by the Atlantic States Marine Fisheries Commission (ASMFC) under Addendum I to the Interstate Fishery Management Plan (FMP) for American Eel.

1. Fishery-Dependent CPUE Data Not Used

Fishery-dependent CPUE data from some states was available for use in the 2017 American Eel Stock Assessment Update (October 2017), but the SAS concluded they were not indicative of trends in the stock as a whole and therefore were not used. Additionally, although fishery-dependent CPUE data from seven states met the minimum ten-year time series to be considered for inclusion in the 2023 American Eel Benchmark Stock Assessment (terminal year of 2019), the SAS again decided against inclusion because they were not considered indicative

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of trends in the stock as a whole and differences in baiting practices and bait preference vary geographically which can confound the accuracy of fishery-dependent CPUE data. The SAS noted fishery-dependent CPUE data are almost exclusively composed of positive trips only; trip reports with zero eels caught are rare because most agencies do not require reports of zero catches. Moreover, the stock assessment Peer Review Panel noted that given the variety of fishing gears and fishing areas, the analysis of fishing effort would not be straightforward. Fishery-dependent indices (n=9), as calculated by state partners, were only included as an appendix in the 2023 benchmark stock assessment. The requirement for states to collect harvest data provided as CPUE by life stage and gear type was intended to improve stock assessments; but has yet to be used for that purpose.

2. No Plan to Use Fishery-Dependent CPUE Data

Traditional stock assessments for American eel have not been possible in the past and the 2023 Benchmark Stock Assessment utilized a new index-based model (ITARGET) approach for management. Model inputs for the ITARGET model are catch (commercial landings submitted annually to ACCSP by the states), and the MARSS (Multivariate Auto-Regressive State-Space model) yellow eel fishery-independent index. If use of ITARGET is continued, fishery-dependent CPUE harvester data are not likely to be used in future assessments. The Peer Review Panel noted fishing effort data is not critical for subsequent assessment analysis. The Board accepted the 2023 Benchmark Stock Assessment and Peer Review Report for management use at their August 2023 business meeting and a motion to form a PDT to draft an addendum using ITARGET to recommend various coastwide catch caps for yellow eels. If the new yellow eel addendum is adopted using ITARGET for management, fishery-dependent CPUE data will continue to not be used to inform management decisions.

3. Voluntary Data Collection

Given fishery-dependent CPUE data collection has not met its intended purpose and there are no plans for the data to be incorporated into the management framework, the collection of this data should be made optional. This would allow several states that were collecting harvester CPUE data prior to the 2007 mandate to continue collection of this data if they choose and continue to allow this data to be available for re-evaluation.

Questions for TC Discussion

Below are several questions the TC should focus on addressing:

States with fishery-dependent CPUE data:

- If harvester CPUE data were not required, would the state keep collecting them?
- Does the state use this data for their own purposes outside of the ASMFC stock assessment?

All states:

- Are there concerns about removing the requirement?
- Would the TC recommend the Board consider removing the harvester reporting requirement?



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American Eel Technical Committee Meeting Summary

Webinar
December 18, 2023

Technical Committee Members: Danielle Carty (TC Chair, SC), Brad Chase (MA), Caitlin Craig (NY), Chris Adriance (DC), Ingrid Braun (PRFC), Jen Pyle (NJ), Jim Page (GA), Josh McGilly (VA), Keith Whiteford (MD), Kevin Molongoski (USGS), Kim Bonvechio (FL), Mike Porta (PA), Pat McGee (RI), Robert Atwood (NH), Sheila Eyler (FWS), Todd Mathes (NC), Troy Tuckey (VA), Wendy Morrison (NOAA)

ASMFC Staff: Kristen Anstead, Caitlin Starks

Additional Attendees: Chris Batsavage

The American Eel Technical Committee (TC) met via webinar to consider a request from the Plan Development Team (PDT) to discuss and provide recommendations regarding a proposal to consider options in Draft Addendum VII to remove the requirement for states to collect harvester trip-level catch per unit effort (CPUE) data established under Addendum I. Addendum I requires states to implement either harvester or dealer permits for the commercial harvest of American eel, with a requirement to report eel catch and effort on a trip-level basis. Effort data components included in this requirement are soak time and number of units of gear fished.

The proposal being considered by the PDT is to include in the Draft Addendum options to modify the CPUE reporting requirement. The rationale for considering such options is that the CPUE data have not been used in the stock assessment as originally intended. In the 2012 and 2023 benchmark stock assessments, these data were considered but the assessment team decided against their inclusion because they were not considered indicative of trends in the stock as a whole, and differences in baiting practices and bait preference vary geographically which can confound the accuracy of fishery-dependent CPUE data. The 2023 stock assessment peer review panel also noted that given the variety of fishing gears and fishing areas, the analysis of fishing effort would not be straightforward. The 2023 stock assessment and peer review reports indicate that there is no plan to use the fishery-dependent CPUE data moving forward. As such, the PDT is considering including an option that would make it voluntary for states to collect these CPUE data for American eel. This would allow states to continue collecting the data if desired, but relieve some burden from states that do not have a need for them.

The TC discussed this proposal and concluded that there are no concerns with considering an option to make this reporting requirement optional. The TC members reported on whether their state would continue to collect harvester CPUE data if it were not required by the

Commission, and what their states use these data for. All states with commercial fisheries indicated they would continue to collect effort data in their harvester reports, except for North Carolina. Todd Mathes from NC DMF commented that the state uses dealer reports to collect landings data and eel is one of the only species for which they require harvester reporting. North Carolina does not use the data and it did not meet the intended purpose of improving stock assessments, so they do not anticipate collecting the CPUE data if it were voluntary.

Some of the states that collect CPUE data do use it for state purposes. A few TC members mentioned that it is used for tracking compliance and understanding effort and catch by different gear types.

The TC noted that if the PDT includes options in the Draft Addendum to consider removing this requirement, the language should be clear that state collection of the trip level effort data would become voluntary or optional, and it will be determined by the state whether harvester or dealer reporting of these data is required. They also clarified that they do not recommend any changes to the requirements for reporting landings.

The TC also discussed a recently published peer-reviewed study by Hiromi Shiraishi and Kenzo Kaifu entitled *Early warning of an upsurge in international trade in the American Eel*. This study has raised some concerns about the American eel stock and international demand since it indicates there has been a drastic increase in imports of live American eel, specifically glass eel or elvers, in Asia in recent years. Notably, imports of juvenile American eel in Asia have surged from only 2 metric tons (MT) in 2004, to 53 MT in 2021, and then 157 MT in 2022. The majority of these imports originate from Haiti, but there have been increases in the numbers coming from the US and Canada as well. The main concern with this large increase is the potential negative impact on the range-wide population. The TC agreed that this paper should be shared with the Board via email to bring it to their attention. The TC did not recommend that this information should impact the development of and decisions related to Draft Addendum VI on Maine's glass eel quota.



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MEMORANDUM

TO: American Eel Management Board

FROM: American Eel Plan Development Team for Yellow Eel

DATE: October 3, 2023

SUBJECT: Request for Feedback on Management Options for Yellow Eel Draft Addendum

In August, in response to the assessment findings the American Eel Management Board (Board) initiated an addendum to consider changes to the coastwide yellow eel harvest cap. The current coastwide cap of 916,473 pounds was set based on the average landings from 1998 to 2010. The benchmark assessment proposes a new tool, called I_{TARGET} for setting the coastwide cap based on abundance indices and catch. The Plan Development Team (PDT) was tasked with developing a draft addendum that considers using this tool to recommend a range of coastwide caps and management options.

The PDT met twice in September 2023 to discuss potential management options for consideration in the addendum. Below are some preliminary recommendations from the PDT.

- The addendum should include as an option one catch cap based on the stock assessment recommended configuration of I_{TARGET} (1974-1987 reference period, 1.25 multiplier, and 0.8 threshold).
- The addendum should also include an option using the 1988-1999 reference period with different multipliers and thresholds.
- Each option should clearly indicate what target abundance level (relative to the reference period) it is aiming to achieve.
- The addendum should consider some additional options for a management response to exceeding the catch cap, in addition to status quo from Addendum V. It should be noted that landings from Maryland alone could be high enough to exceed some of the caps recommended by I_{TARGET} .
- The catch cap should be reevaluated no sooner than three years after implementation.
- When reevaluating the catch cap, the PDT does not recommend changing the I_{TARGET} configuration, but rather adding additional years of data.

Another management strategy the PDT discussed is considering options that would allow states to explore implementing a glass eel fishery in exchange for significantly reducing yellow eel landings or closing their commercial yellow eel fishery. This idea is grounded in the understanding that the glass eel fishery could withstand a greater amount of fishing mortality than the yellow eel fishery in part due to the greater natural mortality that glass eels experience compared to yellow eels. These options could build off of the Addendum IV (2014)

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provision that allowed states to request an allowance for commercial glass eel harvest based on stock enhancement programs. The PDT is interested in further exploring options for states to pursue glass eel harvest as an alternative to yellow eel harvest in order to reduce mortality on the yellow eel life stage.

The PDT is seeking additional guidance from the Board on the development of draft management options. Specifically, the PDT is looking for input on the following questions:

- What levels of abundance should the addendum options aim to achieve? I.e., what multiplier values should be considered (1, 1.25, 1.5)?
- Does the Board want to reconsider the use of state-by-state quotas? If not, how will states control or reduce yellow eel landings to prevent exceeding the coastwide cap?
- Are there bounds on the landings caps the Board is willing to consider?
- Does the Board want to use the same process established in Addendum V if the coastwide landings exceed the cap?
- Should the PDT further explore options for states to pursue glass eel harvest in exchange for reducing or eliminating yellow eel harvest?



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American Eel Yellow Eel Plan Development Team Meeting Summary

Webinar
September 12, 2023

Plan Development Team Members: Brad Chase (MA), Jen Pyle (NJ), Todd Mathes (NC), Troy Tuckey (VA), Sheila Eyler (FWS), Kirby Rootes-Murdy (USGS), Caitlin Starks (ASMFC)

Additional Attendees: Raymond Kane

The American Eel Plan Development Team (PDT) for yellow eel met via webinar to begin developing a draft addendum to consider using the *I_{TARGET}* tool recommended in the recent benchmark stock assessment to recommend various catch caps. This addendum was initiated in response to the assessment findings that the American eel stock is depleted, and fishing is likely having a negative impact on the stock.

Staff reviewed the current management program. Sheila Eyler presented on the *I_{TARGET}* tool and how it can be configured. There are three “knobs” that can be adjusted in the tool.

1. Reference period: the reference period should be a time period where the population is stable or at a desirable abundance level.
2. Multiplier: The multiplier determines the level of abundance that management is aiming to achieve. A multiplier of 1 is equal to the abundance from the reference period, and a multiplier of 1.25 increases the abundance from the reference period by 25%.
3. Threshold: This value reflects goals of the fishery. If landings exceed the threshold, then future landings are reduced. A threshold of 0.5 is less conservative, whereas a threshold of 0.8 was recommended by the NEFSC.

The assessment recommended using a reference period of 1984-1987, which represents a period of high abundance. The management Board also requested evaluating a reference period when more surveys were available (1988-1999). This reference period reflects a lower abundance value relative to the first, but higher than recent years. The stock assessment used a multiplier of 1.25 rather 1.5, because it recognizes that more factors beyond fishing have influenced the stock and it might not be achievable to aim for higher abundance. The Stock Assessment Subcommittee (SAS) recommends using the values recommended in the assessment for the reference period and the multiplier, and using the threshold value to produce alternate catch caps.



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The PDT noted that it would be a challenge to update the I_{TARGET} annually because of the timing of data availability. They recommend considering reevaluating the catch cap using I_{TARGET} on the same schedule as assessment updates. It was also noted that this addendum would most likely not be implemented before the 2025 fishing year.

The PDT discussed the merits of considering use of the later reference period. They agreed it should be considered because of data reliability issues in older years, and more surveys being available for the later period.

The PDT agreed on the following preliminary recommendations for the draft addendum:

- Include as an option one catch cap based on the stock assessment recommended configuration of I_{TARGET} (earlier reference period, 1.25 multiplier, and 0.8 threshold)
- The addendum should include some options using the later reference period with different multipliers and thresholds
- It should be clear in each option what the target abundance level is that it is aiming to achieve
- The addendum should consider some additional options for a management response to exceeding the catch cap, in addition to status quo from Addendum V

The PDT discussed the following topics where they feel guidance is needed from the Management Board:

- The Board should provide input on what abundance level they want to aim to achieve
- Does the Board want to reconsider the use of state-by-state quotas? If not, how will states control or reduce yellow eel landings to prevent exceeding the coastwide cap?
- Are there bounds on the landings caps the Board is willing to consider?
- Does the Board want to use the same process established in Addendum V if the coastwide landings exceed the cap?
- How often does the board want to reevaluate the catch cap?
- When reevaluating the catch cap, the PDT does not recommend changing the I_{TARGET} configuration, but rather adding additional years of data.

The PDT identified the following tasks to be completed before the next meeting.

- Draft a memo to the Board with draft options and a request for feedback
- Develop questions and/or options for fishery goals and how to control landings
- Develop language to explain the scientific basis of the “knobs” in I_{TARGET}
- Run additional combinations in I_{TARGET} using the later reference period

DRAFT FOR BOARD REVIEW

ATLANTIC STATES MARINE FISHERIES COMMISSION

**REVIEW OF THE INTERSTATE FISHERY MANAGEMENT
PLAN**

**AMERICAN EEL
(*Anguilla rostrata*)**

2022 FISHING YEAR



Prepared by the American Eel Plan Review Team

January 2024



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

**REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN AND STATE COMPLIANCE FOR
AMERICAN EEL (*Anguilla rostrata*) FOR THE 2022 FISHERY**

Management Summary

<u>Date of FMP approval:</u>	November 1999
<u>Addenda:</u>	Addendum I (February 2006) Addendum II (October 2008) Addendum III (August 2013) Addendum IV (October 2014) Addendum V (August 2018)
<u>Management unit:</u>	Migratory stocks of American Eel from Maine through Florida
<u>States with a declared interest:</u>	Maine through Florida, including the District of Columbia and the Potomac River Fisheries Commission
<u>Active committees:</u>	American Eel Management Board, Plan Review Team, Technical Committee, Stock Assessment Subcommittee, and Advisory Panel

I. Status of the Fishery Management Plan

The ASMFC American Eel Management Board (Board) first convened in November 1995 and finalized the Fishery Management Plan (FMP) for American Eel in November 1999 (ASMFC 2000).

GOAL

The goal of the FMP is to conserve and protect the American eel resource to ensure its continued role in the ecosystems while providing the opportunity for its commercial, recreational, scientific, and educational use.

OBJECTIVES

1. Improve knowledge of eel utilization at all life stages through mandatory reporting of harvest and effort by commercial fishers and dealers, and enhanced recreational fisheries monitoring.
2. Increase understanding of factors affecting eel population dynamics and life history through increased research and monitoring.
3. Protect and enhance American eel abundance in all watersheds where eel now occur.
4. Where practical, restore American eel to those waters where they had historical abundance but may now be absent by providing access to inland waters for glass eel, elvers, and yellow eel and adequate escapement to the ocean for pre-spawning adult eel.
5. Investigate the abundance level of eel at the various life stages, necessary to provide adequate forage for natural predators and support ecosystem health and food chain structure.

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The FMP requires all states and jurisdictions to implement an annual young-of-year (YOY) abundance survey to monitor annual recruitment of each year's cohort. In addition, the FMP requires a minimum recreational size, a possession limit and a state license for recreational fishermen to sell eels. The FMP requires that states and jurisdictions maintain existing or more conservative American eel commercial fishery regulations for all life stages, including minimum size limits. Each state is responsible for implementing management measures within its jurisdiction to ensure the sustainability of its American eel population.

The FMP has been adapted through the following addenda:

[Addendum I \(February 2006\)](#)

In August 2005, the Board directed the American Eel Plan Development Team (PDT) to initiate an addendum to establish a mandatory catch and effort monitoring program for American eel. The Board approved Addendum I at the February 2006 Board meeting.

[Addendum II \(October 2008\)](#)

In January 2007, the Board initiated a draft addendum with the goal of increasing escapement of silver eels to spawning grounds. In October 2008, the Board approved Addendum II, which placed increased emphasis on improving the upstream and downstream passage of American eel. The Board chose to delay action on management measures in order to incorporate the results of the 2012 stock assessment.

[Addendum III \(August 2013\)](#)

In August 2012, the Board initiated Draft Addendum III with the goal of reducing mortality on all life stages of American eel. The Addendum was initiated in response to the findings of the 2012 Benchmark Stock Assessment, which declared American eel stock along the US East Coast depleted. The Board approved Addendum III in August 2013.

Addendum III requires states to reduce the yellow eel recreational possession limit to 25 eel/person/day, with the option to allow an exception of 50 eel/person/day for party/charter employees for bait purposes. The recreational and commercial size limit increased to a minimum of 9 inches. Eel pots are required to be ½ by ½ inch minimum mesh size or have at least a 4" by 4 inch escape panel of ½ by ½ inch mesh escape panel. The glass eel fishery is required to implement a maximum tolerance of 25 pigmented eels per pound of glass eel catch. The silver eel fishery is prohibited to take eels from September 1st to December 31st from any gear type other than baited traps/pots or spears. The Addendum also set minimum monitoring standards for states and required dealer and harvester reporting in the commercial fishery.

[Addendum IV \(October 2014\)](#)

In October 2014, the Board approved Addendum IV. This addendum was also initiated in response to the 2012 American Eel Benchmark Stock Assessment and the need to reduce mortality on all life stages. The Addendum established a coastwide cap of 907,671 pounds of yellow eel, reduced Maine's glass eel quota to 9,688 pounds (2014 landings), and allowed for the continuation of New York's silver eel weir fishery in the Delaware River. For yellow eel

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fisheries, the coastwide cap was implemented for the 2015 fishing year and established two management triggers: (1) if the cap is exceeded by more than 10% in a given year, or (2) the cap is exceeded for two consecutive years regardless of the percent overage. If either one of the triggers are met, then states would implement state-specific allocation based on average landings from 2011-2013. The addendum also requires any state or jurisdiction with a commercial glass eel fishery to implement a fishery independent life cycle survey covering glass, yellow, and silver eels within at least one river system.

[Addendum V \(August 2018\)](#)

In August 2018, the Board approved Addendum V. The Addendum increases the yellow eel coastwide cap starting in 2019 to 916,473 pounds to reflect a correction in the historical harvest data. Further, the Addendum adjusts the method (management trigger) to reduce total landings to the coastwide cap when the cap has been exceeded, and removes the implementation of state-by-state allocations if the management trigger is met. Management action will now be initiated if the yellow eel coastwide cap is exceeded by 10% in two consecutive years. If the management trigger is exceeded, only those states accounting for more than 1% of the total yellow eel landings will be responsible for adjusting their measures. A workgroup was formed to define the process to equitably reduce landings among the affected states when the management trigger has been met (see appendix, approved October 2019). Additionally, the Addendum maintains Maine's glass eel quota of 9,688 pounds. The Board also slightly modified the glass eel aquaculture provisions, maintaining the 200 pound limit for glass eel harvest, but adjusting the criteria for evaluating the proposed harvest area's contribution to the overall population consistent with the recommendations of the Technical Committee.

II. Status of the Stock

The first benchmark stock assessment for American eel was peer reviewed in March 2012 and was approved for management use in May 2012 (ASMFC 2012). Due to biological data limitations and the extremely complex life history of American eel, traditional stock assessment models could not be developed and several data-poor methods were used to assess the American eel resource. The stock status was determined to be depleted, and overfishing and overfished status could not be determined with confidence.

The 2017 American Eel Stock Assessment Update updated the 2012 American Eel Benchmark Stock Assessment with data from 2010-2016. The trend analysis results in this stock assessment update were consistent with the 2012 results, with few exceptions. Despite downward trends in the indices, commercial yellow American eel landings were shown to be stable in the decades leading up to the assessment, but landings still remained much lower than historical levels. The conclusion of the assessment update was that the American eel population in the assessment range remains depleted (ASMFC 2017).

The most recent benchmark stock assessment was peer reviewed in late 2022 and accepted for management use in 2023. The 2023 assessment concludes that the stock is depleted at or near

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historically low levels due to a combination of historical overfishing, habitat loss, food web alterations, predation, turbine mortality, environmental changes, toxins and contaminants, and disease. Despite exploring additional approaches for assessing American eel that were suggested in past stock assessments including a delay-difference model, traffic light analysis and surplus production models, and developing an egg-per-recruit model, overfished and overfishing determinations still could not be made due to data limitations. However, the 2023 stock assessment found that the yellow eel population has declined since the previous assessment, and yellow eel harvest should be decreased.

III. Status of the Fishery

Commercial fisheries for American eel occur throughout their range in North America, with the most significant of those fisheries occurring in the US Mid-Atlantic region and Canada. These fisheries are executed in riverine, estuarine, and ocean waters. In the US, commercial fisheries for glass eel/elvers only exist in Maine and South Carolina, a silver eel weir fishery exists in New York's Delaware River, and yellow eel fisheries exist in all states and jurisdictions except Pennsylvania and the District of Columbia.

Although eel have been continuously harvested, consistent data on harvest has not always been available. Harvest data from the Atlantic coastal states (Maine to Florida) indicate that the harvest fluctuated widely between 1970 and 1980, but showed an increasing trend that peaked in 1979 at 3,951,936 pounds. From then landings declined to a low of 641,000 pounds in 2002, recovered steadily to exceed one million pounds on average from 2010-2014, and have since experienced a general downward trend, reaching a time series low in 2020. Because fishing effort data are unavailable for the entire time series, finding a correlation between population numbers and landings data is difficult.

The Advisory Panel (AP) has provided feedback that recent declines in landings have primarily been related to market demand; demand for wild-caught American eels from the US for European food markets has decreased in recent years due to increased aquaculture in Europe. Demand for domestic bait decreased from 2019 to 2020 due in part to COVID-19 restrictions. A smaller proportion of landings traditionally goes to the domestic bait market, and the AP indicated that it does not anticipate landings to increase significantly from current levels in the near future.

Commercial Fishery

State reported commercial landings of yellow/silver eels in 2022 totaled approximately 334,653 pounds¹ (Table 1, Figure 1), which represents a 2% increase in landings from 2021 (328,618 pounds). Yellow eel landings increased in eight states and jurisdictions, while decreasing in three. In 2022, state reported landings from Maryland, Virginia, New Jersey and New York together accounted for 91% of the coastwide commercial total landings. Glass eel

¹ Preliminary landings data for 2022 come from ACCSP and state compliance reports. Landings information from state compliance reports updates the preliminary landings presented to the American Eel Management Board.

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landings reported from Maine totaled 9,459 pounds; South Carolina’s glass eel landings are confidential.

Table 1. Preliminary 2022 Commercial Landings by State and Life Stage¹

State	Glass	Yellow
Maine	9,459	856
New Hampshire	No Fishery	0
Massachusetts	No Fishery	Confidential
Rhode Island	No Fishery	585
Connecticut	No Fishery	3,755
New York	No Fishery	27,038
New Jersey	No Fishery	52,543
Pennsylvania	No Fishery	0
Delaware	No Fishery	2,967
Maryland	No Fishery	188,903
D.C.	No Fishery	0
PRFC	No Fishery	12,814
Virginia	No Fishery	35,516
North Carolina	No Fishery	3,602
South Carolina	Confidential (<750 pounds)	0
Georgia	No Fishery	Confidential
Florida	No Fishery	6,073
Total	Glass: Approx 9,459 Elver: 0	334,653

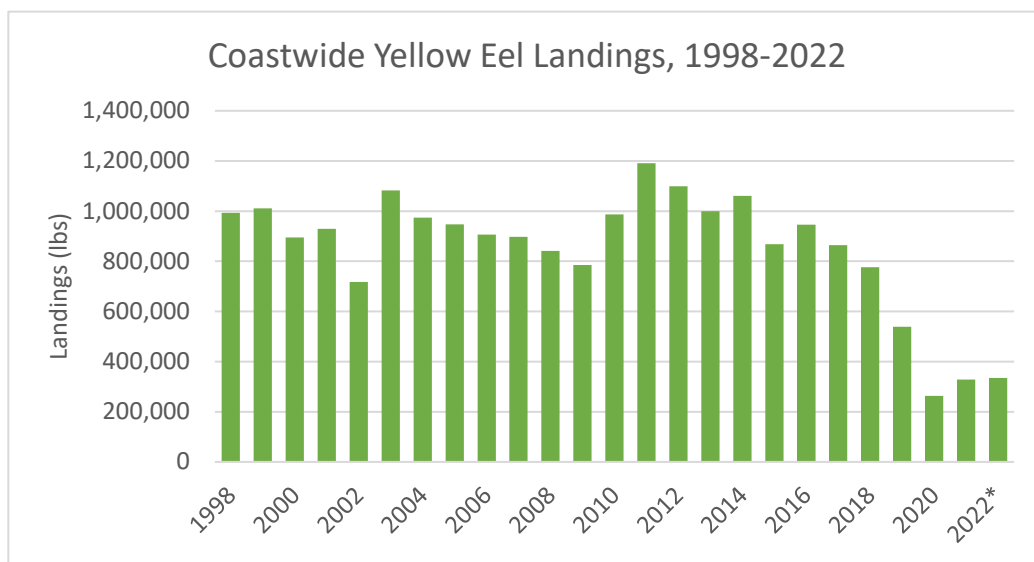


Figure 1. American Eel Yellow-Life Stage Coastwide Landings 1998-2022.

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Table 2. State commercial regulations for the 2022 fishing year.*

State	Min Size	License/Permit	Other
ME	Glass	Daily dealer reports/swipe card program; monthly harvester report of daily landings. Tribal permit system in place for some Native American groups.	In 2017, the Legislature authorized the DMR commissioner to adopt rules to implement the elver fishing license lottery, including provisions for the method and administration of the lottery.
	No minimum size		
	Yellow 9"	Harvester/dealer license and monthly reporting. Tribal permit system in place for some Native American groups.	Seasonal closures. Gear restrictions. Weekly closures.
NH	9"	Commercial saltwater license and wholesaler license. No dealer reports. Monthly harvester reporting includes dealer information.	Gear restrictions in freshwater.
MA	9"	Commercial permit with annual catch report requirement. Registration for dealers with purchase record requirement. Dealer/harvester reporting.	Traps, pots, spears, and angling only. Mesh restrictions.
RI	9"	Commercial fishing license. Dealer/harvester reporting.	Seasonal gear restrictions.
CT	9"	Commercial license (not required for personal use). Dealer/harvester reporting.	Gear restrictions.
NY	9"	Harvester/dealer license and monthly reporting.	Gear restrictions. Maximum limit of 14" in some rivers.
NJ	9"	License required. No dealer reports. Monthly harvester reporting includes dealer information.	Gear restrictions.
PA	NO COMMERCIAL FISHERY		
DE	9"	Harvester reporting, no dealer reporting. License required.	Commercial fishing in tidal waters only. Gear restrictions.
MD	9"	Dealer/harvester license and monthly reporting.	Prohibited in non-tidal waters. Gear restrictions. Commercial crabbers may fish 50 pots per day, must submit catch reports.
DC	NO COMMERCIAL FISHERY		
PRFC	9"	Harvester license and reporting. No dealer reporting.	Seasonal gear restrictions. Mesh size restrictions on eel pots.
VA	9"	Harvester license required. Dealer/harvester monthly reporting.	Mesh size restrictions on eel pots. Seasonal closures.
NC	9"	Standard Commercial Fishing License for all commercial fishing. Dealer/harvester monthly combined reports on trip ticket.	Mesh size restrictions on eel pots. Seasonal closures.

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State	Min Size	License/Permit	Other
SC	Glass No minimum size	Fyke and dip net only permitted. Dealer/harvester monthly combined reports on trip ticket. License required.	Max 10 individuals. Gear and area restrictions.
	Yellow 9"	Pots and traps permitted only. Dealer/harvester monthly combined reports on trip ticket. License required.	Gear restrictions.
GA	9"	Personal commercial fishing license and commercial fishing boat license. Dealer/harvester monthly combined reports on trip ticket.	Gear restrictions on traps and pots. Area restrictions.
FL	9"	Permits and licenses. Harvester reporting. No dealer reporting.	Gear restrictions.

* For specifics on licenses, gear restrictions, and area restrictions, please contact the individual state.

Recreational Fishery

Available information indicates that few recreational anglers directly target American eel. For the most part, hook-and-line fishermen catch eel incidentally when fishing for other species. American eel are often purchased by recreational fishermen for use as bait for larger gamefish such as striped bass, cobia, and catfish. Some recreational fishermen may catch their own to use as bait.

Despite the incidental nature of hook-and-line eel catches, the National Marine Fisheries Service (NMFS) Marine Recreational Information Program (MRIP) does encounter enough observations to indicate widespread and common presence as a bycatch species. However, there is low precision associated with the recreational fishery statistics for American eel due to the limited numbers that have been encountered during surveys of recreational anglers along the Atlantic coast. These limited numbers are partly due to the design of the MRIP survey, which does not sample from the areas and gears assumed to be responsible for the majority of recreational fishing for American eels. As such, the recreational fishery statistics for American eels provided by MRIP should be interpreted with caution.

MRIP shows a declining trend in the coastwide recreational eel catch starting in the 1980s, but the total annual harvest values are highly uncertain. As of 2009, MRIP no longer provides recreational data for American eel due to the survey design being unsuitable for sampling targeted eel fishing. At the state level, only New Hampshire and Georgia collect recreational data for American eel outside of MRIP.

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Table 3. State recreational regulations for the 2022 fishing year.*

State	Min Size	Daily Possession Limit	Other
ME	9"	25	Gear restrictions. License requirement and seasonal closures (inland waters only). Bait limit of 50 eels/day for party/charter boat captain and crew.
NH	9"	25	Coastal harvest permit needed if taking eels other than by angling. Gear restrictions in freshwater.
MA	9"	25	Nets, pots, traps, spears, and angling only; seasonal gear restrictions and mesh requirements. Bait limit of 50 eels/day for party/charter boat captain and crew.
RI	9"	25	Bait limit of 50 eels/day for party/charter boat captain and crew.
CT	9"	25	
NY	9"	25	Maximum limit of 14" in some rivers. Bait limit of 50 eels/day for party/charter boat captain and crew.
NJ	9"	25	Bait limit of 50 eels/day for party/charter boat captain and crew. Mesh size restriction on pots.
PA	9"	25	Gear restrictions.
DE	9"	25	Two pot limit/person.
MD	9"	25	Gear restrictions.
DC	9"	10	
PRFC	9"	25	
VA	9"	25	Recreational license. Two pot limit. Mandatory monthly catch report. Gear restrictions. Bait limit of 50 eels/day for party/charter boat captain and crew.
NC	9"	25	Gear restrictions. Non-commercial special device license. Two eel pots allowed under Recreational Commercial Gear license. Bait limit of 50 eels/day for party/charter boat captain and crew.
SC	9"	25	Gear restrictions. Permits and licenses. Two pot limit.
GA	9"	25	
FL	9"	25	Gear restrictions. Wholesale/retail purchase exemption applies to possession limit for bait.

* For specifics on licenses, gear restrictions, and area restrictions, please contact the individual state.

IV. Status of Research and Monitoring

The FMP requires states and jurisdictions with a declared interest in the species to conduct an annual YOY survey to monitor annual recruitment of each year's cohort.

In 2022, the states and jurisdictions of Maine, New Hampshire, Massachusetts (Wankinco River), Connecticut (Lamprey River), New Jersey, Delaware, the Potomac River Fisheries

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Commission, and South Carolina all observed relatively high YOY counts. The catch in Maine was the highest in the time series, far exceeding previous catches, and the yellow eel catch was the second highest in the time series. The Lamprey River catch and CPUE of YOY eel in New Hampshire were also time series highs. In Massachusetts the YOY catch from the Wankinco River was the second highest in the data series, but catches from the Saugus Eel ramp and the Jones River were below average. However, the removal of the Elm Street Dam on the Jones River in 2019 may have contributed to the decline. The Connecticut YOY CPUE was the highest in the time series. The New Jersey YOY catch was the second highest in the 19-year time series. In Delaware the YOY catch was the second highest annual catch for the 23-year time series; the geometric mean daily catch in 2022 was 2,809% higher than the 2021 geometric mean. The PRFC index for elvers was above average, returning to levels observed prior to the recent record highs observed in 2019 and 2020. The catch rates in the Goose Creek YOY survey in South Carolina increased in 2022 from recent years.

All other YOY surveys in 2022 (Rhode Island, New York, Pennsylvania, Maryland, North Carolina, and Florida) had at or below average survey counts. The New Hampshire Cochecho River YOY survey catch in 2022 was the second lowest in the time series, and the Hamilton Fish Lift count in Rhode Island was the lowest. The 2022 YOY CPUE in Maryland was 24% lower than the time series mean, but the 2022 CPUE in the Sassafras River pot survey has generally increased since 2006. Relative abundance of American Eel in the SCDNR Electrofishing Survey in 2022 was 2nd lowest in time series. Catch at Florida's Guana River Dam was the lowest in the time series. North Carolina samples from the Beaufort Bridge Net survey for 2021 and 2022 have not been processed yet due to a data backlog.

D.C. and Georgia do not have YOY surveys, but instead have yellow eel surveys. New Jersey additionally developed and implemented a fishery-independent eel pot survey to collect abundance data of yellow American eels within nursery grounds. This survey, which began in 2015, supplements the current glass eel survey by sampling more life stages and will allow biologists to collect additional biological samples (age-length-weight data). The 2022 yellow eel CPUE in New Jersey was above the mean.

As required by Addendum IV, Maine continued the fishery independent life cycle survey of glass, yellow, and silver eels within at least one river system (West Harbor Pond) in 2022. This site was changed from Cobboosecontee Stream to West Harbor Pond to improve collection of eels at all life stages by Maine Department of Marine Resources staff starting in 2019.

Maine's glass eel aquaculture proposal for the 2022 season was approved and 200 pounds were harvested for aquaculture grow out. Maine submitted a similar proposal for the 2023 fishing season that was also approved. For both years, the approved proposals allow for an additional 200 pounds of glass eels to be harvested for aquaculture; this amount is in addition to the Maine's glass eel quota of 9,688 pounds.

V. Research Needs

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The FMP does not require any other research initiatives for participating states and jurisdictions. Nonetheless, the American Eel Technical Committee (TC) has identified several research topics to further understanding of the species' life history, behavior, and biology. Research recommendations from ASMFC 2012, 2017 remain important, but the following list was provided in the 2023 benchmark stock assessment, and is specific to what the Stock Assessment Subcommittee thinks could improve the next stock assessment. Research needs for American eel identified by the TC include:

Future Research and Data Collection

- Improve upstream and downstream passage for all life stages of American eels.
- Continue to improve the accuracy of commercial catch and effort data through ACCSP and state partners
- Characterize the length, weight, age, and sex structure of commercially harvested American eels along the Atlantic coast over time.
- Research coastwide prevalence of the swim bladder parasite *Anguillacolla crassus* and its effects on the American eel's growth and maturation, migration to the Sargasso Sea, and spawning potential.
- Improve understanding of the spawning contribution of unexploited portions of the stock (i.e., freshwater areas of coastal US).
- Characterize the length, weight, and sex structure in unharvestable habitats.
- Conduct a tagging study throughout the species range.
- Quantify recreational removals in marine and freshwater habitats and characterize length, weight, and sex structure.
- Evaluate the passage/passage efficiency of American eels through existing fishways at dams/barriers and evaluate barrier physical attributes (height, material) that can be passed by eel without fishways.
- Evaluate the use vs. availability of habitat in the inland portion of the species range, and how habitat availability has changed through time, including opening of habitat from recent dam and barrier removals. This could and should include assisted migration by trucking around dams.
- To the extent that the data allows, account for the proportion of the population (yellow, silver phase) represented by the inland portion of the species range.
- Evaluate the relative impact that commercial harvest has on population status versus the accessibility to inland habitats.

Assessment Methods

- Develop methods to assess spawner escapement and biological information pertinent to silver eels in major river basins.
- Perform a range-wide American eel assessment with various countries and agencies (e.g., Canada DFO, ASMFC, USFWS, Caribbean, US Gulf and inland states).

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- Explore methods to characterize data by sex to support a female-only delay-difference model.

VI. Status of Management Measures

The FMP requires that all states and jurisdictions implement an annual YOY abundance survey in order to monitor annual recruitment of each year's cohort. Addendum III requires a 9 inch minimum size restriction in the commercial and recreational yellow eel fisheries, as well as a minimum mesh size of ½ by ½ inch in the commercial yellow eel pot fishery. The recreational bag limit is 25 fish/angler/day, and the silver eel fishery is restricted, as is the development of pigmented eel fisheries.

VII. Current State-by-State Implementation of FMP Compliance Requirements

The PRT reviewed the state compliance reports for the 2022 fishing year. The PRT notes the following issues with state implementation of the required provisions of the American Eel FMP:

Yellow Eel Measures

- New York's regulations for minimum mesh size do not meet the requirements of the FMP. Addendum III requires states and jurisdictions to implement a ½ by ½ inch minimum on the mesh size used in commercial yellow eel pots. New York's regulation is as follows: "Minimum mesh size must be one inch by one-half inch, unless such pots contain an escape panel that is at least four inches square with a mesh size of one inch by one-half inch located so that the panel is on a side, but not at the bottom of a pot." Addendum III allowed states to use a 4 by 4 inch escape panel constructed of a mesh size of at least ½ by ½ inch mesh in order to reduce the financial burden of gear changes on the fishery for three years (until January 1, 2017). Because this provision has expired, New York should require the minimum mesh size for all yellow eel pots, regardless of the presence of an escape panel.

Silver Eel Fishery Measures:

- Delaware has not implemented regulations preventing harvest of eels from pound nets from September 1 through December 31. No pound net landings have been reported in the state in over 50 years. Delaware will address this issue as part of any future changes to the eel regulations.
- Florida does not have a regulation preventing harvest of eels from pound nets from September 1 through December 31, but the state is unaware of any active pound net fishery in the past 10-15 years.

Reporting Measures:

- The following jurisdictions do not have dealer reporting:
 - New Hampshire and New Jersey do not have dealer reporting (there are no permitted eel dealers for either state), but harvesters report some information on dealers.

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- Delaware (no permitted eel dealers)
- Potomac River Fisheries Commission (jurisdiction reports harvest, not landings)
- Florida (considered a freshwater species and there is dealer reporting for freshwater species)
- New York was unable to provide data on commercial CPUE for the last two fishing years.
- New York has yellow and silver eel fisheries but does not report commercial landings by life stage, as required by the FMP.
- Many states have been unable to provide information on the percent of commercial harvest sold as food versus bait; only Maine, New York, New Jersey, Delaware, and Florida provided this information for 2022.

Section 4.4.2 of the FMP stipulates that a state may apply for *de minimis* status for each life stage if (given the availability of data), for the preceding two years, its average commercial landings (by weight) of that life stage constitute less than 1% of the coastwide commercial landings for that life stage for the same two-year period. States meeting this criterion are exempted from having to adopt commercial and recreational fishery regulations for a particular life stage listed in Section 4 and any fishery-dependent monitoring elements for that life stage listed in Section 3.4.1.

Qualification for *de minimis* is determined from state-reported landings found in annual compliance reports. New Hampshire, Massachusetts, Pennsylvania, District of Columbia, Georgia, and Florida have requested continued *de minimis* status for their yellow eel fisheries. Florida does not qualify as the state landings in 2022 exceed 1% of the coastwide yellow eel landings. All other states that applied for *de minimis* of the yellow eel fishery meet the *de minimis* criteria.

VIII. Recommendations/Findings of the Plan Review Team

1. The PRT recommends the Board consider state compliance notes as detailed in Section VII.
2. The PRT recommends *de minimis* be granted to New Hampshire, Massachusetts, Pennsylvania, District of Columbia, and Georgia for their yellow eel fisheries.
3. The PRT requests that New York separate its yellow and silver eel landings when reporting harvest.
4. The PRT requests that states quantify escapements, changes in upstream and downstream passage (e.g. dam removals, new impediments to passage) annually and provide this information to the Technical Committee for evaluation. The PRT recommends that a section be added to the compliance reports for this information.
5. The PRT had previously requested that the Board reevaluate the requirement that states provide estimates of the percent of harvest going to food versus bait, as there is a high level

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of uncertainty and subjectivity inherent in the data. Additionally, the PRT notes that this information does currently impact regulations and is unclear of the benefit for management. The PRT requests again that the Board consider tasking the Committee on Economic and Social Sciences (CESS) to conduct an analysis of the market demand for all life stages of eel, specific to food vs bait markets, as well as international market demand.

6. The PRT recommends that the Commission and USFWS work together to annually compare domestic landings data to export data for American eel across all life stages.

VIII. Works Cited

Atlantic States Marine Fisheries Commission (ASMFC). 1998. Interstate Fishery Management Plan for American Eel (*Anguilla rostrata*). Washington D.C. NOAA Oceanic and Atmospheric Administration Award No. NA97 FGO 0034 and NA07 FGO 024.

Atlantic States Marine Fisheries Commission (ASMFC). 2012. American Eel Benchmark Stock Assessment. Arlington, VA.

Atlantic States Marine Fisheries Commission (ASMFC). 2017. American Eel Stock Assessment Update. Arlington, VA.



Atlantic States Marine Fisheries Commission

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MEMORANDUM

December 4, 2023

To: American Eel Management Board
From: Tina Berger, Director of Communications
RE: Advisory Panel Nomination

Please find attached a new nomination to the American Eel Advisory Panel – Sara Rademaker, an eel aquaculturist from Maine. She replaces David Allen on the Panel. Please review this nomination for action at the next Board meeting.

If you have any questions, please feel free to contact me at (703) 842-0749 or tberger@asmfc.org.

Enc.

cc: Caitlin Starks

M23-103

AMERICAN EEL ADVISORY PANEL

Bolded names await approval by the American Eel Management Board
Bolded and italicized name denotes Advisory Panel Chair

December 4, 2023

Maine

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Appt Reconfirmed 5/10

New Hampshire

Vacancy – comm/trap

Massachusetts

Vacancy – dealer/comm fisherman

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Phone: (860)667-2515
Appt. Confirmed: 5/21/97
Appt. Reconfirmed 10/1/01
Appt Reconfirmed 10/05
Appt Reconfirmed 5/10

New York

Vacancy – rec/pot for bait eels

New Jersey

Vacancy – commercial

Pennsylvania

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Phone (eve): (610)964-8465
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feigen15@yahoo.com

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Appt Reconfirmed 8/07

Vacancy – recreational

Delaware

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Appt. Confirmed 8/17/05
Appt Reconfirmed 5/10

Vacancy – comm/pot

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Appt. Confirmed: 5/21/97
Appt. Reconfirmed 10/1/01
Appt Reconfirmed 10/05
Appt Reconfirmed 5/10

Vacancy – comm/pot, fyke & gillnet

North Carolina

2 Vacancies – comm/pot & dealer

AMERICAN EEL ADVISORY PANEL

Bolded names await approval by the American Eel Management Board
Bolded and italicized name denotes Advisory Panel Chair

December 4, 2023

South Carolina

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Florida

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PRFC

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Appt. Reconfirmed 10/1/01
Appt. Confirmed 8/05

Mari-Beth DeLucia (environmental)
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Appt Confirmed 5/21/13



ATLANTIC STATES MARINE FISHERIES COMMISSION

Advisory Panel Nomination Form

This form is designed to help nominate Advisors to the Commission’s Species Advisory Panels. The information on the returned form will be provided to the Commission’s relevant species management board or section. Please answer the questions in the categories (All Nominees, Commercial Fisherman, Charter/Headboat Captain, Recreational Fisherman, Dealer/Processor, or Other Interested Parties) that pertain to the nominee’s experience. If the nominee fits into more than one category, answer the questions for all categories that fit the situation. **Also, please fill in the sections which pertain to All Nominees (pages 1 and 2). In addition, nominee signatures are required to verify the provided information (page 4), and Commissioner signatures are requested to verify Commissioner consensus (page 4). Please print and use a black pen.**

Form submitted by: _____ State: _____
(your name)

Name of Nominee: _____

Address: _____

City, State, Zip: _____

Please provide the appropriate numbers where the nominee can be reached:

Phone (day): _____ Phone (evening): _____

FAX: _____ Email: _____

.....

FOR ALL NOMINEES:

1. Please list, in order of preference, the Advisory Panel for which you are nominating the above person.

- 1. _____
- 2. _____
- 3. _____
- 4. _____

2. Has the nominee been found in violation of criminal or civil federal fishery law or regulation or convicted of any felony or crime over the last three years?

yes _____ no _____

3. Is the nominee a member of any fishermen's organizations or clubs?

yes _____ no _____

If "yes," please list them below by name.

_____	_____
_____	_____
_____	_____

4. What kinds (species) of fish and/or shellfish has the nominee fished for during the past year?

_____	_____
_____	_____
_____	_____

5. What kinds (species) of fish and/or shellfish has the nominee fished for in the past?

_____	_____
_____	_____
_____	_____

FOR COMMERCIAL FISHERMEN:

1. How many years has the nominee been the commercial fishing business? _____ years

2. Is the nominee employed only in commercial fishing? yes _____ no _____

3. What is the predominant gear type used by the nominee? _____

4. What is the predominant geographic area fished by the nominee (i.e., inshore, offshore)? _____

FOR CHARTER/HEADBOAT CAPTAINS:

1. How long has the nominee been employed in the charter/headboat business? _____ years

2. Is the nominee employed only in the charter/headboat industry? yes _____ no _____

If "no," please list other type(s) of business(es) and/occupation(s): _____

3. How many years has the nominee lived in the home port community? _____ years

If less than five years, please indicate the nominee's previous home port community.

FOR RECREATIONAL FISHERMEN:

1. How long has the nominee engaged in recreational fishing? _____ years

2. Is the nominee working, or has the nominee ever worked in any area related to the fishing industry? yes _____ no _____

If "yes," please explain.

FOR SEAFOOD PROCESSORS & DEALERS:

1. How long has the nominee been employed in the business of seafood processing/dealing? _____ years

2. Is the nominee employed only in the business of seafood processing/dealing?

yes _____ no _____ If "no," please list other type(s) of business(es) and/or occupation(s):

3. How many years has the nominee lived in the home port community? _____ years

If less than five years, please indicate the nominee's previous home port community.

FOR OTHER INTERESTED PARTIES:

1. How long has the nominee been interested in fishing and/or fisheries management? _____ years

2. Is the nominee employed in the fishing business or the field of fisheries management?
yes _____ no _____

If "no," please list other type(s) of business(es) and/or occupation(s):

FOR ALL NOMINEES:

In the space provided below, please provide the Commission with any additional information which you feel would assist us in making choosing new Advisors. You may use as many pages as needed.

I started working with eels in 2012 in an effort to bring eel aquaculture to Maine. In 2014, I founded American Unagi and started growing out eels using land-based aquaculture.

Nominee Signature: Sam Rubin

Date: 11/27/23

Name: _____
(please print)

COMMISSIONERS SIGN-OFF (not required for non-traditional stakeholders)

State Director

Megan Ware

State Legislator

On Behalf of Maine Commissioners

Governor's Appointee