PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ATLANTIC HERRING MANAGEMENT BOARD

The Westin Crystal City
Arlington, VA
August 2, 2022

Approved November 7, 2022

TABLE OF CONTENTS

INDEX OF MOTIONS

ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)
Steve Train, ME (GA)
Cheri Patterson, NH (AA), Chair
G. Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Melanie Griffin, MA, proxy for D. McKiernan (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Conor McManus, RI, proxy for J. McNamee (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Justin Davis, CT (AA)
Bill Hyatt, CT (GA)
Sen. Craig Miner, CT (LA)
James Gilmore, NY (AA)
Emerson Hasbrouck, NY (GA)
Joe Cimino, NJ (AA)
Peter Clarke, NJ, proxy for T. Fote (GA)
Allison Murphy, NMFS
John Coll, US FWS

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

Ex-Officio Members

Renee Zobel, Technical Committee Chair
Jeff Kaelin, Advisory Panel Chair

Staff

Robert Beal
Toni Kerns
Lisa Carty
Pat Campfield
Maya Drzewicki
Tina Berger
Kristen Anstead
Emilie Franke
Lisa Havel
Chris Jacobs
Jeff Kipp
Dustin Colson Leaning
Sarah Murray
Joe Myers

Guests

Jordan Andrews, Press Herald
Max Appelman, NOAA
Pat Augustine, Coram, NY
Megan Barrow, NYS DEC
Alan Bianchi, NC DENR
Colleen Bouffard, CT DEEP
Jeff Brust, NJ DEP
Joshua Carloni, NH FGD
Beth Casoni, MLA
Matt Cieri, ME DMR
Heather Corbett, NJ DEP
Nicole Lengyel Costa, RI DEM
Jamie Cournane, NEFMC
Caitlin Craig, NYS DEC
Jon Deroba, NOAA
Russell Dize, MD (GA)
Maria Fenton, NOAA
Marianne Ferguson, NOAA
James Fletcher
Angela Forristall, NEFMC
Pat Geer, VMRC
Emily Gilbert, NOAA
Willy Goldsmith, SGA
Caroline Good, NOAA
Kurt Gottschall, CT DEEP
Pam Lyons Gromen, WildOceans
Jon Hare, NOAA
Amalia Harrington, Univ ME
Jay Hermsen, NOAA
Matthew Heyl, NJ DEP
Jaclyn Higgins, TRCP
Jesse Hornstein, NYS DEC
Nancy Koenig
Rob LaFrance, Quinnipiac Univ, CT
John Maniscalco, NYS DEC
J A McFarlan, RI DEM
Dan McKiernan, MA (AA)
Steve Meyers
Jack Molmud, News Center ME
Lindsey Nelson, NOAA
Thomas Newman, NC
Virginia Olsen, Local 207
Nick Popoff, US FWS
Will Poston, SGA
Melissa Smith, ME DMR
Renee St. Amand, CT DEEP
Penelope Sutter
Andrea Tomlinson
Mary Beth Tooley, O'Hara Corp
Chris Uraneck, ME DMR
Jesica Waller, ME DMR
Craig Weedon, MD DNR
Kelly Whitmore, MA DMF
Chris Wright, NOAA

The Atlantic Herring Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Tuesday, August 2, 2022, and was called to order at 9:00 a.m. by Chair Megan Ware.

CALL TO ORDER

CHAIR MEGAN WARE: Good morning, everyone. I'm going to call the Atlantic Herring Management Board to order this morning. I would like to thank Cheri Patterson for her service as Chair over the last two years. My name is Megan; I am the incoming Chair for the Atlantic Herring Board.

APPROVAL OF AGENDA

CHAIR WARE: Our first order of business is Approval of the Agenda. I do want to note, we had a request to talk about industry funded monitoring for herring, so we're going to do that under-Agenda Item Number 6, just as an FYI for those who are interested in that. Are there any additions or modifications to the agenda this morning? Seeing none; the agenda is approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR WARE: Next is approval of the proceedings, and these will be from October, 2021. Are there any edits to the proceedings? Seeing none; the proceedings are approved by consent.

PUBLIC COMMENT

CHAIR WARE: Next is public comment, and this is for items not on the agenda. We'll looked for raised hands in the room, and also on the webinar. Seeing no hands; we are going to assume that there is no public comment this morning.

REVIEW OF THE 2022 ATLANTIC HERRING MANAGEMENT TRACK ASSESSMENT AND PEER REVIEW REPORT

CHAIR WARE: We will move on to Agenda Item 4, which is Review of the 2022 Atlantic Herring Management Track Assessment and Peer Review Report. Dr. John Deroba from NOAA is going to present an overview of the 2022 Track Assessment for Atlantic Herring, so I will pass it off to him. Then afterwards, we will take questions and comments.

DR. JON DEROBA: Just a quick background, and then I'll get into the terms of reference. It was last assessed two years ago. It used the familiar statistical catch at age ASAP model that we often use in New England. There are like two fleets, a fixed-gear fleet, which is largely Canadian, and a mobile gear fleet, which is basically the U.S. fleet, which is trawlers and purse seines.

The assessment uses four surveys, Spring Bottom Trawl, Fall Bottom Trawl, a Summertime, also known as a Shrimp Bottom Trawl, and an Acoustic Time Series collected during the Fall Bottom Trawl Survey. Natural mortality is assumed constant at 0.35, and we haven't been able to estimate a stock recruit relationship, so MSY reference points using F40 percent proxy. The stock was overfished, but overfishing was not occurring back in 2020. I'm going to go over a few data changes, most of which didn't have much effect on the assessment. We get stop seine and some other fixed gear catch information from Canada. They made some changes to the way in which they handle their data.

Apparently, they used to do a lot of quality control in Excel Spreadsheets. They used to fill age length keyholes manually in Excel Spreadsheets. There was no standardization or reproducibility. Canada went through, standardized some computer code, to automate all of this and make it reproducible.

A bunch of data changes on the Canadian end, all I would say for the better. There are some minor changes to the fixed gear catches and the fixed gear catch at age, but that also had a negligible effect on the assessment. Here is the catch time series, so

the mobile fleet in black and the fixed fleet, which is largely Canadian, in purple.

I won't interpret that for you. I think you're probably all capable of seeing the same things I am. This is the age composition for the mobile fleet, which is the U.S. fishing fleet. Again, just trawls and purse seiners for the most part. You can see as you go from large bubbles that occur in the sort of upper left or left portion of the graphic, that you can track those cohorts as they go down to the right through time.

For the most part we haven't had any cohort tracking, or any sign of large cohorts for quite some time, maybe since about let's say 2011. This is the age composition for the fixed fleet, and you can see the estimated catch is almost exclusively Age 2 fish. This is term of reference 2, which was evaluating the indices used in the assessment.

The one minor change we made here was to use NMFS Spring and Fall Bottom Trawl Survey catches using tow specific measured distance. Though we used to assume that every tow had the same effective tow time, but that is not true. Since the use of the Bigelow, we can now get tow specific calculations, and account for the fact that each tow isn't fishing effectively for the same amount of time. Again, that had a negligible effect on the assessment.

There is the survey trend from the Spring Bottom Trawl Survey, not a trend you like to see. That is the age composition from that survey, so similar to the mobile fishery catches. You can track cohorts through time, and you can see, we haven't seen a good cohort incident event. Again, probably since about 2011.

This is the Fall Bottom Trawl Survey. Again, you see some very low observation in recent years, not something we want to see. There is the age composition for the Fall Bottom Trawl Survey, so a similar story to the other age comps that we've already looked at. This is the Summer or Shrimp Bottom Trawl Survey, similar story in terms of recent low observations.

We did make a change to this dataset. Herring ages typically were not collected during the survey, so on the left what we used to do is take an average of the Spring and Fall Bottom Trawl Survey age length key, and use that to have age composition. We now have three years of age data collected directly from the survey, and that's what you see on the right. Rather than borrow age length key information, I'm using the age data collected from the survey directly, and if you advance the slide, on the left is the selectivity curve estimated from averaging age length key is from the spring and fall, on the right is the selectivity curve using the age data collected during the survey. Even though that selectivity shape is quite different, overall, this also had a negligible effect on the stock assessment.

This is the acoustic index that is collected during the fall bottom trawl survey, and again, some relatively low recent observations. If I were to run the model with just those minor data changes that I noted all had negligible effects on the assessment, that would have been sort of a very basic, the most simple sort of management track, simple update that I could have done.

Unfortunately, the model blew up. There is the reason why, 70 parameters with CVs greater than 0.5. A maximum CV on one of the parameters, whatever 7 to the plus 79 is. I was calling it nearly a google, 1,600 some parameter pairs of high correlation are a relatively large gradient. If this s all Greek to you, long story short, there is a bunch of diagnostics here that suggest this model is not useable.

The model is struggling to estimate something. I suspected we have no 2020 survey data, so I suspected the model was struggling to estimate recent recruitments, due to that missing survey data. I explored two solutions, the first was to derive a recruitment index from seabird diet data. There is the recruitment index, so this would be an Age 1 herring index of abundance derived from

seabird diet data. That is what is in the graphic there.

Adding this resolved all those diagnostic issues, but unfortunately the model did not fit this index very well. What you're seeing here are some diagnostics from an assessment run that tried to fit to this data. I'll call your attention to the upper right panel. First what you'll notice, those vertical bars are the error bars on the estimated observed Age 1 index.

The takeaway there is that this index is very uncertain and noisy. In the lower left is the time series of residuals. You see mostly negative residuals early on, and then a bunch of positive residuals in more recent years. All that to say that while including this index solved some of the problems, it's not fitting well, and so not useable, at least not yet.

A little bit more about that seabird index. I do think there is something useable in here. I suspect there is nonlinearities in the relationship between the index and Age 1 recruitment. I think they might be fixable. But we got this data in very late. I don't understand seabird feeding habits very well, but it would be a nice dataset to include in the future.

I'm looking to explore this more. I think we have a research track in 2025, so I hope to bring this up again. There is a list of folks that helped with that work that I wouldn't have considered it even, if it weren't for those folks. Back to this model that is still directing. The seabird diet index didn't work, so the second possible solution was to penalize recruitment deviations for deviating from median recruitment.

Historically the herring assessment estimates annual recruitments as free parameters, they can do whatever they want. You can add a penalty for that, which basically if you don't have information about a recruitment, you can just more or less make it close to the median. I used a very weak penalty of coefficient of variation equal to 1. While this is new to herring, this type of penalty is very prominent in New England. It does help stabilize model estimates, especially in data sparse situations, as we have when we don't have 2020 survey data.

It did resolve all those diagnostic issues. Adding this penalty fixed those diagnostic issues. The hang up here is we now have, well let me describe the graphic first. The blue line is the model that blew up that does not have a recruitment penalty. You can see the most recent two recruitments are very, very low.

The red line, which you mostly cannot distinguish from the blue line, is what happens when I add the penalty. On the more recent years, 2020 and 2021, you see some higher recruitments. That is because there is no data in the assessment to inform those recruitments. All you are seeing there is a picture of false increase in recruitment that is driven entirely by the addition of this likelihood penalty on recruitment.

What you might interpret as maybe a positive trend in recruitment for the last two years, is really just a hard effect of this penalty I had to add to stabilize the model. Spawning stock biomass and F however, were indistinguishable between each of the model runs. Here is the retrospective tie in for this model fit.

That model fit with the recruitment penalty is what was put forward as the final model. This is the retrospective pattern for that model fit. The top row is fishing mortality, the bottom row is spawning stock biomass. The right-hand column is what we often look at when we're measuring retrospective severity, so the Mohn's Rho for F is negative 0.21. It's a bit obscured by the lines there, and the Mohn's Rho for SSB, you can see in the lower right, is 0.447.

This is the time series plot of total biomass, spawning stock biomass and exploitable biomass. This is the time series of fishing mortality rates. The black line, F. report is the average F over Ages 7 and 8 for fully selected by the U.S. Mobile Fleet, and

that is what we use for stock status and such. The black line is the one you want to pay attention to.

Here is that recruitment time series again. Again, you see a positive trend in the last two years. But again, that's driven almost entirely by the likelihood recruitment penalty I had to add, in order to stabilize the model. On to term of reference 4, which was Biological Reference Points. Just a review of what used to be done, and to some extent still is.

Like history traits like maturity, weights at age, just to use the recent 5-year average when we were calculating reference points. Selectivity equals F in the U.S. Fleet, and we use F 40 percent as a proxy for FMSY in long-term projections used to derive the SSB proxy. Recruitment was sampled from the full time series of estimated recruitments.

For the calculation of reference points, we used to just set the fixed gear fishing mortality to 0, so basically ignore the fixed gear mortality source when calculating biological reference points. Previous reviewers did not like that, so I changed it for this management track. When calculating the biological reference points, I now set the fixed-gear fishing mortality rate equal to its ten-year average, the most recent ten-year average, which equals 0.13. The top bullet is the reference points as they were in 2020. If I were to make no changes to the way in which reference points were calculated, other than to update the data. The middle bullet is what the reference points would have been, so an F40 percent of 0.5, and an SSB proxy that was slightly lower than in 2020.

When I add some accounting for the fixed gear fishing mortality rate, the F 40 percent is still 0.5, but you can see the SSB proxy comes down quite a bit, due to that new accounting for the fixed gear mortality rate. Looking at the bottom set of bullets here now. We reconsidered the recruitment stanza to use the biological reference points.

We've had an unprecedented string of lousy recruitments in this stock, as you saw. Using a full time series of recruitments for reference points was just indefensible. We considered a couple alternatives. One was to just use the really poor recruitment since 2013, then we rejected that idea simply because it's too short of a time frame.

That is not even quite a full generation time for herring. The second thing we tried was to disentangle the effects of environment and spawning stock biomass on recruitment, and look for an environmental signal that might tell us that something in the environment changed, and we could use that to define a different recruitment signal.

What I did was conduct a change point analysis on the recruitment and recruit for spawner time series. I applied all the analyses to estimates from '65 to 2019, so I excluded those last years of recruitment estimates, because again, those estimates were driven almost exclusively by the recruitment likelihood penalty.

I limited the number of change points across that entire time series to 3, so that any block of time, and this will make sense hopefully on the next slide, would include at least two to three generations, to make sure we would have a relatively long or enough generations and enough years in each time series.

All that mumbo jumbo on the previous slide to say, I did an analysis to see if average recruitment or average recruit per spawner changed. On the left is the recruit time series, on the right is recruit per spawner. On the left you can see this change point analysis identified two different time stanzas, with significantly different average recruitment.

The problem is we don't know if the average recruitment is low because of low spawning stock biomass, or if something in the environment has changed, and we can expect lower production. If we standardize for spawning stock biomass size, which is what the right panel does, recruit per

spawner. It's getting more at whether or not the environment changed.

You can see three-time stanzas that jump out, and since 1992 the average recruit per spawner has been much lower than it was from '77 to '91. All that to say, the panel on the right here is telling us that something about the environment since 1992 leads us to believe that the number of recruits we'll get for spawners is going to be lower than it used to be in the '70s to the early '90s. Instead of drawing recruitments from the full time series, we're only going to draw recruitments from 1992 to 2019. When we do that, I have now made two changes to how these reference points are calculated. I account for fixed gear fishing mortality, and I'm not only drawing recruitments from the stanza on 1992 to 2019. There you see the bottom bullets are the new reference points. These are the reference points that are now, I'll say official.

You can see the spawning stock biomass proxy is quite a bit lower than it otherwise would have been, because we're selecting recruitments only from a more recent time period. Here is the stock status plot, so the vertical access is fishing mortality in 2021 over FMSY. That horizontal dash line at 1 would be F equal to FMSY.

Then the horizontal access is spawning stock biomass in 2021 over the SSBmsy proxy. The overfished threshold is the vertical line at 0.5. You can see the stock is overfished, but overfishing is not occurring. That red line coming from the black dot is the retrospective adjusted value. A retrospective adjustment was necessary here, so that red dot is really what we're using for official stock status.

Short term projections, so previously fixed gear catches and short-term projections were equal in all years and equal to ten-year average. The mobile fleet fishing mortality rate, which is the U.S. Fleet, was specified based on the New England Council's Harvest Control Rule, and recruitments were drawn from the entire time series again.

Just as with the reference points, drawing from the entire time series was indefensible, so what I did was estimate an autoregressive model, meaning that since recruitment has been lousy recently, an autoregressive model will say that in the short-term recruitment is more likely to stay lousy. There are equations and details that I'm not going to get into.

Long story short, I estimated the parameters of this autoregressive model using the recruitments from 1992 to 2019. The process was initialized, meaning the short-term projections will start using the rho-adjusted 2021 recruitment estimate. That recruitment estimate, which is relatively low, and so again, all this AR model is doing is saying since recruitment is low in 2021, the projected recruitment in 2022 is also likely to remain low, and so on and so forth.

It will take some number of years until you reach sort of a longer term higher average recruitment. It will slowly creep back up to average, as opposed to immediately jumping to average recruitment. In this top table on the short-term projection results, if I were to have made absolutely no changes to the reference points or the short-term projection methodology.

If I had done things exactly like they were done in 2020, those were the projection results. If I used the reference points based on that change-point analysis, and we used this autoregressive recruitment in the short-term projections, that is what you're seeing in the bottom table. Term of reference 6 was report on previous research recommendations.

Back in 2020 it was suggested we account for fixed-gear mortality when doing biological reference points. As I said, we did that. The SSC last go round suggested we consider autoregressive models for short-term projections. As I said, we did that. Here are some research projects that were listed as high priority in a 2018 stock assessment. Further research on the use of acoustics for the assessment.

We've made no progress on that. I don't really see it ever happening, unless budget situations change drastically. I've been collaborating with our study fleet, to see if we can look at changes in herring's depth preference, so are they occupying the bottom more through time, and spending less time in sort of a pelagic zone?

That work is ongoing. You folks may have all heard about WHAM or state-space models. Probably in the 2025 research track we'll consider moving this assessment to a state-space model, probably WHAM. That is sort of a burgeoning technology that I think we're still learning about.

Previous assessments recommended we, to be blunt, do stuff to make sure we're doing it right. There are all sorts of local national and international projects looking at the performance of state-space models, including an ongoing research track at the Northeast Center. What did the Review Panel say?

In summary, the stock assessment was accepted. They made several recommendations. I've picked out a few key ones here. They made several suggestions, relatively simple ones for how data are handled, including continued otolith collections from that Summer/Spring survey. It wasn't clear why missing the 2020 survey data had such a large impact on the performance of the model, or the lack of performance in the model, I should say.

Exploring why that was, was recommended. I did that change point analysis on the recruitment and recruit per spawner, which might tell us that the environment has changed since 1992, but it doesn't tell us exactly what has changed, so they recommended exploring some mechanistic relationships.

I got the impression the Review Panel was pretty happy with the way we went about defining the recruitment time stanza for reference points. But they recommended continued consideration of what we would call dynamic reference point, and continued work on that seabird Age 1 recruitment index. That is all I have.

CHAIR WARE: Great, thank you, Jon, I appreciate the presentation. It looks like there were some important changes to the recruitment assumptions here that feed into both the reference points and projections, so I think that is important for the Board to see. We'll start with questions. Any questions from the Board? If you're in-person you can just raise your hand or on the webinar raise your hand virtually. Yes, Justin Davis.

DR. JUSTIN DAVIS: I had a question regarding, it was the slide with the change point analysis with the stanzas on recruitment and recruit per spawner. I don't know if it is possible to bring that slide back up again.

MS. TONI KERNS: Jon, do you know which slide it is? It will help Maya to navigate the slides?

DR. DEROBA: Yes, give me one moment. Slide 30.

MS. KERNS: Then one more thing, Jon. When you're not talking, it will help on our end to have you muted, just so there is no feedback in the room.

DR. DEROBA: I'm happy to remain as quiet as possible.

MS. KERNS: Maya, if you're moving through the slides you are paused on questions.

DR. DAVIS: Great, thanks. My question is in the figure on the right, which is the stanzas of recruit per spawner, that estimate all the way on the right, the sort of spike there in that terminal year. I'm wondering, is that a product of that model artifact high recruitment that came from using the likelihood penalty on recruitment? If so, I'm wondering, is that driving why those later years are included in the same stanza as 1992 up to, I guess it's about 2010 or so.

I was just curious. Looking at this it seemed like other than that estimate in that terminal year, it

looks like in recent years it may have entered even another stanza of even lower recruit per spawner. I was just curious why the change point analysis maybe didn't identify those most recent years as a new stanza.

DR. DEROBA: That terminal point, I actually excluded the 2020 and 2021 estimates that were highly impacted by that recruitment penalty. That terminal point that you see is sort of above the red line that is relatively positive, has nothing to do with that likelihood penalty. It does tell us that at least since 1992, even though average recruit per spawner is lower, it is still possible to get at least slightly above average recruits per spawner, despite whatever change happened in '92.

I suspect the change point analysis didn't identify, let's say since 2010, didn't identify that as another stanza, because I limited the number of change points to three. Again, so that each stanza would have at least two to three generation times within it, as opposed to identifying if it allowed 15 or 20 change points. It would identify, because of differences in three-year blocks, which isn't very helpful.

CHAIR WARE: Any other questions for Jon? All right, I think that's it. Thank you, Jon, for the presentation, we appreciate it. I invite you to stick around for the rest of our meeting. We're going to be talking about portside sampling next, which obviously may have some impacts on the assessment. If you have time and can stick around that's great.

DR. DEROBA: I will plan to stick around. I have a sick wife who is watching our kid. She wasn't able to get our kid to daycare this morning, because she felt so crappy. I will probably sign off at some point, but I will stay on for at least for another half hour or so.

CHAIR WARE: Thank you. Tell your wife we thank her for her service this morning. Just for the Board. The SSC is meeting this week to develop recommendations for the 2023, 2025 specifications. I think that is on Thursday, and then the Council will consider those at their September meeting. Those are our next steps. We're going to move on to – Toni.

MS. KERNS: If the Board had anything that they wanted the SSC to look at or a question for them, right now would be the time to tell us, and Emilie could pass that on to the SSC. While the Commission doesn't task the SSC to do anything, I think that they would be happy to have questions from us. If there is anything, we would just need to know that right now.

CHAIR WARE: If there are no hands, then we'll assume there are no comments for the SSC.

UPDATE ON THE PORTSIDE SAMPLING PROGRAM

CHAIR WARE: All right, great, so we'll move on to Agenda Item Number 5, which is an Update on the Portside Sampling Program. Just to kind of set the stage here, Maine DMR has been running a portside sampling program for much of the east coast. That funding has been through ACCSP, but that funding is expected to run out in 2023.

The Board needs to start considering what the response should be, as a result of that funding. We have Matt Cieri from Maine DMR, who is going to provide an overview of DMRs portside sampling program, and the status of the program funding. I'm hoping that this is an opportunity for everyone to get a brief refresher on what that program is. Then we can talk about next steps after the presentation. Matt, I will turn it over to you.

DR. MATT CIERI: Yes, I'm going to talk about the portside biological and bycatch sampling for Atlantic herring, where we've been and where we are, and where we might be headed. Maine DMR has been doing sampling for Atlantic herring since at least into the 1960s, back when the Boothbay facility in Maine was actually a federal lab, and sampling was done at the local canneries.

Sampling usually takes place portside for herring for biological sampling. Since about 2001, or about when I started DMR, we've been getting support

through ACCSP to conduct a whole plethora of sampling regimes for Atlantic herring and other species. This project was expanded to mackerel and bycatch in 2004, and then expanded to menhaden in 2010, when they started to show up.

Since about 2016, most of the cost has been pretty much just supplies, use of a vehicle, et cetera. It has been fairly cheap, ranging between $23,000.00 and $26,000.00 a year. There are four main data products that we supply from this project. The first is the biological sampling of Atlantic herring.

It's based on BMS prelanding reports from federal harvesters. The range is between New Jersey and the Canadian border. The idea is to get 50 fish samples, which are generally frozen. Two samples per gear type, per statistical area, per biweekly period over the entire timeframe in which the fishery runs.

That usually works out to be about one sample for every 200 to 350 metric tons. The samples are brought back to the lab for later analysis, which I'll get into in a little bit. Then all the data are housed and analyzed at Maine DMR, and then are used as a primary input into Jon's assessment and the updates, but a little bit more on that later.

The second sort of sampling product that we provide is spawning sampling. Again, this uses the VMS prelanding reports to track vessels, make sure that they're fishing in the areas that we want to have samples from. Generally, this is between August and November. We pretty much stay fairly close within the state of Maine for this, as most of the spawning area closures, as you guys know, are within the Gulf of Maine. But we sometimes do sampling in New Hampshire and Massachusetts.

Usually, our sampling year is 100 adult sized fish as a fresh sample for GSI calculation. We like to get two samples per spawning closure area a week when the fishery is up and running. These fresh samples are used for closing and then reopening ASMFC spawning management areas, typically in the Gulf of Maine.

The third data product is bycatch sampling, and that was added in a few years ago, as I alluded to earlier. This is conducted portside. Again, it's based on VMS prelanding reports, with a range between New Jersey and the Canadian border. Here what we're doing is we're systematically sub-sampling at timed intervals, off-loads that are happening, particularly to monitor for river herring and haddock bycatch quotas, and to determine overall bycatch composition.

This is done pretty much all year. Then we do a host of other sampling. In particular we do menhaden sampling, where we grab scales and take some data for Beaufort, and then ship the scales down to the Beaufort Lab for use in that assessment. We also do mackerel sampling, particularly in Area 2 in the winter time, where there is a mixture of herring and mackerel.

We've also done herring genetic sampling for different projects that have been doing genetic work for Atlantic herring. We've also picked up otolith samples for use in microchemical analysis, shape analysis. Then in the past we've also done some dogfish sampling, as we run across them for different projects.

That just sort of covers the actual grabbing the sample part of things. There is a whole other thing that happens once those samples get back into the lab. All of this is funded by IJ back in the laboratory, and we get a host of biological information, including length and weight, sex, age determination. We have an age reader here at Maine DMR, who specializes in Atlantic herring.

We also do some calibrations for aging, between ourselves, NOAA, and DFO out of Canada. But we also look for spawning condition, as well as we've been doing some fecundity over the last probably six or seven years. This ends up being the primary data dependent data used in the assessment. If

you'll remember back on Jon's slide, he was talking bout year class strength from the fisheries.

That is where that data comes from, it comes from this portside sampling project. In addition to the assessment, it also supports a lot of Council and ASMFC management actions. For example, when managers want to know what the impact of a different closed area or some sort of management measure might have on the size and age of the fish caught. This is where that data comes from.

Over all, the DMR project with funding from ACCSP has provided really excellent results. It's fairly low cost and it covers the fishery, generally between New Jersey and the Canadian border, which is the bulk of the landings. A few years ago, we did a comparison between the portside bycatch sampling and at-sea observers, and they lined up fairly well, typically for small bodied fish, things like river herring and small haddock. The use of VMS pre-landings is actually kind of novel in this sort of approach, and we think it's actually it's really a good mechanism. For the most part we get a chance, using those VMS reports, to see where the boat is coming from, what fishing ground it's coming from.

In many cases the boat is unaware that there is going to be a sampler at the dock, sampling for either bycatch or for biological sampling or for spawning sampling, until they tie up. In addition, we've supported a myriad of other projects as a platform to get things like genetic samples and otolith samples from a variety of different species.

As Megan suggested, this program will be ending in 2023. We have enough money to go through January 1, 2024, and we may have some additional money, depending on how we spend things between now and then. But that is sort of to be determined, and it's kind of up to the finance people about rolling over. But even if we do, it would only be for a certain number of months.

After that, my understanding is that DMR will continue to collect biological sampling and spawning samples from landings that occur in Maine, and of course we'll collect menhaden samples for the obligation to the FMP. But in general, we will be unable to conduct sampling out of state, or to conduct the portside bycatch sampling or to do mackerel sampling. Again, as that tends to be more in Area 2 in the winter.

Because the lab activities are actually covered under a separate grant, we will certainly process any samples that we get from other states or from other projects, in order to help fill in some of the gaps. It's the sample collection part, where the money is ending, whereas the laboratory part will still continue.

About 50 percent of the coastwide catch is landed in Maine, even in the most recent timeframe. This really will begin to limit our sampling for this fishery. It's likely that we're going to be under sampling Atlantic herring after this program ends, if there are no other actions that are taken.

In fact, that 50 percent that is landing in Maine, most of that comes from Area 1 and Area 1A. There will be particularly large holes in fishery dependent sampling for herring, particularly on Georges Bank and south of Cape Cod in Area 2. I think that's it. I would be happy to answer any questions you guys have.

CHAIR WARE: Great, thank you, Matt. We'll start with questions, but as people raise their hand, maybe I'll turn it over to Jon Deroba quickly, if you want to provide any comments or sense of potential impacts to the assessment from reduced portside sampling, if you're still with us.

DR. DEROBA: I'm still with you. Everything that I'm about to say is complete speculation. But stock structure for Atlantic herring is an uncertainty in this assessment. We know there is discreet spawning on Georges Bank and in the Gulf of Maine. Any restricted sampling that becomes

limited in space, would limit our ability to evaluate that impact in the future. Beyond that, if we have fewer age samples, the certainty with which we can estimate cohort size will decline pretty substantially. As you saw with missing 2020 survey data, it can put us on some shaky ground. That's it, I mean you can kind of infer the outcomes, but at this point I can't say anything definitively, it's all guess work.

CHAIR WARE: Thank you, Jon. We'll start with questions on how the portside sampling program works. Any questions for Matt? Yes, Bill Hyatt.

MR. WILLIAM HYATT: I want to make sure I'm remembering correctly what was presented. Is this really an issue over $30,000.00, roughly in that neighborhood?

CHAIR WARE: Yes, I believe. Matt, go ahead, sorry.

DR. CIERI: It's usually below $25,000.00. It was substantially more, earlier on before 2016, because we had somebody on payroll that was coming off of this grant. But Maine DMR decided that it was in its best interest to take up that person as part of our funding, and so we fund the person. The money that we're talking about is basically the use of a vehicle, field supplies, and overnight travel. That's it.

CHAIR WARE: Any other questions for Matt? Yes, Justin Davis.

DR. DAVIS: I guess to follow up on Bill's question. Matt, I would just be interested in your perspective. Has that level of funding in the past sort of been adequate to meet, it's tough to say, but to meet the objectives for the sampling program? I guess I was struck too by the low-price tag.

I just wonder, it allows an amount of sampling that is adequate to provide some data to address the questions relative to herring biological sampling, or river herring bycatch. Is there a sense that well more funding would be needed to provide the data that is really needed to meet those objectives? I guess I'm just looking for sort of an assessment of, is that level of funding adequate.

DR. CIERI: Actually, it probably is. We've been doing this work for, like I said at this sort of funding level since 2016. Even when the fishery was running a lot higher than it is now. In fact, we've been spending a little bit less money, of course as you can imagine. You know the herring fishery is already closed within 1A.

As the fishery, given the low spot it's in, it's more than adequate. Even if it ramps up quite a bit, $25,000.00 is a lot of hotel rooms and meals, I guess is the best way of putting it. It seems to be adequate. We've been at that funding level, and have basically been covering the fishery fairly well.

CHAIR WARE: Thank you, Matt, and I'm hoping to hear the low-price tag, I hope means that this is something we can easily solve as a group. We'll talk about next steps after a few more questions. Conor McManus.

MR. CONOR McMANUS: Thanks for your presentation, Matt. Just thinking through the logistics, a bit, and perhaps this has already been explored. But is there possibly a way to enhance new or increased effort for collaboration with states, to help collect some of those samples? I'm thinking in southern New England with Area 2. Are there tools that would allow for perhaps increased collaboration, as well as cost savings?

DR. CIERI: Yes, I mean certainly. During the pandemic the other states were really good, because we couldn't travel out of state very much, you know given our travel restrictions. I will say of course, when you're talking about funding a project, you're talking about you know for something like this, that becomes the priority. In some cases, for other states there are other priorities, rather than getting herring samples, depending on what's going on.

But there is certainly some, you know we certainly have collaborated really heavily with Mass DMF and Rhode Island as well, in getting ahold of samples and tracking down boats and those types of things. Yes, there is definitely ways that we can collaborate to sort of bring down the cost. I just think once that funding ends, I can't justify sending a Maine state employee out of state to sample in another state.

CHAIR WARE: Conor, are you all set?

MR. McMANUS: Yes, thank you for that and I guess I'll hold the other comment until we discuss next steps, thanks.

CHAIR WARE: All right, any other questions for Matt? All right, I do see we have a few members of the public with their hand raised. Since we're a little ahead of schedule. Oh, Ray Kane, go ahead, Ray.

MR. RAYMOND W. KANE: Matt, this past year I understand Area 3, they filled that pack in no time whatsoever, and I don't really know how much herring fishing went on in Area 2. When you speak about the low cost of this program, which I agree, and I think we should find funding to continue it.

What happens with the excess money, like from this year like that they've shut down, I believe today in 1A. I think it was very limited in 2, so is there any surplus money from this year's budget that we could move forward?

DR. CIERI: That's what I was talking about, as far as maybe being able to extend it a few months afterwards. You do also have to understand that the ability to rollover money, because these are managed as federal grants, is severely limited. Lots of times any money that we haven't used, particularly during the pandemic, you know we were able to roll over some and extend it. But in many cases, it just simply goes away for us.

MR. KANE: Thank you for the explanation. I presume this whole presentation, I believe it's been funded what, for the past ten years ASMFC has funded this program, or longer?

DR. CIERI: ACCSP has funded this since 2001, so over 20 years.

MR. KANE: This presentation bottom line is we're going to look for a motion to continue funding this very important research project. Correct?

CHAIR WARE: Ray, this is Megan. I think we're going to talk about next steps in just a few moments, so maybe I'll have you hold that question and comment, and we'll get back to that.

MR. KANE: Thank you, Megan. Thank you, Matt.

CHAIR WARE: As I mentioned, we have a few members of the public with their hands raised. At this point I'm just going to take questions, so Pam, did you have a question you wanted to ask?

MS. PAM LYONS GROMEN: I did have a question, thank you, Madam Chair. Thank you, Matt, for the presentation. My question is about your bycatch sampling. I was wondering if any of the samples for river herring and shad go to the Alosine Genetic Repository Study that is a partnership between the Commission and USGS, if that has been a part of that effort?

DR. CIERI: We have grabbed genetic sampling in the past. I'm not quite sure what the status of that is currently, but we have been. One of the projects has provided genetic samples to that project.

MS. LYONS GROMEN: Thank you, I do think that is another important aspect of the work that you do.

CHAIR WARE: All right, thank you, Pam. Let's move into a discussion of next steps, and at least from my perspective, I think there are kind of two outcomes here that we could try and pursue. As people have alluded to, it's not a huge chunk of change we're talking about. One option is to try and find funds that will cover that money, and keep the same

format where DMR is collecting and analyzing the samples.

I think the other option is to consider something like a menhaden-esque approach, where each state is collecting the samples and then sending them to DMR for analysis. Again, that analysis is on a separate grant. Those are kind of the two ways that I see the Board to try and address this. But I'm happy to at least have an initial conversation. We have some time.

But I don't expect any decisions today. I think maybe the best path forward is, as a Chair request that Emilie help us coordinate some discussions with the states over the next few months, to kind of assess what the best path forward is, and assess what some of the funding opportunities may be. Ray, to your question previously. I don't think we need a motion today, but if anyone has any reactions to those two paths, we can take those comments. Melanie Griffin.

MS. MELANIE GRIFFIN: Yes, as you just kind of distinguished, that is what I was gathering from this presentation, that there are some aspects of this portside sampling program that can continue to be funded without problems, thinking that a lot of analytical work that Matt presented. But the real budget shortfall is that collection of herring and mackerel biological and spawning samples from non-Maine landings. I know in the past Massachusetts has been supportive collecting its own samples in-state. I definitely could see that as one path forward, where we would carve off those sampling costs and processes by state, that more collaborative process that folks were talking about. Certainly, that could be a more efficient administration, given conceivably it would reduce some of these costs, those travel costs. But there are plenty of details that would need to be ironed out.

One particular one I know that we've struggled with in the past is including some kind of VIMS access to refine port sampling. I think those are real important conversations if we want to pursue this path. I like that idea of having some follow up meetings amongst the state agencies to really roll up our shirt sleeves and see what that might look like, if that kind of path forward is what we want to do. I guess that's just to say I'm supportive of having that conversation. Thanks.

CHAIR WARE: Thank you, Melanie. Ray Kane.

MR. KANE: Yes, I support what Melanie just stated. We have to keep in mind that the range of states would run from Maine to Jersey. If I'm not mistaken, fish are landed in Jersey out of Area 2 in the wintertime. Also, would the vessels that land 6,000 pounds or less be included in this research?

CHAIR WARE: Any other comments on the suggested path forward. I think we have two options here, and then a subsequent meeting with the states. Eric.

MR. ERIC REID: Okay, the states are going to talk about how they can fund it. I would like to know from the Service what they can do for funding, once it runs out. Is there anybody at the Service that is working on this project, or is it going to fall all on the states? Thank you.

CHAIR WARE: I don't know if anyone from NOAA wants to answer that. Otherwise, we'll get you an answer later. Alli, go ahead.

MS. ALLISON MURPHY: I'm certainly not, I don't have a lot of association or much information on the budgetary side of things here. As we'll likely to discuss under a subsequent agenda item, we have our own funding issues with continuing funding the industry funded monitoring program. I'm not sure that it's realistic to assume that if we can't fund industry monitoring, that we would be able to take on this program. But I'm happy to take this topic back to folks in my office, and chat with folks.

CHAIR WARE: Thank you, Alli. Any other questions or comments? Bob.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Just a comment. I think the state conversation about state conduct that sampling as a good long-term solution. There may be some money within a cooperative agreement that we have at ASMFC with NOAA Fisheries, it's kind of leftover what we call Plus Up money from about four years ago.

It's not a long-term funding source, but it may be kind of a Band-Aid to get us through this conversation period and over the hump. No guarantees. I'll look at that and see if it's an option, and work with Maine and work with Emilie as she works through that conversation with the state sampling. There may be some short-term money. It' is $30,000, not a whole lot of money. We should be able to scrape that up for a few years if we're transitioning to state conduct, or whatever this looks at, whatever the long-term solution is. We'll bring something back at the next meeting, and report out on what is available.

CHAIR WARE: Okay, great. Final call from any comments. Justin.

DR. DAVIS: Just to clarify. There will be some follow up after this meeting, sort of e-mails or something to get the states talking about how to approach this.

CHAIR WARE: Yes, I'm going to ask Emilie probably early this fall to try and schedule a webinar meeting with the state agencies, so we can discuss how we want to move forward. It sounds like there may be some interim funding that could tie us over for a little bit, so that is good to hear. Then we can report back at future board meetings about how those discussions are going.

UPDATE FROM THE NEW ENGLAND FISHERY MANAGEMENT COUNCIL

CHAIR WARE: Seeing no other hands, we're going to move on to Agenda Item 6, which is an Update from the New England Fishery Management Council.

We have Dr. Jamie Cournane here, who will provide an overview of the Council herring priorities, and the discussion from the June, 2022 Council meeting. Really the purpose here is to help improve communication between the Commission and Council on herring management. At the end we'll hopefully have some time for questions. Jamie, I will pass it over to you.

DR. JAMIE COURNANE: Good morning, everyone. I have been in this role for about a month now, covering the Herring Plan. Prior to that Dr. Rachel Feeney was serving as the interim Plan Coordinator. I will be serving in this role at least through the September Council meeting, and I will do my best to answer your questions about what I have to present today, and the Council's work on herring.

One of the big tasks that the Council undertook was developing a rebuilding plan for Atlantic herring, after finding out that the stock was overfished. That rebuilding plan has now been approved. It's in Framework Adjustment 9, and the effective date of that plan is August 18 of this year. You'll find that Final Rule published in the Federal Register mid-July.

What this rebuilding plan does is it takes the Council's Control Rule and continues to use that as a way to set an F rebuild. Based on the rebuilding plan that was developed at the time the projections indicated rebuilding within five years, and that would be by fishing year 2026. It assumed long-term average recruitment in those projections.

If you're not familiar with the Council's Control Rule for Herring, it is biomass based, and when biomass is greater than the ratio of spawning stock biomass to spawning stock biomass at MSY, then that is greater than 0.5. The maximum fishing mortality allowed is 80 percent of FMSY. But as biomass declines so is fishing mortality in linear fashion.

If biomass falls below 0.1 for that same ratio, then the ABC is set to 0, and there is no fishery

allocation. A second part of Framework Adjustment 9 is that it adjusts how accountability measure catch trigger threshold work. In the event there is an overage in a sub-ACL in one fishing year, it's only deducted in the subsequent fishing year. This would be Year 3 in this case. If an overage exceeds 10 percent of that sub-ACL, and/or if the ACL is also exceeded in the same year so that changes how those thresholds are determined. For several years now the Council has been working on Framework Adjustment 7.

There is a longer history, I won't review, but I wanted to provide you an update on where the Council is with this work. Back in May there was a joint meeting of the Plan Development Team and Advisory Panel, and at this meeting they were discussing the development of alternatives for Framework Adjustment 7, which could include alternatives to protect spawning adult herring.

There was a lot of information that was still lacking, and the PDT felt that this could be difficult to monitor and enforce. At the same time, the Advisors felt that they do support this incentive to avoid spawning herring. The Committee discussed some of this as well at their June meeting. They didn't pass any specific motions.

They did table a motion to stop action on Framework 7. This was not brought up at the Council, because we would have to be noticing on our agenda, we would be considering such a motion. But at the time the Committee did feel that postponing work over the summer would make sense, and asked the Council, does this make sense for postponing the work on this action until September?

We will be discussing this again on the plans for this Framework at our September or future meeting. But right now, everything is on hold for developing any kind of spawning protections on Georges Bank through this Framework adjustment. The core thing that we've been working on for Atlantic herring this summer is setting specifications for the next three years.

You heard Dr. Jon Deroba provide a presentation on the results of the stock assessment. Then on Thursday our Scientific and Statistical Committee will convene to discuss recommending overfishing limits and acceptable biological catches for the stock for the next three years. That meeting has been preceded again by the Peer Review, and then two meetings of our Plan Development Team to develop recommendations.

All of those reports and information are now available on our website. If you want to know where that is, I'll share that with Emilie and she can share all the details of that meeting. If you plan to join that meeting, it is available by webinar. We're expecting this action to set overfishing limits, ABCs using the Control Rule and the Rebuilding Plan.

Then there is a number of pieces, elements of the flow chart, if you will, that go into this specification setting process, including management uncertainty, annual catch limits, the management area based sub-ACLs and river herring and shad catch caps. There are also some other components that get set through specifications. We anticipate that our Advisory Panel and Committee will meet on September 23, to make recommendations on their preferred alternatives. That will also be in a meeting by webinar. It's on a Friday. AP will be in the morning and the Committee will be in the afternoon. The following week the Council will take final action on specifications at an in-person meeting in Gloucester, Massachusetts, which is also available to the public by webinar official station. Lastly, I was asked to provide a brief update on industry funded monitoring.

I think that NOAA staff will provide greater details. But what we heard back earlier this year is the concerns about not having the funding identified for the program, specifically to administrate and in May our Advisory Panel met and they discussed potentially initiating an action to advise the weighting approach in the industry funded monitoring program, to address the shortfall for the herring fishery.

In June, the Committee didn't make a specific motion, and our Council didn't take any action in June. We did discuss the issue. Presently the program will be on hold past April 2023, without federal funds. There is a provision of the program that there is a required program review that would begin in 2023.

I think the Service can provide greater details on the status of the industry funded monitoring program. At this point the Council did not decide to take any specific action at its June meeting. That concludes my presentation and brief update, and thank you for the opportunity to preset it today. Hope I can answer any questions you may have.

CHAIR WARE: Thank you, Jamie. We'll start with any questions from the Board for Jamie. Justin.

DR. DAVIS: Thanks for this update. I'm curious. I will admit, I don't understand this as well as I would like to. The bycatch caps that are in place for river herring in some fisheries. It was my understanding that the at-sea monitoring is one of the data sources that are used to assess how the fishery is performing relative to those bycatch caps.

I'm curious whether the portside sampling that we discussed earlier today also plays into that, and then I'm just sort of wondering, if we get into a situation here where the at-sea monitoring is on hold indefinitely, what information will be used to assess how those fisheries perform against those river herring bycatch caps?

CHAIR WARE: Jamie, do you want to take a crack at that? If not, I can try and provide an answer.

DR. COURNANE: I don't want to guess at the answer to this question. I will admit that it's been some time since I've looked at the data that goes into determining the values for river herring catch caps. But I hope that someone else can answer the question, or if you give me a moment, I can find out for you.

DR. CIERI: I can answer this if you want me to. Yes, the portside sampling, you know the ACCSP funded portside sampling, does feed directly into the river herring and haddock bycatch caps. We forward that data on to NOAA as we get it.

CHAIR WARE: I think that's a partial answer, maybe Justin, and we can follow up. I think I'll just highlight it's just industry for the monitoring that is on pause in 2023, not NEFOP. I'm unclear though if NEFOP collects anything related to bycatch. Alli may have some additional information.

MS. MURPHY: I believe it's a combination of the SBRM or NEFOP coverage as well as information from the portside sampling program.

CHAIR WARE: Okay, thank you, Alli. Any other questions for Jamie? Jamie, it looks like you have your hand up.

DR. COURNANE: Yes, thank you. I can send a link to staff, but if you go to GARFOs reporting page for the river herring and shad quota in-season monitoring, there is a summary of the data and the approaches that are used to determine the estimates in season. That is what I was looking for when you were asking the question. I would be happy to share that if folks are interested in greater detail.

CHAIR WARE: Great, thank you, Jamie. All right, last call for any questions or comments. All right, seeing none; thank you, Jamie, we appreciate your time.

ADJOURNMENT

CHAIR WARE: We'll move on to our final agenda item, which is Other Business. I didn't have any other business brought forward. Seeing no hands raised, I think we can go ahead and adjourn the meeting, so I'll ask for a motion to adjourn. Steve Train, and a second from Cheri. Thank you.

(Whereupon the meeting adjourned at 10:15 a.m. on Tuesday, August 2, 2022)