

The Horizon

FOR THE FUTURE OF FISHING

East Coast Forage Fish Crisis

By Roger Fleming and Zane Ruzicka

Forage fish, including small pelagic species like herrings, sardines, anchovies, and krill, play a pivotal role in marine ecosystems and economies around the world by sustaining predators and fisheries directly and indirectly. Forage fish transfer energy from primary producers like zooplankton and phytoplankton up the food web, supporting a wide range of predators such as tuna, striped bass, cod, seabirds, and marine mammals. They are the foundation for many of the world's largest fisheries.

Despite this ecological and socioeco-

nommic importance, however, most forage fish populations are overexploited or at risk of collapse due to old school single-species management approaches where the goal is to achieve maximum yield without accounting for their critical ecosystem role. They are often the target of industrial-scale fisheries that rapidly overfish populations before managers react, and face increasing pressures from climate change, habitat loss, pollution, and other stressors. As a result, many forage fish populations have experienced dramatic declines or collapses, with

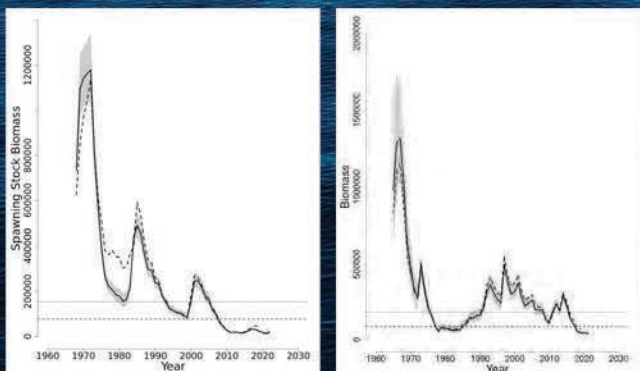
cascading impacts on dependent predators and human communities.

This is true on the U.S. East Coast where a look at the status of key forage fish populations reveals a disheartening trend – most key forage fish populations are in trouble. Atlantic herring and Atlantic mackerel are two critical forage fish populations that are ecosystem linchpins in New England and Mid-Atlantic waters

and provided for thriving fisheries, but both have recently tanked. As recently as 2009, fishermen caught over 100,000 metric tons of Atlantic herring. But this was unsustainable and the most recent stock assessment released this summer concluded that Atlantic herring are overfished and at only 26 percent of its target biomass. The soon to be approved 2025 catch limit will total less than 3000 metric tons – a 97 percent decline in 15 years.

Similarly, the 2021 Atlantic mackerel stock assessment found that mackerel were overfished and overfishing was occurring. The assessment also concluded that previous assumptions about recruitment were overly optimistic, thus mackerel would not be able to rebuild as hoped by 2023. A new rebuilding plan was implemented in 2023

ATLANTIC MACKEREL AND HERRING BIOMASS TRENDS



Mackerel Trends

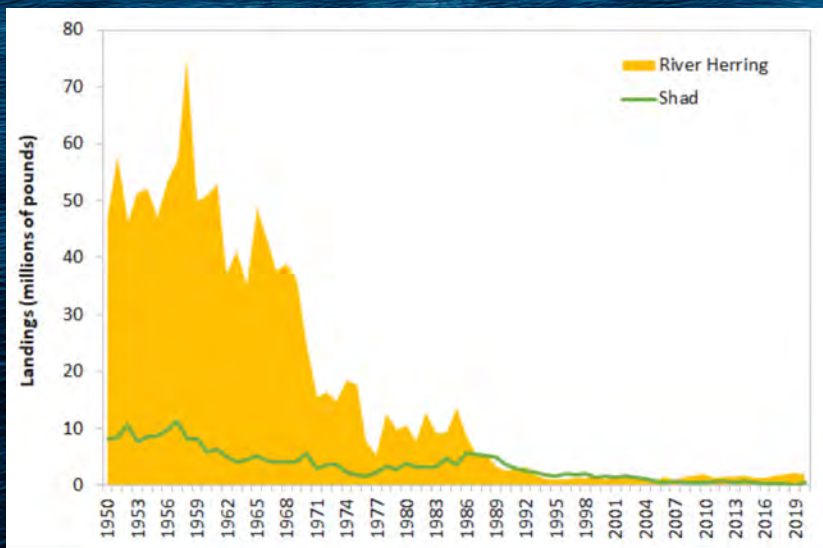
Herring Trends

A downward trajectory from 1960s-2020s

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RIVER HERRING AND SHAD COMMERCIAL LANDINGS



Caught to the brink of extinction

and today mackerel is at only 12 percent of its target biomass with a commercial quota of only 868 metric tons. As recently as 2007 U.S. commercial catch was nearly 26,000 metric tons. Not surprisingly, the Atlantic herring and mackerel fisheries were both heavily prosecuted by industrial-scale midwater trawlers since their arrival on the East Coast beginning in 1994.

River herring were once a keystone forage species in the coastal ocean ecosystem stretching from Florida all the way to Maine. They were ecologically and cul-

tion of *Horizon*, river herring continue to disappear from most parts of the East Coast. The most recent stock assessment released this summer revealed that the coastwide populations of river herring remain severely depleted at near-historic low levels, with mortality too high to sustain recovery. Few river herring runs today allow for any catch of river herring, yet incidental catch (bycatch) in midwater and bottom trawl fisheries remains significant and the largest source of mortality on the population. Similarly, American shad once



supported one of the nation's largest and most important commercial and recreational fisheries. Landings have declined precipitously since the 1950s peak of nearly 4000 metric tons to only about 225 metric tons in recent years.

Like river herring,

turally significant throughout their range and revered as one of the nation's oldest fisheries. But as explained in *River Herring Continuing to Disappear* on page 4 of this

today, shad are severely depleted with the most recent stock assessment in 2020 concluding that stocks of American shad in their native range along the East Coast are

likely at all-time lows.

The other big piece of the East Coast forage fish puzzle is Atlantic menhaden. The current menhaden stock assessment concluded it is not overfished, but many are concerned about signs of stress in the population. In 2019, stock assessment scientists adopted a new natural mortality rate assumption that effectively doubled the previous rate used in the menhaden assessment model. This was a dramatic and controversial change that if inaccurate could be artificially inflating estimates of population size, allowing for unsustainable catch levels, and risking that menhaden will soon join Atlantic herring, mackerel, river herring and shad in crisis.

As part of Wild Oceans' effort to remain a nimble but effective organization, we are setting out to more deeply understand recent forage fish management including the policy failures that have contributed to the current East Coast forage fish crisis and to identify actions that will help restore and sustain forage fish populations into the future. During the next year we will conduct a comprehensive review of recent East Coast forage fish management actions and evaluate the policy choices underlying them to identify mistakes and offer meaningful and achievable solutions. While each forage fish is unique, we believe there must be common management problems that have led so many of our vital forage fish populations to collapse at roughly the same time.

This collapse and associated degradation of the marine ecosystems that depend on them is not inevitable. In recent years, there has been growing recognition of the need to transition toward ecosystem-based fisheries management (EBFM) for forage species. EBFM is based on taking a holistic approach to managing a species that considers the complex interactions between fished species, their predators and prey, and the broader ecosystem. *Wild Oceans* knows we need to shift from single species management to EBFM, but by looking back we will identify pathways and tools to move us forward. We invite forward-thinking industry leaders, committed advocates, and scientists to join us in this effort to help chart a new course forward to help safeguard the future of forage fish and the marine ecosystems and human communities that depend on them.

Making a Difference

By Rob Kramer

President Robert F. Kennedy once said that “the purpose of life is to contribute in some way to making things better”. While all of us have the ability to do this in one way or another each and every day, not all of us have the ability to be financially compensated for doing so. I feel extremely fortunate that for the past 31 years I have been able to have a career with nonprofit organizations that are working to make the world a better place. Nonetheless, I sometimes find myself examining the work that I do and asking, “am I truly making things better, in a meaningful and measurable way?” and “if so, how?”.

I think for anyone working for a nonprofit, especially in a leadership role, it is not only “OK” to ask these questions, but it is a necessary and required part of the job. It is far too easy to get caught up in the “work” and then one day realize you have lost sight of the forest for the trees and consequently struggle to quantify what has been accomplished with your efforts. Ironically, this can be even more likely to happen when you have a strong passion for and interest

in the work being performed.

In the world of nonprofit organizations, some perform services whereby it is easier to see measurable results of just how they are “making things better”. With an organization like Habitat for Humanity for instance you can see and count the houses constructed for those having difficulty obtaining a home. With animal control shelters you can look at the number of pets adopted in a given time period. But, when it comes to fisheries conservation, it is sometimes not so clear. The work that we do through engaging in the fisheries management process is necessary and greatly needed, but progress is often ephemeral and difficult to measure.

However, this is certainly not the case with all of our work. Our engagement with the Florida Forage Fish Research Program is a good example. Funds raised through the program provide \$15,000 fellowships to graduate students at Florida universities who collaborate with the Florida Fish and Wildlife Conservation Commission (FWC) scientists to advance our understanding

of forage fish. The program produces high-quality research on the value of forage fish to predators and marine habitats, builds collaborative partnerships between academia and FWC, and fosters the next generation of fisheries scientists. Since its inception in 2017, we have funded 13 Graduate Student Fellowships. In addition to the students obtaining advanced degrees, they have collectively produced 10 peer-reviewed open-accessed publications with over 120 citations, their work benefiting not only the resource and other scientists, but the public as well. Additionally, several of the fellows have taken the next step by obtaining jobs with universities and government agencies involved in ocean conservation work such as the US Geological Survey, NOAA, and the FWC. The meaningful and measurable impact that these individuals provided is not only quite clear, but will continue on into the future for many years to come, indeed “making things better” for all. **See *Florida Forage Fish Research Program Update* article on page 7.**

For the Future of Fishing

Wild Oceans is a 501(c)(3) non-profit organization dedicated to keeping the oceans wild to preserve fishing opportunities for the future.

Our Goals:

- Preventing overfishing and restoring depleted fish populations to healthy levels
- Promoting sustainable use policies that balance commercial, recreational and ecological values
- Modifying or eliminating wasteful fishing practices
- Improving our understanding of fish and their role in the marine environment
- Preserving fish habitat and water quality

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River Herring Continuing to Disappear in 2024

By Zane Ruzicka

In the Winter 2008 edition of our newsletter, then called the *NCMC Marine Bulletin*, we published a story titled “River Herring Disappearing”. In this article, we suggested that at-sea bycatch was the likely culprit for the disappearance of two critical river herring species, alewife and blueback herring. Well, at its August 6th meeting, the Atlantic States Marine Fisheries Commission’s Shad and River Herring Management Board heard the results of the latest River Herring Benchmark Stock Assessment that provided evidence to support exactly what we had hypothesized back in 2008.

To expand, researchers sought to answer several questions including identifying the current status of river herring populations and comparing that to historic levels, determining mortality rates and abundance trends, and examining the impact of habitat loss and restoration, bycatch, and fishery limits. Using abundance and mortality information from 84 rivers, representing 105 stocks of river herring, the reality the researchers found presents a sobering picture. Their assessment revealed that the coastwide populations of river herring are not only depleted relative to historic levels and mortality was too high to sustain populations, but also that population levels are near historic lows. Specifically, total removals of river herring from all sources are at “approximately 4 percent of the reported landings

compared to the height of the directed fishery in the 1950s and 1960s”. While some of this decline could be due to dams and river habitat loss—which the reversal of could help rebuild populations—during the meeting, researchers presented evidence that identified bycatch as being the bigger issue.

The data provided shows there are differing trends between the Northern New England Coast (where there is a seasonal prohibition against midwater-trawling) and the Southern New England and Mid-Atlantic regions where researchers identified limited-to-no population increases despite similar investments in dam removal and habitat restoration efforts to the Northern New England region. This is likely because the assessment found that significant amounts of river herring are caught as incidental catch (bycatch) in fisheries targeting other species like Atlantic herring and mackerel. Researchers also called for new methods of data collection to establish biologically-based incidental catch caps for river herring to aid in their recovery.

During the summer, I had the privilege to meet with river herring stewards in Connecticut at inshore rivers where river herring used to run. Currently, river herring do not support any Connecticut fisheries and taking them has been prohibited since 2002 when a complete moratorium was established. River herring stewards shared with me how their efforts to restore rivers—the same actions taken in the Northern New England region—had not resulted in their river herring populations returning. The difference they see points to the time/area closures for midwater trawlers in the North.

Unless we are able to establish more protections for river herring while they are at-sea, treasured and economically valuable river herring populations will remain at historically low levels, especially those in Southern New England. *Wild Oceans* will continue to advocate for new protections for river herring that will address at-sea catch of river herring through the New England Council’s ongoing development of Amendment 10 to the Atlantic herring fishery management plan. We will also continue to lead in research to identify emerging threats to our most important coastal ecosystem resources, and in developing effective advocacy approaches that result in change. We must do everything we can to prevent our next story from being titled “River Herring Disappeared”.



U.S. Holds the Key to Rebuilding Striped Marlin

By Theresa Labriola

This summer, the United States made a commitment to work with other members of the Western and Central Pacific Fisheries Commission to take steps to ensure that northern Pacific striped marlin spawning stock recover by 2034. Striped marlin remain in a decades-long downward spiral as a result of overfishing at the hands of industrial longline vessels that target tuna and swordfish. First, we saw a decline in striped marlin spawning stock biomass to just 1,696 tons (54 percent below the international rebuilding target of 3,660 tons). Now, we have seen an increase of juvenile striped marlin catch, which have a much higher relative mortality than catching adult fish. In concert, the two challenge the ability of the stock to recover.

The International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) provided a dozen rebuilding scenarios for striped marlin that cover a range of rebuilding targets, timelines, and probabilities of each scenario to reach each target within different timelines. The United States has an opportunity to make meaningful progress to rebuild striped marlin, a goal that gets sidelined in favor of management that focusses on high value tuna stocks.

To this end *Wild Oceans* is advocating for an international measure that reduces catch below the most recent levels *immediately* instead of reducing catch in phases. After a decade of being overfished and inadequate action to reverse the trend, there is no justification for further delaying catch reductions. Furthermore, annual catch for Japan, Korea, Taiwan and the United States has been below the catch limits for all of the rebuilding scenarios since 2020, and as low as 1,450 tons in 2022. It seems counter-intuitive and counterproductive to allow an increase in catch on an overfished stock.

However, catch limits alone may not shield north Pacific striped marlin from excess fishing mortality especially as the stock rebuilds. Even once the catch limit is reached, unless the fisheries are closed, fishing vessels will continue their pursuit of target species, and catch, kill and discard striped marlin as bycatch. Accordingly, we support adoption of annual limits along with robust complementary conservation and management measures for longline vessels including:

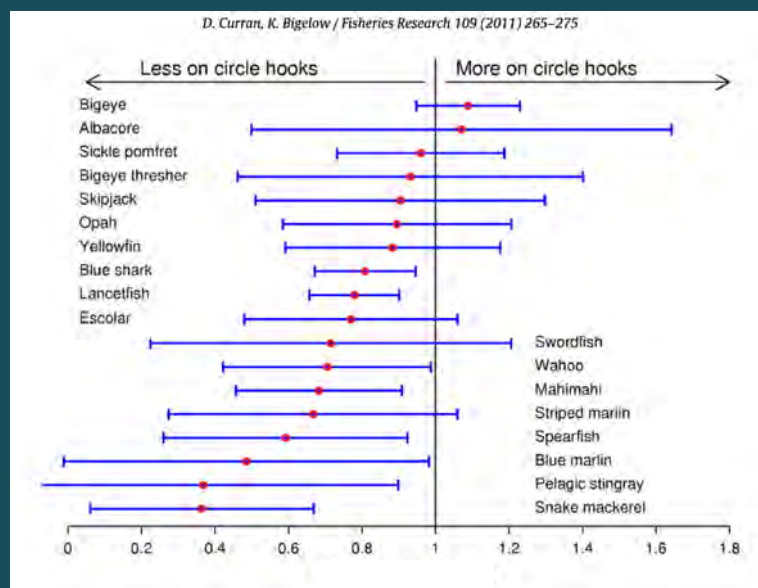
- Ocean-wide mandated use of large circle hooks – or at least a ban on J-hooks –

on all longline vessels to reduce striped marlin catch and maximize post-release survivability.

- Requiring release of all live striped marlin to ensure the catch limit is not reached.
- Modifying longline gear to remove hooks adjacent to floats or increase hook depth because the shallowest hooks adjacent to the longline floats have substantially higher billfish catch than any deeper hooks.
- Protecting striped marlin through spatial management such as time-area closures to safeguard vulnerable life-history stages, particularly juvenile habitat, migratory corridors and spawning aggregations.
- Reaching a limit should trigger accountability measures that adjust fishing behavior or future catch limits (fishery closure, payback provisions, etc.).

Ultimately, we are urging the U.S. to ask for development and adoption of a long term, pre-agreed, management strategy evaluation-tested management procedure to set catch limits to rebuild and maintain stock health of striped marlin and other billfishes. Without thoughtful management we are apt to repeat our mistakes and risk the long-term health of billfish stocks worldwide.

RELATIVE CATCHABILITY



Comparison of circle and J-hook catchability for 18 species caught in the Hawaii-based tuna longline fishery. Mean catchability (circles) is the exponent of the GLMM estimated hook type parameters and horizontal lines are the 95% confidence intervals around the estimate.

Turning the Tide

News | Activities

LARGE MARINE FISH CONSERVATION

■ *Wild Oceans* Pacific Program Director, Theresa Labriola, attended meetings of the Inter American Tropical Tuna Commission (IATTC), including the Working Group on Ecosystem and Bycatch and the Scientific Advisory Committee (SAC). The SAC reviewed the benchmark stock assessment for Pacific bluefin tuna which shows the stock has recovered from less than 3 percent of the historic spawning stock biomass (SSB) to more than 20 percent SSB. The SAC recommended that the IATTC consider a long-term harvest strategy with reference points in 2025 based on the results of the ongoing management strategy evaluation. The Working Group could not agree on a definition of “large circle hook” required on longline vessels and recommended holding a second workshop to provide additional advice on the impacts of fishing hooks on sea turtles.

■ Theresa is a member of the General Advisory Committee (GAC) to the U.S. Section to the IATTC which met via webinar on July 22 and 23. The GAC made several high-priority recommendations including that the U.S. 1) prioritize progress on a comprehensive long-term harvest strategy for bluefin for adoption in 2025 and urged the U.S. to maintain a precautionary stance on Pacific bluefin tuna given uncertainty in recruitment and the impact of the small fish quota increase on eastern Pacific fisheries, 2) advocate for full compliance of a measure to protect silky sharks, 3) support the prioritization of blue shark research, which could inform future development of a Management Strategy Evaluation for the stock. In addition, the GAC supported the U.S. proposed Resolution that would require longline vessels to use large circle hooks and finfish type bait.

■ In July, the Joint Working Group (JWG) on Pacific Bluefin Tuna Management met in Kushiro, Japan to review the benchmark stock assessment for bluefin. This global working group – including representatives from the United States, Japan, Mexico, South Korea, Chinese Taipei and several Pacific Island countries – announced new recommendations for Pacific bluefin tuna fishing. The agreement included increases in fishing quotas for certain sizes of Pacific bluefin tuna in the Eastern and Western Pacific regions at levels that will still allow for increases in stock size. Theresa participated in the JWG and the immediately preceding meeting of the Western and Central Pacific Fisheries Commission (WCPFC) Northern Committee (NC) as part of the U.S. Delegation. The NC adopted JWG recommendations on bluefin. The NC also reviewed the rebuilding analysis for north Pacific striped marlin which provided several strategies for recovering striped marlin. Theresa supported the U.S. commitment to prioritize a new management measure for striped marlin this year.

■ Theresa attended the WCPFC Scientific Committee (SC) meeting August 13-21 as a member of the U.S. delegation and engaged in discussions regarding the North Pacific striped marlin rebuilding plan. Some nations continued to question the validity of the stock assessment and argued that WCPFC should delay any action to set new catch limits until the next stock assessment in 2027. Overall, the members agreed that the 2023 stock assessment and 2024 rebuilding plan provided the best scientific information available and recommended WCPFC base their management on the adopted assessment. The WCPFC will discuss the rebuilding plan when they meet in November.

■ Theresa was invited to participate in a 2-day planning meeting on June 6-7 in San Diego, CA to develop an HMS Roadmap that contemplates two factors that are critical to bycatch reduction in the face of climate change. One factor concerns the deployment and use of gears or other fishing methods which are less prone to bycatch events and the second is the use of forward-looking tools

that anticipate bycatch probabilities based on changing conditions. Theresa participated in small group discussions about gear performance criteria, acceptable levels of bycatch, climate ready fisheries and economic viability. The Pacific Fishery Management Council is scheduled to review the results of the meeting in November.

ECOSYSTEMS AND FORAGE FISH

■ The Pacific Fishery Management Council initiated Fishery Ecosystem Plan Initiative 4 in September 2022 to incorporate climate and ecosystem information into the Council’s harvest-setting and fisheries management processes. As part of this initiative the Ecosystem Workgroup in cooperation with scientists from NOAA Fisheries have developed an ecosystem and climate informed risk assessment methodology. Theresa attended the Scientific and Statistical Committee Ecosystem Committee meeting on August 5th to review this methodology. It became clear that risk tables can be used not only to inform harvest setting, but to provide qualitative information on how ecosystem changes may impact other fishery dynamics such as bycatch.

■ On June 24, 2024, Roger Fleming attended the New England Fishery Management Council meeting in Freeport Maine and spoke on behalf of *Wild Oceans* in support of three motions advancing river herring and shad (RH/S) protections through Amendment 10 to the Atlantic Herring Fishery Management plan. The motions passed will require Council staff to 1) analyze and develop alternatives that implement time/area closures for portions of Areas 2 and 3 where RH/S overlap with the herring fishery, 2) analyze and develop alternatives that implement revisions to RH/S catch cap values that reflect regional abundance and scale to changes in herring abundance and/or regional river herring abundance, and 3) analyze and develop recommendations for improving the accuracy and precision of RH/S catch estimates in the herring fishery.

■ Roger also attended several meetings addressing the New England Fishery Management Council’s catch specifications for 2025-27 in the Atlantic herring fishery, including the Science and Statistical Committee meeting on July 31 and joint meetings of the New England Fishery Management Council’s Atlantic herring Advisory Panel and Committees on August 22 and September 12th. The 2024 Atlantic herring management track assessment estimated the spawning stock biomass (SSB) in 2023 to be at only 26 percent of its biomass target and that herring are overfished and have been in recruitment failure for nearly 15 years. Updated projections also showed that the stock’s rebuilding timeline is significantly behind expectations, pushing the projected completion of rebuilding from 2028 to 2031. In a coalition letter, we urged the Council to adopt the low Acceptable Biological Catch (ABC) derived catch limits, and given recent poor recruitment and risk of overfishing, that the Council reconsider 2027 catch levels based on the next herring stock assessment scheduled for 2026. We also strongly urged the Council to move forward with final action setting the 2025-2027 specifications immediately, and not delay as requested by the industry, to ensure catch limits are implemented prior to the January start of the 2025 fishing season to reduce the risk of overfishing and management area overages.

■ In an effort to help assemble information for the Atlantic Herring Campaign, from June through August, *Wild Oceans* Atlantic Coast Programs Coordinator, Zane Ruzicka, traveled to Mystic, CT, Cape Cod, MA, and Nantucket, MA to administer and find partnership opportunities for the Atlantic Herring Commercial Fishery Interactions Survey with commercial fishermen, recreational fishermen, Indigenous people, and herring stewards. During these trips, Zane

was able to survey and geolocate about 20 individuals who have experienced a user conflict, especially with mid-water trawlers. People surveyed experienced a range of conflicts including their gear being destroyed by midwater trawlers and witnessing the bycatch of non-target fish and marine mammals. The most successful method for surveying fishermen was meeting them on the docks and having in-person conversations with them about their frustrations with the herring fishery. They highlighted the urgent need for action, but also their anger at having previously participated in the Council process only to have their voices disregarded in the end. *Wild Oceans* is dedicated to providing a voice for responsible fishing through community-based participatory initiatives as well as promoting evidence-based policy advice to the Councils.

■ On September 3, Zane submitted public comments to the Mid-Atlantic Fishery Management Council (MAFMC) about what priority items should be included in their next strategic plan. In the public comment, *Wild Oceans* expressed appreciation to the MAFMC leadership in evolving with new challenges as our oceans warm, fish stocks shift, and the need for additional and new science increases. In our comments, we recommended that the new strategic plan should emphasize 1) conserving the forage base to safeguard critical links between predators and prey as essential to the sustainability of fisheries, 2) continuing to build on the Council's ecosystem-approach to fisheries management by recognizing the biological, economic, social, and physical interactions among the components of ecosystems, and 3) creating climate dynamic fisheries which are responsive to changing oceanographic factors. *Wild Oceans* will continue to engage in the public commenting process for the MAFMC strategic plan.

■ From August 12th through August 15, the Mid-Atlantic Fishery Management Council (MAFMC) met in Philadelphia, PA. Along with Zane, *Wild Oceans'* President Rob Kramer attended the meeting from August 12th through 13th in-person to follow the Council's discussions on NOAA Fisheries' Ecosystem-Based Fishery Management Roadmap (see article on page. Generally, the Council liked the Roadmap but felt that the national guidance needed to have more direct reference to Council collaboration to ensure regional nuances are considered. For example, the Council supported finding ways to make management processes more efficient to implement Ecosystem Based Fisheries Management (EBFM), but they wanted regional milestones to be created in collaboration with the Councils. Additionally, the Council said they appreciated the breadth of references to other national programs that are a part of creating climate-dynamic fisheries and EBFM implementation but felt that there was little reference to how newly funded Inflation Reduction Act projects fit into roadmap guidance. *Wild Oceans* shared similar views to the MAFMC staff in our comments that there needed to be more references to how regional collaboration would occur and what metrics would inform if outlined EBFM goals were met. *Wild Oceans* continues to push for prompt EBFM implementation and supports efforts to provide all regions with the science and management tools to accomplish this.

■ On August 7, Rob, Zane and Roger attended the webinar for the Atlantic States Marine Fisheries Commission's Shad and River Herring Management Board where it reviewed the 2024 River Herring Benchmark Stock Assessment. No action was taken, although the assessment highlighted new recognition of the problem with at-sea catch of river herring, including that "[w]ith incidental catch now representing the largest source of fisheries mortality on the population, the high mortality rates create a need to improve the monitoring and modeling of bycatch and improve the efficacy of the current catch caps." Further on, "[t]he Stock Assessment Subcommittee recommended developing a species-distribution model to determine time-area closures as an alternative or complement to the catch cap approach to reduce river herring bycatch, which would require less intensive observer sampling to implement." These recommendations provide strong support for *Wild Oceans'* ongoing advocacy for new protections for river herring that will address at-sea catch of river herring through the New England Council's Amendment 10 to the Atlantic herring fishery management plan. See [River Herring Continuing to Disappear in 2024 article on page _4_](#).

Florida Forage Fish Research Program Update

This past July, the Florida Forage Fish Coalition partners reviewed new applications for 2024-2025 Fellowship awards. Although several worthy applications were received, the partners settled on Megan Siemann from the University of Florida and Mack White who is studying at Florida International University.



Megan's work will focus on the newly designated Nature Coast Aquatic Preserve (NCAP) on Florida's Gulf Coast. A priority for preserve management is establishing monitoring baselines and programs for repeated, consistent sampling, including trophic dynamics. The overarching goal of Megan's project will be to develop directed, cost-effective sampling recommendations for trophic monitoring within the NCAP, that could eventually be applied to other Aquatic Preserves as well.

Mack's research aims to explore the spatiotemporal dynamics of forage fish community biomass across seven major Florida estuaries (Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, Southern Indian River Lagoon, Northern Indian River Lagoon, Northeast Florida) in response to varying types of disturbance. This investigation proposed to address how community stability and its intrinsic properties, resilience, and resistance, interact to influence responses to environmental stressors.

The Florida Forage Fish Coalition partners are extremely grateful for the financial support of *Fish Florida* who provides much of the funding for the student fellowships program.





The stage is set for the most important event for billfish in nearly a decade!



Over one hundred scientists and billfish enthusiasts from 12 countries will be convening in San Diego for the 7th International Billfish Symposium. Cohosted by the International Game Fish Association and Wild Oceans, the three-day event will focus on billfish movement and habitat use, billfish biology and fisheries science, and human dimensions in billfish fisheries. In our next edition of the Horizon newsletter, we will have a complete recap of the October event. For more information and to view a complete schedule of daily scientific presentations, visit <https://bfsymposium.org>

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