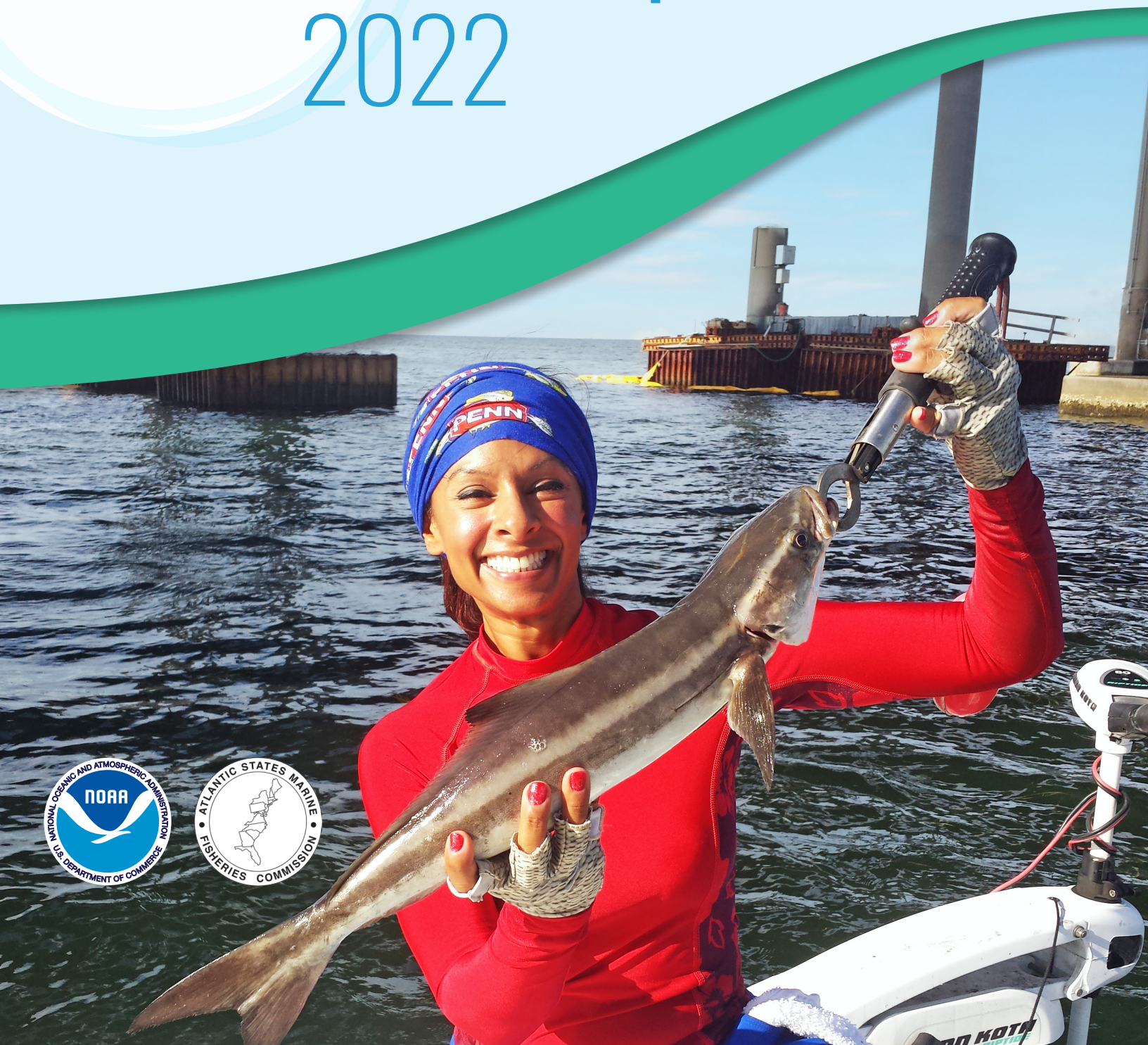
# National Saltwater Recreational Fisheries **Summit Report** 2022



# Acknowledgements

This report was prepared by Tidal Bay Consulting and AECOM. The Summit organizers, listed below, reviewed and contributed to the report, along with members of the Steering Committee, presenters, and panelists. The Summit and report are funded through the Atlantic States Marine Fisheries Commission (ASMFC) pursuant to National Oceanic and Atmospheric Administration (NOAA) Award No. NA18NMF4720321.

The Summit organizers include the following individuals:

Russell Dunn, Tim Sartwell, Sean Lawler, and Derek Orner with NOAA Fisheries. Tina Berger, Laura Leach, Lisa Hartman, Lisa Carty, Chris Jacobs, and Maya Drzewicki with the Atlantic States Marine Fisheries Commission. Jessica Gribbon Joyce and Madeline Tripp from Tidal Bay Consulting. Kelly Stoll, Jack Murphy, and LeeAnn Lyons from AECOM.

Planning the Summit was a collaborative effort. The planning process was informed by a series of roundtable meetings that NOAA Fisheries convened in 2021. The issues and topics that emerged from these meetings were then discussed and narrowed by the Steering Committee. Ultimately, the Steering Committee and Summit organizers identified four major topics that were explored over the course of two days through a mix of facilitation approaches selected to meet specific session outcomes.

Accordingly, the Summit organizers recognize the following individuals:

*Steering Committee members:* Trip Aukeman, Dr. Luiz Barbieri, Lucas Bissett, Kevin Blinkoff, Forrest Braden, Chris Burrows, Jamie Diamond, Willy Goldsmith, Richard Heap, Mike Leonard, Matt Ramsey, Charlie Robertson, and David Sikorski (See Appendix A for a full list of members and their affiliations.)

*Keynote speakers:* Whit Fosburgh, President and CEO, Theodore Roosevelt Conservation Partnership; Deputy Don Graves, Deputy Secretary of Commerce; Janet Coit, Assistant Administrator, NOAA Fisheries; and Spud Woodward, Chair, Atlantic States Marine Fisheries Commission

*Presenters, panelists, and moderators* (See Appendix B for their biographies.)

*NOAA Fisheries and ASMFC leadership and staff,* for supporting the Summit in many ways, including presenting, moderating, IT and webinar support, communications, venue logistics, and other roles

*Break-out group facilitators and rapporteurs:* Kevin Blinkoff, Tim Sartwell, Moira Kelly, Brad McHale, Heidi Lovett, Chris Burrows, David Sikorski, Cliff Hutt, Scott Steinback, Charlie Robertson, Dr. Luiz Barbieri, Sean Meehan, Heather Blough, Kenneth Brennan, Forrest Braden, Richard Heap, Daniel Studt, and Keith Kamikawa

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# Executive Summary

NOAA Fisheries and the Atlantic States Marine Fisheries Commission (ASMFC) hosted the fourth National Saltwater Recreational Fisheries Summit on March 29-30, 2022, in Arlington, Virginia. The Summit brought together diverse stakeholders from the recreational fishing community across the coastal U.S. The theme of the 2022 Summit was *Recreational Fisheries in a Time of Change,* and the primary **goals** of 2022 National Saltwater Recreational Fisheries Summit were:

- Reestablish lines of communications that eroded during the COVID-19 pandemic
- Strengthen rapport and collaboration between the saltwater recreational fishing community, fishery managers, and scientists
- Share knowledge and perspectives
- Identify and investigate solutions to issues jointly identified as significant

March 29th opened with keynote speakers, and then transitioned into Session I: Climate Resilient Fisheries, which included presentations on the state of the science of changing climate and oceans; tools, investments, and the importance of habitat for climate-resilient fisheries; on the water perspectives from anglers; and climate change scenario planning. There was an opportunity for audience questions following the presentations, and then attendees participated in regional break-out group discussions. In the afternoon, Session II: Balancing Ocean Uses, began with presentations that shared agency, industry, and anglers' perspectives on offshore wind energy and marine aquaculture, and included an opportunity for questions and answers. Then a panel discussion allowed for additional time for discussion among panelists and participants.

March 30th commenced with a guest speaker, and then focused on Session III: Data Collection and Use. This Session offered presentations from subject-matter experts in data collection, stock assessments, and catch monitoring, and an opportunity for discussion with the audience. Session IV: Management Reform, Flexibility, and Optimum Yield (OY), started later in the morning. The first part of this Session focused on ongoing efforts on management reform and flexibility, and the second part concentrated on an understanding of OY, and how to better integrate OY into management (a detailed agenda for the two days can be found in Appendix A). More information about the process of planning the Summit is included in the 'About the Summit' Section.

## Cross-Cutting Themes

Across the four sessions, several cross-cutting themes emerged. These underlying themes will be considered as NOAA Fisheries and ASMFC review the ideas and suggestions from the specific sessions.

## *Human Dimensions*

There is broad recognition that climate change is affecting traditional angling opportunities, and in order to effectively adapt, more attention is needed to understand and regularly incorporate human dimension considerations into decision making. This ranges from assessing the intrinsic values of fishing to better understand OY, to considering cultural practices associated with non-commercial fisheries in the Pacific Islands, for example. These types of information and data are not always available or easy to collect. In order to obtain and utilize social science data and information, there are obstacles to overcome. These include identifying funding to collect the information, recruiting economists and social scientists to conduct analyses, and a recognition by managers of the need to apply these data. Whether it is understanding recreational fishing activity in aquaculture or offshore wind lease areas, or digging into applications of management flexibility to maintain fishing opportunities, human dimension considerations were of great interest to many participants at the Summit.

## *Shifting Data Needs*

Throughout the sessions, there were calls for more precise and timely fishery-dependent and independent data that accurately represent the fishery. These are not new requests; however, some of the solutions offered represent a shift in thinking away from a heavy reliance on fishery-independent data, and towards new and more diverse data streams. There was recognition that the gaps in fishery-independent data resulting from the pandemic heightened the importance of broadening fishery data horizons. However, the path to collecting and incorporating new data streams, including mechanisms to ensure their scientific validity, may require shifts in federal and state management, and partnerships with stakeholders.

Attendees suggested that NOAA work with the for-hire industry and anglers to collect and/or better utilize fishery-dependent data, and conduct collaborative research. Examples were shared of citizen-science initiatives, angler data collection applications, and the role of technology in improving data collection. Finally, participants voiced support for recent recommendations from the 2021 National Academies of Sciences, Engineering, and Medicine (NASEM) review of the Marine Recreational Information Program (MRIP), and the role of regional MRIP implementation teams in addressing these recommendations.

## *Tradeoffs in Management, Conservation, and Opportunity*

Management flexibility was viewed as a double-edged sword by various stakeholders in the recreational fishing community, where some were optimistic about its potential, and others expressed apprehension. There was traction around the desire of anglers to maintain fishing opportunities (i.e., the experience) over catching certain amounts of target species. However, there was also a shared concern around the ability of the management system to shift to new flexible management models.

New management initiatives like fishery ecosystem plans (FEPs) and scenario planning are seen as showing promise to address climate change; however, the amount of time and capacity it takes to implement these initiatives lags behind the current community needs. There are capacity issues to wholesale adaptation of these initiatives across the regions, as a result of lingering federal mandates around annual specifications, catch limits, and accountability measures. There are data limitations and setbacks to informing these new processes. Ultimately, there are tradeoffs between these short-term requirements and longer-term planning; however, they must be taken in stride until there is

an opportunity to merge and utilize new approaches. Leaders from NOAA, councils, commissions, and participants alike called for collaboration to pave the way forward in management reform.

### *Community Engagement and Trust*

As with past Summit events, engagement, communications, and outreach were reaffirmed as important topics across the sessions. Particularly during this time of increased offshore development in wind energy and aquaculture, the recreational fishing community is being asked and urged to be more involved in scoping, review, mitigation, and compensation processes. This is in addition to specific state and regional fisheries meetings, and broader regional or coastwide conversations around climate change/scenario planning and FEPs. Stakeholders are participating in these forums, but questions remain around how to deepen the reach to the angling community, and how to increase the diversity of those around the table.

Many participants suggested increasing opportunities for face-to-face conversations through local and regional workshops, task forces, and individual meetings. This request was made broadly, although there was certainly a focus on having more workshops around data, and in particular, MRIP. The Marine Resource Education Program (MREP) emerged as a successful model that should be better utilized in some scenarios. Ultimately, there was agreement that while there are many nuances around building trust on certain topics, that the avenue to gaining trust is centered around relationships, engagement, and shared understandings.

In addition to these cross-cutting themes, there are key messages and themes from each session. These are synthesized in the summary section at the end of each of the four sessions.

PHOTO BY JAIME DIAMOND

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# Acronyms

| | |
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| ABC | Acceptable Biological Catch |
| ACL | Annual Catch Limit |
| ACP | American Clean Power |
| ACT | Annual Catch Target |
| AM | Accountability Measure |
| AOA | Aquaculture Opportunity Area |
| APAIS | Access Point Angler Intercept Survey |
| ASA | American Sportfishing Association |
| ASMFC | Atlantic States Marine Fisheries Commission |
| BOEM | Bureau of Ocean Energy Management |
| CCA | Coastal Conservation Association |
| EFH | Essential Fish Habitat |
| ERP | Ecological Reference Point |
| ESE | Economic, Social, and Ecological [factors] |
| FAD | Fish Aggregating Device |
| FEP | Fishery Ecosystem Plan |
| FMP | Fishery Management Plan |
| GAF | Guided Angler Fish |
| HCR | Harvest Control Rule |
| MAFAC | Marine Fisheries Advisory Committee |
| MAFMC | Mid-Atlantic Fisheries Management Council |
| MFA | Modernizing Recreational Fisheries Management Act, or Modern Fish Act |
| MRFSS | Marine Recreational Fisheries Statistics Survey |
| MREP | Marine Resource Education Program |
| MRIP | Marine Recreational Information Program |
| MSA | Magnuson-Stevens Fisheries Conservation and Management Act, or Magnuson-Stevens Act |
| MSY | Maximum Sustainable Yield |
| NASEM | National Academies of Sciences, Engineering, and Medicine |
| NEPA | National Environmental Policy Act |
| NOAA | National Oceanic and Atmospheric Administration |
| NS | National Standard |
| OY | Optimum Yield |
| PSE | Percent Standard Error |
| RQE | Recreational Quota Entity |
| SEFHIER | Southeast For-hire Integrated Electronic Reporting |
| TRCP | Theodore Roosevelt Conservation Partnership |

# Background

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Saltwater recreational fishing is a traditional American pastime integral to social, cultural, and economic life in coastal communities across the nation. This time-honored activity allows millions access to America's great outdoors each year, while generating billions of dollars in economic activity.

As partners in the stewardship of fishery resources with anglers, the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the Atlantic States Marine Fisheries Commission (ASMFC) are committed to ensuring the sustainability of fishery resources and access to diverse and satisfying fishing opportunities. Realizing these commitments requires managers and scientists to understand the values, perspectives, and priorities of anglers. Angler understanding of fisheries science and management processes, as well as conservation mandates, is similarly important.

Initiated in 2010, the quadrennial recreational fisheries summit events provide anglers, scientists, and managers the opportunity to engage in direct and meaningful two-way dialogue, and to learn from each other. Key concepts and ideas uncovered during Summit discussions provide important information and reference points for all participants as we pursue the common goal of improving life on the water.

## Past Summit Events

NOAA Fisheries and ASMFC have hosted National Saltwater Recreational Fisheries Summit events every four years since 2010. The 2010 and 2014 events focused on building relationships, enhancing awareness of recreational fisheries challenges, community priorities, and policy issues related to recreational fisheries. The 2018 Summit sought to identify and explore potential solutions to improve stability and fishing opportunities in marine recreational fisheries while ensuring the long-term health of fish stocks. All three summits, in combination, were essential to establishing and maintaining NOAA's focus on marine recreational fisheries.

The first morning of the 2022 Summit, Russell Dunn, National Policy Advisory for Recreational Fisheries, shared a presentation describing progress since the 2018 Summit. A summary of this presentation is included in the 'Keynote Speakers' Section.

## About this Report and Other Resources

This report provides a summary of the presentations and discussions, as well as suggestions, challenges, and opportunities identified by speakers and participants. Following the introduction, the report is organized by each day of the Summit, and each

session. The appendices provide supporting information, including: A - Summit Agenda and Steering Committee Members, B - Speaker and Panelist Biographies, C - Background Papers, D - Summit Participant List, and E - Summit Evaluation Results.

Tidal Bay Consulting and its subcontractor, AECOM, developed the report, in consultation with NOAA Fisheries and ASMFC. As materials provided in presentations and discussions have been synthesized, members of the Steering Committee, speakers, and panelists were also provided the opportunity to review the report for completeness and accuracy. Please note that the ideas, comments, and suggestions stated in this report reflect the opinions of the speakers, panelists, and participants, and are not those of the Summit organizers or preparers of this report.

The NOAA Fisheries Summit event webpage included relevant information for in-person and remote attendees.[1] The 'Key Resources' section provided the agenda and other background materials, and the main content included registration, travel, and schedule information.

The presentations and recordings are available on ASMFC's website, on the meeting archive webpage.[2] Ultimately, this report, and links to all the Summit communications are available on NOAA's Recreational Fisheries website.[3]

PHOTO BY AMERICAN SALTWATER GUIDES ASSOCIATION

1 https://www.fisheries.noaa.gov/event/2022-national-saltwater-recreational-fisheries-summit
2 http://www.asmfc.org/home/meeting-archive
3 https://www.fisheries.noaa.gov/insight/recreational-fishing

# Introduction

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In 2022, NOAA Fisheries and ASMFC hosted the National Saltwater Recreational Fisheries Summit on March 29-30, at the Westin Crystal City in Arlington, Virginia. The agenda for the Summit included multiple keynote speakers and four primary sessions: 1) Climate-Resilient Fisheries, 2) Balancing Ocean Uses, 3) Data Collection and Use, and 4) Management Reform, Flexibility, and Optimum Yield. Each session had a combination of plenary presentations and discussion and/or smaller discussions in break-out groups. The full agenda is included in Appendix A.

## About the 2022 Summit

### *Theme, Goals, and Outcomes*

The world is experiencing substantial change that is affecting many facets of life, including oceans and fisheries. Climate change, novel uses of ocean space, new technologies, and more, offer both challenges and opportunities for collaboration to safeguard and improve the state of recreational fisheries. In addition to these unprecedented changes to the ocean environment, the world is facing extraordinary circumstances brought on by a global pandemic. The challenges resulting from these parallel occurrences are exceptional and compound pre-existing issues. Anglers, managers, and scientists must work together to understand and adapt to these changes to ensure abundant and sustainable recreational fishing opportunities for this generation and the next.

Input from recreational fisheries stakeholders, including multiple virtual regional constituent discussions held in 2021, suggested numerous potential 2022 Summit discussion topics within the larger theme of change. Broadly categorized, topic suggestions included: climate change and other large-scale emerging challenges (e.g., wind energy); habitat and fishery (e.g., release mortality) conservation; fishery management improvements (e.g., stable and predictable seasons); data collection (e.g., electronic reporting); citizen science and cooperative research; fishing effort and efficiency; as well as communications and engagement, among many others. Cross-cutting these topics were the underlying themes of enhancing partnership, collaboration, and trust building, as well as considering equity and inclusion.

The 2022 Summit explored several of these topics within the overarching theme of *Recreational Fisheries in a Time of Change,* to identify pathways and tangible steps to adapt, improve, and address identified issues. For recreational fisheries to thrive, there is a need to come together with a common purpose. Recognizing this, the **goals** of 2022 National Saltwater Recreational Fisheries Summit were:

- Reestablish lines of communications that eroded during the COVID-19 pandemic
- Strengthen rapport and collaboration between the saltwater recreational fishing community, fishery managers, and scientists

- Share knowledge and perspectives
- Identify and investigate solutions to issues jointly identified as significant

The agenda was designed to accomplish these goals with **objectives** that were met through presentations and facilitated discussions to explore ways for stakeholders, managers, and scientists to identify and address existing challenges. Where possible, discussions sought to hone in on actions and solutions that appeared realistic within existing resources and authorities, with a focus on what could be done by the marine recreational fishing community, managers, and scientists, collaboratively and/or independently. It was important to leave the Summit with a shared sense of ownership on actions to adapt and improve recreational fisheries.

Some of the desired overall **outcomes** for the Summit included:

- A shared understanding of specific challenges, roadblocks, solutions, areas of collaboration, and actions
- Mutual commitments to work together on Summit findings and initiatives

In addition, each session had specific outcomes that are listed in the agenda (see Appendix A).

## *Planning Process and Steering Committee*

The planning for the 2022 Summit started almost a year in advance of the meeting. NOAA Fisheries, along with ASMFC, recruited Steering Committee members during the summer of 2021. Steering Committee members included knowledgeable recreational fisheries stakeholders and partners who were representative of regional and national issues and concerns. See Appendix A for a list of Steering Committee members and their affiliations (at end of agenda).

The goals for the Summit were informed by a series of roundtable meetings that NOAA Fisheries hosted in 2021. A summary of these meetings is available on the Summit event webpage.

Starting with a review of themes that emerged during the roundtable meetings, the Steering Committee supported the planning process in the 6 months leading up to the Summit. There were monthly Steering Committee meetings where members provided input on a range of agenda items, including, but not limited to: goals and outcomes, identification of topics and issues, speaker suggestions, format of the agenda, facilitation techniques, and coronavirus (COVID) protocols.

The planning team and Steering Committee members gave much consideration to COVID, and with additional consultation with NOAA and the Department of Commerce, weighed the risks and benefits to hosting the Summit during and after new COVID variants were present in the U.S. There were several iterations of COVID protocols, and ultimately the policies changed just days prior to the Summit, which relaxed almost all of the requirements aside from the duty to self-monitor and report.

## *Attendee Demographics*

During the registration process for the Summit, attendees were asked to provide basic demographic information, including their affiliation, region, and the state in which they currently work. Some of these responses are summarized in this Section, and only represent in-person Summit attendees. The responses do not include demographic information from the 85-90 attendees who live-streamed the event each day.

Participants represented a wide range of affiliations or roles within the recreational fisheries community. The largest proportion of attendees were fisheries managers (32%), followed by for-hire owners/operators and recreational anglers (16%). This was

followed by fisheries scientists (12%), and members of recreational fishing or trade associations (12%) (Figure 1). Staff from nonprofit organizations represented 11%, followed by consultants (5%), and shore-side support businesses (2%). Other affiliations included media representatives or journalists, a congressional representative, and a representative from the Bureau of Ocean Energy Management (BOEM). See Appendix D for a list of participants. Following the Summit, participants were sent an online evaluation. A summary of the evaluation responses is included in Appendix E.

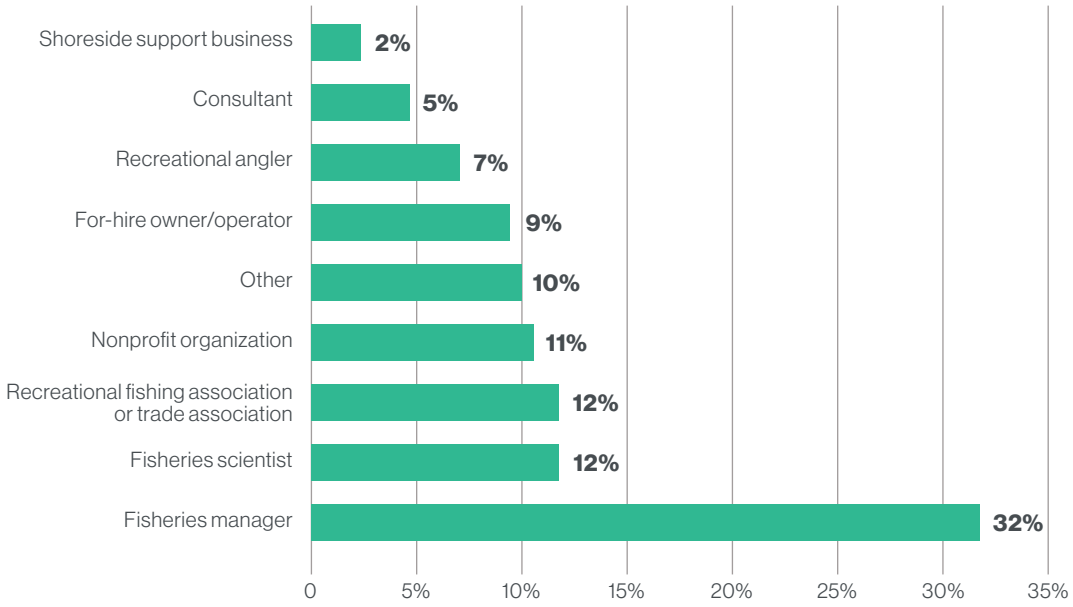


**Figure 1: Summit Participant Affiliation (n=169)**

The Summit brought together stakeholders from a diverse range of regions throughout the U.S. Many of the attendees were nationwide representatives (24%), or represented multiple regions, including the East Coast (12%), the Southeast Atlantic Coast, Gulf, and Caribbean regions (5%), or the Pacific Coast and Alaska (2%) (Figure 2). Of those who represented single regions, the Mid-Atlantic (14%), Northeast (12%), Pacific Coast (11%), and Gulf Coast (8%) had the highest participation. There was less representation from Hawaii (3%), the Southeast Atlantic (3%), Alaska (3%), and the Caribbean (1%).

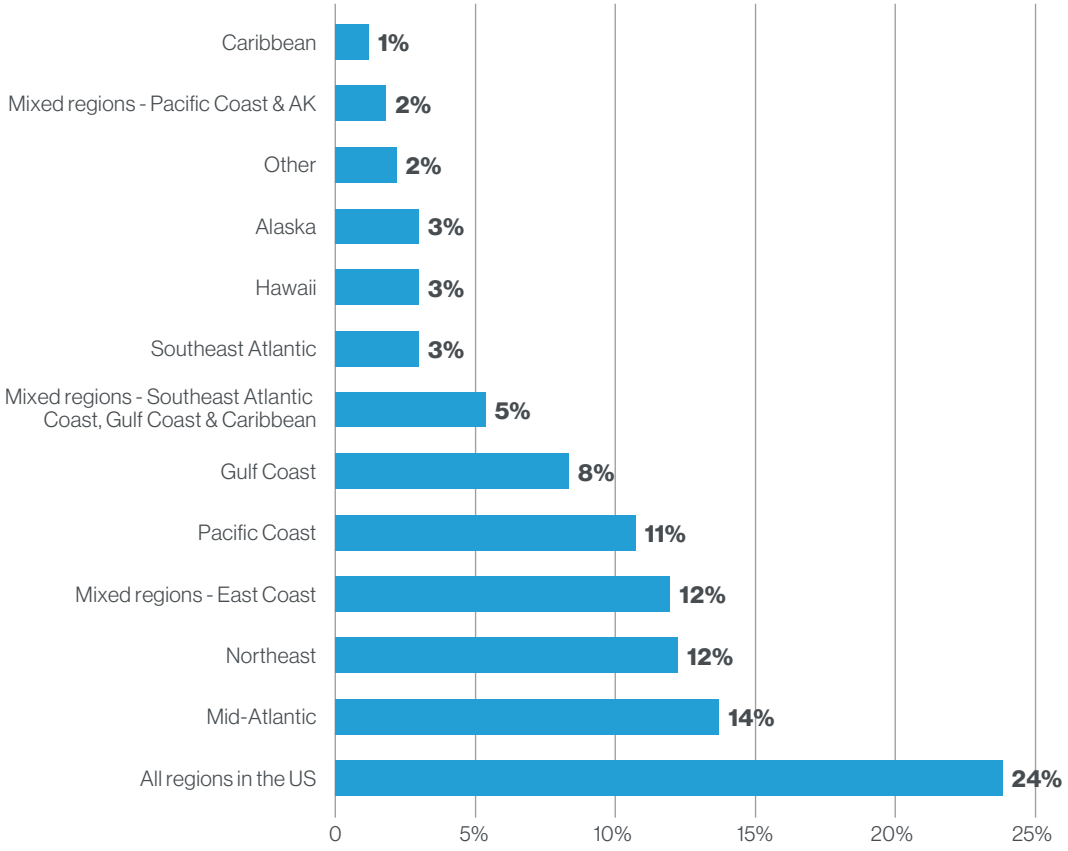


**Figure 2: Regions Represented at the Summit (n=169)**

# Day One: March 29, 2022

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## Opening Remarks

Russell Dunn, the NOAA National Policy Advisor for Recreational Fisheries, offered opening remarks for the first day of the 2022 National Saltwater Recreational Fisheries Summit, which was the fourth summit since 2010. He welcomed both the in-person and virtual participants on behalf of ASMFC, NOAA Fisheries, the Steering Committee, and Tidal Bay Consulting. He then introduced each of the four sessions that were covered at the Summit, including: Climate-Resilient Fisheries; Balancing Ocean Uses; Data Collection and Use; and Management Reform, Flexibility, and Optimum Yield (OY); and acknowledged that each topic could be the sole focus of the Summit.

Mr. Dunn introduced Jessica Gribbon Joyce, the Principal at Tidal Bay Consulting, and the primary facilitator of the Summit. Ms. Joyce acknowledged those streaming from home, as well as the planning team, her associate, Madeline Tripp, and her subcontractors from AECOM, Kelly Stoll and Jack Murphy. Ms. Joyce reviewed the agenda for the day and Summit logistics, including COVID protocols, and meeting etiquette.

## Keynote Speakers

Mr. Dunn introduced the first keynote speaker, Whit Fosburgh, who is the President and CEO of the Theodore Roosevelt Conservation Partnership (TRCP). Prior to coming to the TRCP in 2010, Mr. Fosburgh spent 15 years at Trout Unlimited, playing a critical role in the organization's evolution into a conservation powerhouse. He served as Fisheries Director for the National Fish and Wildlife Foundation, was the Chief Environment and Energy staff member for Senator Tom Daschle, and formerly a Wildlife Specialist for the National Audubon Society. During Mr. Fosburgh's time at TRCP, the organization has been very collaborative with NOAA.

### *Whit Fosburgh*

Mr. Fosburgh gave a presentation on conservation and recreational fishing. There has been unprecedented growth in the recreational fishing industry over the past few years, with boating and fishing making up the largest segment of the $684 billion outdoor recreation economy. Over the past two years, the number of participants in recreational fishing has jumped from 50 million to 55 million. To maintain this trend, the challenge will be to ensure that recreational anglers continue having a good experience by managing recreational fisheries well.

The Morris-Deal Report was created by the American Sportfishing Association (ASA), the Coastal Conservation Association (CCA), and TRCP to establish a national policy for recreational saltwater fishing, opening the door for a partnership between these organizations on shared goals. Some recommendations that came from this

report included adopting alternative management and cooperative management strategies, as well as improving the management of forage fish. Alternative management involves incorporating new management strategies specifically tailored to a recreational fishery, such as those for red snapper; South Atlantic reef fish; and summer flounder, scup, and black sea bass in the Mid-Atlantic. Cooperative management involves anglers in the process through data collection and reporting, such as in the Louisiana Creel program and Florida's reef fish survey. One of the most important recommendations was to increase the focus on forage fish management, since these fish are the base of all of the other recreational fisheries. Atlantic menhaden are now being managed through the use of ecological reference points (ERPs). Ecosystem-based management should be expanded to the Gulf of Mexico. Other related recommendations included lowering the Chesapeake Bay reduction fishing cap, expediting ASMFC's development of spatially explicit modeling, and passing the Forage Fish Conservation Act.

The challenges facing recreational fisheries in the coming years include addressing the decline of striped bass and forage fish; adapting to the impacts of climate change, including shifts in the ranges of species, rising sea levels and ocean acidification; and supporting research to help management keep pace with the changing ocean. Those involved in recreational fisheries management and conservation need to be united to support actions that will address climate change, increase coastal resilience, and result in impactful conservation. Infrastructure, such as boat ramps and marinas, may need updating due to sea level rise, and the Infrastructure Investment and Jobs Act represents an opportunity to fund these projects. The National Fish and Wildlife Fund is providing $140 million in funding through the Coastal Resilience Fund and is planning to fund projects by November of 2022.

Collaboration has historically been a challenge in the recreational fisheries community, and distracts


**Whit Fosburgh**
PHOTO BY TIM SARTWELL

from addressing the issues at hand. Mr. Fosburgh concluded by imploring the community to use the collaborative momentum from the menhaden process to tackle other shared goals and to involve the support of the environmental community.

## *Secretary Graves*

Don Graves, the U.S. Deputy Secretary of Commerce, offered pre-recorded video remarks. Secretary Graves welcomed the participants and thanked the ASMFC for its leadership in planning the Summit. He highlighted the role that NOAA has played in providing anglers and boaters with data and information, such as coastal weather, tide charts, and surface temperature data, as well as NOAA's role in managing the nation's fisheries. He commended the participants' resilience throughout the COVID-19 pandemic and emphasized the willingness of NOAA and the Department of Commerce to listen and work toward the recommendations from this Summit. Recreational fishing is a key part of the blue economy, which accounted for 162,000 new businesses and 3.4 million employees in 2021. NOAA Fisheries estimated that recreational saltwater anglers spent $36.1 billion on fishing trips and related goods and supported 470,000 jobs. The U.S. has one of the

most sustainable fisheries in the world, with only 20 of the 420 federally-managed species classified as overfished. Secretary Graves stressed the importance of collaborating to achieve conservation and sustainability goals, including the development of wind energy, to protect the nation's tourism and marine economy.

## *Janet Coit*

Janet Coit, the Assistant Administrator for NOAA Fisheries and Acting Assistant Secretary of Oceans and Atmosphere, gave brief opening remarks. Ms. Coit stated the goals of the Summit, which were to share views and experiences to improve public policy and to leverage partnerships, to identify stressors and science needs, to develop skillful responses to challenges, and to be good stewards of marine resources. She thanked everyone for attending and emphasized that their expertise and commitment to recreational fisheries management are needed for the Summit's success.

The intention of the Summit was for everyone to leave with a shared understanding of the facts and issues of concern, steps that can be taken to address these issues, and a mutual commitment to work together to implement solutions. Some issues may be complex or even contentious, and while many are new in recreational fisheries discussions, such as offshore wind energy, many more are long standing ones, such as data collection/MRIP and management flexibility. To find solutions, the recreational fishing community will need to look beyond past conflicts and be open to new ideas, such as landing tag programs, federal permits for recreational anglers, split-mode catch levels, or electronic reporting. These management approaches can be incremental or more decisive and novel, but none of these tools are without controversy, challenge, or risk. However, unprecedented change is occurring in the marine environment due to climate change, which presents risks and unknowns.


**Janet Coit**
PHOTO BY TIM SARTWELL

Therefore, supporting and improving scientific studies is important, as well as holding continuous, honest conversations about management practices. Ms. Coit stressed the importance of creating a shared vision for the future of recreational fisheries and seizing new opportunities.

Ms. Coit gave an update on the *America the Beautiful Initiative,* which the White House published its first progress report on in December 2021. Most of the work done this past year involved supporting locally-led volunteer projects that, in turn, benefited these communities and their economies. There is a subcommittee developing the American Conservation and Stewardship Atlas, which will document a baseline of and track the progress of conservation and restoration projects in U.S. lands and waters. They are currently taking public comments on the Atlas and will release it later in 2022.

Before concluding, Ms. Coit highlighted the importance of increasing diversity, both on the management and participant sides of recreational fisheries.

## *Russell Dunn: Reflections Since the 2018 Summit and the Path Forward*

Mr. Dunn gave a presentation titled, 'Reflections Since the 2018 Summit, and the Path Forward.' Since 2018, climate change impacts have become more severe, with 20 separate natural disasters costing 1 billion dollars or more, totaling more than 150 billion dollars in damages. The COVID-19 pandemic disrupted lives, and the U.S. government experienced the longest shutdown in history. These challenges have forced everyone in NOAA to adapt.


**Russell Dunn**
PHOTO BY TIM SARTWELL

In 2018, more and improved communication with anglers emerged as a priority. In response, NOAA signed a 5-year Memorandum of Understanding with several leading recreational fishing organizations to promote sustainable recreational fishing and boating. NOAA staff also collaborated with local partners to support and fund educational opportunities on fishing techniques and marine conservation, engaging children, veterans, and people with disabilities. This included fishing clinics, the Bristol Bay Fly Fishing Academy, and MREP, through which anglers taught other anglers about the science and management process in the federal system. Annual recreational fisheries policy round tables and forums were supported by NOAA, including the TRCP Saltwater Media Summit, and the ASA Annual Policy Summit, among others. The NOAA Fisheries' Pacific Islands region created a grant program to support sustainable recreational and non-commercial fishing practices and protect cultural fishing traditions.

After COVID-19 curtailed in-person events, NOAA shifted to virtual engagement. Among other activities, this included recreational fisheries habitat conservation workshops, a series of instructional fishing videos, an expanded online celebration of National Fishing and Boating Week, and nationwide virtual roundtable discussions to prepare for the 2022 Summit. There was also a partnership with NOAA Fisheries' Office of Aquaculture to hold a series of webinars that engaged the recreational fishing community in discussions around Aquaculture Opportunity Areas (AOAs).

Another priority from the 2018 Summit was understanding the socioeconomics of recreational fishing. In response, NOAA conducted several novel studies on topics including: the motivations of anglers, economic contributions of tournaments and charter fisheries, and angler expenditures across the nation. These data help inform managers as they consider the impact of potential regulatory changes. While a workshop on socioeconomics was postponed due to COVID-19 restrictions, it remains an agency priority. In the meantime, NOAA's economists turned to examining the impacts of the pandemic on the recreational for-hire fishery and were awaiting approval to conduct another nationwide fisheries expenditure survey at the time of the Summit.

Data collection was a priority that emerged from the 2018 Summit as well. Several of the new state Access Point Angler Intercept Survey (APAIS) programs earned MRIP survey design certification, and NOAA continues to work with those states and data to calibrate them for management. Electronic reporting has expanded in the for-hire industry with the introduction of the Southeast For-Hire

Integrated Electronic Reporting (SEFHIER) program. The Marine Fisheries Advisory Committee (MAFAC) also created a task force to provide guidance on the role of electronic reporting in recreational fisheries management. The Recreational Subcommittee of MAFAC completed a report on improving the understanding of offshore fishing effort. NOAA's data staff heavily supported the development of the NASEM report on Data and Management Strategies for Recreational Fisheries with Annual Catch Limits, and NOAA is now responding to the findings. NOAA also disbursed funds to support increased sampling by the Atlantic Coastal Cooperative Statistics Program, the Gulf Fisheries Information Network, and the Pacific Fisheries Information Network.

Innovative management was another focus in 2018, particularly in discussions about how to align management with the needs of anglers. The Modernizing Recreational Fisheries Management Act (MFA) was signed into law at the close of 2018, and while it did not fundamentally change the mandates of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), it did reflect interest in exploring alternative management approaches by authorizing several new management strategies. Progress has been incremental yet collaborative. There have been several related discussions and initiatives since, including: efforts by the Council Coordinating Committee, which led to the creation of the Gulf of Mexico and South Atlantic Councils' joint work group on alternative management; the Greater Atlantic Regional Fisheries Office's workshops; and the ASMFC and Mid-Atlantic Fishery Management Council (MAFMC) recreational management reform initiative. The North Pacific Fishery Management Council adopted the recreational quota entity (RQE) and identified preferred funding mechanisms.

Conservation was the final focus of the 2018 Summit. Efforts were made to reduce post-release mortality by distributing fish-descending devices and circle hooks. NOAA also collaborated with the National Fish Habitat Partnership to support 14 habitat restoration projects around the country that directly engaged anglers. Despite the interruptions caused by COVID, much progress has still been made toward the goals established at the last Summit, yet there is still much to be done. This Summit presented an opportunity to accelerate this work.

## Session I: Climate Resilient Fisheries

Changing climate and ocean conditions are having significant impacts on the nation's valuable marine life and ecosystems, as well as the many communities and economies that depend on them. Scientists expect environmental changes and ocean acidification to increase with continued shifts in the planet's climate system. There have already been shifts in the distribution and productivity of fish stocks, disruptions to seasonal migratory patterns, and damage to shore-side infrastructure, creating new challenges for fishery participants and managers.

The plenary part of this Session covered a range of topics, including: the state of science on changing climate and oceans; tools, investments, and the importance of habitat for climate-resilient fisheries; on the water perspectives from the recreational fishing community; and climate change scenario planning. After the opening presentations and discussion, regional break-out groups discussed several questions to understand the recreational fishing community's vision for climate-resilient fisheries, and to develop activities or strategies to achieve the vision. Please refer to Appendix C for a background

paper on this topic that was distributed at the Summit, which includes additional resources.

The goals for this Session included sharing current climate knowledge, tools, and approaches, and hearing anglers' observations, experiences, concerns, and priorities related to changing ocean conditions and the marine recreational fishing community. The outcomes for this Session included:

1. Share current climate work and knowledge
2. Listen to climate observations, experiences, concerns, and priorities from the recreational fishing community
3. Understand the recreational community's vision for climate-resilient fisheries
4. Identify activities/strategies to achieve this vision

## *Presentations and Discussion*

Ms. Coit was the moderator for this Session. She offered background information on why discussing climate change is relevant to fisheries management, and gave an overview of the flow of the climate panel discussions. After the presentations, there was a group discussion, and then the participants discussed climate related questions in regional break-out groups.

### Dr. Jon Hare

Dr. Jon Hare, the acting Director of Scientific Programs and Chief Science Advisor for NOAA Fisheries, presented on 'Climate Resilient Fisheries' to set the stage for discussions on climate change impacts on marine fisheries, and the opportunities and challenges presented by these changes.

Climate change is impacting recreational fisheries in several ways, including: warming seas, ocean acidification, deoxygenation, altered ocean circulation, precipitation changes, sea-level rise, and increased frequency of extreme events. Each of these effects have been documented in numerous reports, including the Fourth National Climate Assessment


**Climate panelists**
PHOTO BY JESSICA JOYCE

Report. Ocean warming denotes a regionally variable change in temperatures, with certain areas warming and others cooling. This is closely related to shifts in ocean circulation, particularly with the movement of the Gulf Stream northward, which is bringing warmer, higher salinity water closer to the North American coast. Precipitation is increasing in the eastern half of the U.S., and decreasing in the western half, which impacts streamflow and changes conditions for anadromous species like salmon, river herring, American shad, and Atlantic striped bass. These are all examples of how changes in the physical environment are forcing alterations in the biological environment.

These changes have impacts on what anglers are seeing on the water. For example, anglers in the Northeast are now catching king mackerel and mahi-mahi, striped bass are overwintering in Rhode Island, and the productivity of winter flounder is decreasing. In the North Pacific, salmon distribution and productivity are changing, as is halibut productivity. In the Gulf of Mexico, snook distribution is changing as is southern flounder productivity. In the Western Pacific, tuna and billfish distribution and productivity are changing, there is shoreline constriction, and coral bioerosion is increasing. In the South Atlantic, the alewife run timing is earlier and pink shrimp

productivity is changing. In the Pacific, salmon and rockfish productivity are changing.

These changes can be broken down into shifts in distribution of fish stocks and different timing for fish migration, productivity increases or decreases, changes in how species interact (such as diet changes based on food availability), and changes in fish habitat. These shifts are resulting in a number of challenges for fisheries management, including: catch limits, by-catch and discards; allocation and stock availability; and threats to infrastructure. Simultaneously, new opportunities are being realized, including the range of black sea bass extending to the Gulf of Maine and glacial retreat opening up more habitat for Alaskan salmon.

### Richard Heap

Richard Heap, a Sport Fishing Advisor for the Pacific States Marine Fisheries Commission and Chair of the Pacific Fishery Management Council's Salmon Advisory Subpanel, shared his observations of climate change related impacts in the Pacific Northwest. There are nine ports in Oregon, which are typically fed by high-gradient, gravel rich cold-water streams, with native species including chinook salmon, steelhead, and sea-run cutthroat trout.

The most iconic fish in the Northwest are salmon, which are being impacted by marine heatwaves and changes in freshwater levels due to drought. The catch of chinook salmon in Brookings, Oregon has decreased from 10,000 fish in 2013 to around 900 fish last year, and the season decreased from 130 days to 58 days. The distribution of salmon is changing as well, with many staying where there is colder water. Coho salmon are the most abundant in Oregon and make up most of the recreational catch. In the state, anglers can only retain hatchery fish, which are marked with tags that indicate the fish's brood year and hatchery. The drought has reduced the Shasta Reservoir to 25% of its capacity and the snowpack in the Sierra that feeds the reservoir is at 64% of average levels. Outmigrant salmon are challenged by insufficient flow to get to the ocean and warmer stream waters. These factors make them vulnerable to predation, so all hatched salmon are now trucked downstream and released in the ocean.

In the Northwest, bottom fish include lingcod and rockfish. Lingcod are popular gamefish and have had a stable population over the past few years because they spawn during the weather-protected season. Fishing pressure is dramatically increasing over the winter as the number of open days increases, and managers are discussing a winter closure for these fish. Rockfish are a bedrock fishery in Oregon. As salmon availability trends down, trips for rockfish increase. This fish's population trend over time has been down, as it is slow growing and has a long lifespan. This has resulted in the catch limit decreasing from 10 to five fish, now with a one-fish limit on select species. Another species for which participation has grown as salmon participation declines is the albacore tuna, which are found where the inshore cold-water current meets offshore warm water. As target species change, technology also makes finding the productive areas easier, especially as these areas of confluence are moving closer to shore, which has increased fishing effort.

Other negative changes have resulted from warming waters, including an increase in pyrosomes (a colonial tunicate), which foul gear when trolling for salmon. Domoic acid is a byproduct of harmful algal blooms that is stored in the tissue of clams and mussels, resulting in harvesting closures. It also has delayed the opening of crab season for 5 of the last 7 years. This has had a tremendous commercial impact. These are some of the most obvious impacts of climate change in Northwest fisheries, and anglers are concerned for the future of many fisheries, especially salmon.

### David Sikorski

David Sikorski, the Executive Director of the CCA of Maryland, gave a presentation on the 'Perspective of East Coast Fisheries and Climate Change Impacts.' There have been many changes regarding the conservation of habitat and forage fish since Mr. Sikorski spoke in 2018. Anglers must be optimists and face adversity in many ways when seeking opportunities on the water, and as the climate changes, anglers must adjust their expectations. These changes also offer opportunities, such as the increased abundance of red drum in the Chesapeake Bay due to warming waters. To embrace this new opportunity, red drum can be supported through protecting habitat and forage, and juveniles need to be well-managed. Another opportunity is a change in the distribution of Spanish mackerel, which could be valuable to angler communities that have lost access to striped bass.

As these opportunities increase, fisheries management needs to keep pace. An example is with the range expansion of the black sea bass, and how MAFMC and ASMFC are developing a harvest control rule (HCR) that can manage this fishery, and others, as their range and accessibility increases. Fisheries management must be flexible, and anglers need to support efforts to adapt, such as with the cobia range expansion, and the effort to have anglers document their catch in Virginia to support management decisions further north.

Water quality is tied to habitat changes, such as shifts in oyster reefs, which can impact fish stocks. A successful example of this is the return of sheepshead, which is connected to oyster abundance and the associated improvement in water quality. The Chesapeake Bay region must work to improve water quality, both from the perspective of limiting pollution from sewage and other sources, as well as building more artificial reefs. There is an opportunity to educate and involve students in this effort, such as a project to involve every fifth grader in Calvert County,

**David Sikorski**
PHOTO BY TIM SARTWELL

Maryland, in a project to build oyster reefs. This effort will be increasingly important as climate change constricts the area for oyster reefs, which act as an important forage area for striped bass.

While it is difficult to change the approach in existing fisheries, stakeholders need to be persistent in efforts to adapt systems to climate change. In Maryland, at the time of the Summit, the legislature was considering a bill to improve recreational fishing data and licensing systems. As the climate changes, there is a greater opportunity for stakeholders and anglers to express their interests and help shape a better future.

### Carrie Selberg Robinson

Carrie Selberg Robinson, the Director of the Office of Habitat Conservation, presented 'Tools and Investments: The Importance of Habitat for Climate Resilient Fisheries.' Habitat restoration is foundational to the nation's fisheries and to resilient coastal ecosystems. For more than 30 years, NOAA Fisheries' Office of Habitat Conservation has collaborated with over 3,000 partners, supported more than 3,500 projects, restored over 159,000 acres of habitat, opened over 5,700 miles of streams to access by fish, and invested more than $2 billion for restoration

activities across the country. In addition to funding, the program provides technical expertise throughout all aspects of restoration work. As a result of the bipartisan infrastructure bill recently passed by Congress, NOAA Fisheries will be investing nearly an additional billion dollars in restoration over the next 5 years, and will be ready to collaborate with partners to implement these restoration projects.

An example of the kind of work that the Office of Habitat Conservation pursued with this funding is the Robinson Preserve Wetlands Restoration Project in southwest Florida, which had a direct impact on recreational fishing. This project restored degraded coastal farmland as important juvenile sportfish habitat and created key habitats like seagrasses and oyster reefs for fish like red drum and snook. The project was designed to adapt to climate change through a sea level rise-resilient design and the integration of refuge for fish that are recovering from negative impacts such as red tide. This effort also involved working with many partners and funders, and the next step is to collaborate on the development of a comprehensive monitoring program to ensure that the project is generating the expected benefits.

The Office of Habitat Conservation also does other work to support habitat conservation, especially habitats being impacted by climate change. One way they are doing this is by leveraging partnerships (such as the National Fish Habitat Partnership). The office is also using the essential fish habitat (EFH) data and tools to minimize the impact of economic development projects along the coast. An example of this is a collaboration with the U.S. Army Corps of Engineers and the Port of Houston to ensure dredging projects needed for port operations use the dredged sediment to conserve habitat like salt marshes. A new resource to prioritize conservation is a tool developed in the Northeast to assess the vulnerability of several habitat types to climate change. This knowledge helps incorporate critical ecosystem information into decision making. There are opportunities to focus work on vulnerable areas and provide a broader ecosystem context for fishery management decisions.

### Kiley Dancy

Kiley Dancy, a MAFMC Fishery Management Specialist, gave a presentation on the 'East Coast Climate Change Scenario Planning Initiative.' This initiative is being conducted by all the East Coast fishery management councils, the ASMFC, and NOAA Fisheries. The objectives of this effort include exploring East Coast fishery governance and management issues, and how climate-driven changes in fisheries will impact them, as well as advancing a set of tools and processes that would provide flexible and robust fishery management strategies.

**Kiley Dancy**
PHOTO BY JESSICA JOYCE

Scenario planning explores how fisheries management could prepare to respond if certain conditions occur in the future. On the East Coast, specific issues to be addressed included: inquiring how management strategies could change if species distribution changes accelerate, if the Gulf Stream continues to change, or if the frequency and intensity of extreme weather increases. Scenario planning also allows for the consideration of

different possible combinations of future conditions and how management actions and governance strategies could be made more flexible and increase adaptability. The focus is not on prediction; instead, it is a framework for considering different drivers of change and the uncertainty of future conditions in planning. An example of this planning process is the Pacific Fishery Management Council scenario planning, which resulted in a grid structured tool that shows the spectrum for two major drivers of change: changing climate and ocean conditions, and species abundance and availability.

The East Coast Scenario Planning Initiative has completed the first three of six major phases. During orientation, the draft objectives, expected outcomes, and project focus were established. Following orientation, the scoping phase involved reaching out to stakeholders to gather input on forces of change that could affect fisheries over the next 20 years. The exploration phase used feedback from scoping to explore the factors that may cause change in fisheries in more detail through webinars and panel discussions.

During the creation phase (summer 2022), workshops will be conducted to construct and discuss three to five scenarios that emerge from the drivers of change identified in the exploration phase, which included a range of oceanographic, biological, and socioeconomic factors. These scenarios will be further explored to develop actions, recommendations, and indicators in fall of 2022, which will be reviewed for potential management considerations.

### Audience Discussion

After the presentations concluded, the moderator opened the floor for a brief question and answer session. A participant inquired about balancing the urgency of the rapid changes associated with climate change and the time required for stakeholder-engaged scenario planning. A discussion followed on the merits of participatory planning and how climate-resilient fisheries require collaborative participation and ideas from diverse stakeholder groups. Another suggestion was to seek on the water the knowledge from anglers and stakeholders to respond to emerging issues more rapidly, while still going through the longer planning process. Mr. Sikorski highlighted the importance of empowering anglers to collect these data and inform management.

Another participant brought up the issue of planning for changing allocations as stocks shift, and inquired about how fisheries management could more rapidly adapt to these changes from a policy perspective. While the scenario planning process is high-level and does not focus on specific fishery management plans (FMPs), this process could frame discussions about the broader governance strategy for species that cross multiple jurisdictions, and how climate change may impact distribution. The existence of some co-management strategies to address shifting stocks was mentioned, as well as guidance around this issue that is being developed by MAFAC. It is important to differentiate between changing, shifting, expanding, or contracting distributions in fisheries management, and these terms need to be clarified to establish common meanings.

Another question was raised about how to bring the issue of climate change to the forefront of FEP conversations with councils. In the Atlantic, cobia populations are moving up the East Coast, king mackerel stocks are shifting, and “dead zones” (i.e., areas that have low-oxygen or are hypoxic) are getting more pronounced. One attendee from Rhode Island affirmed that anglers are already seeing the impacts of shifting stocks as bluefin tuna are moving further offshore and noted that anglers are adapting and turning to alternative species. Thus, it was seen as important for the councils to prioritize the conversation about FEPs. With council members in the room, the Summit was seen as an opportunity to raise awareness.

One participant mentioned the importance of planning for a broad range of impacts, and asked the group for ideas on using data from recreational anglers to inform the conversation. An example was mentioned in Oregon, where there are angler data collection requirements for salmon, steelhead, and sturgeon, although some anglers have been resistant to sharing catch information. This highlighted the need for anglers to recognize their role in the system, and that this issue will not be solved by government action alone. This work is incremental and will require unity and participation from everyone in the recreational fishing community. While participants expressed regret that this type of data collection did not start years ago, they recognized that division and blame are counterproductive, and these issues are highly nuanced.

The growing citizen science movement was also mentioned in the context of self-reporting catch applications whose increasing popularity is being driven, in part, by the work of conservation organizations. This shows the influence and impact public engagement can have. A system should be set up to organize the use of this angler-collected data in decision making to keep anglers engaged. NOAA Fisheries affirmed the need for a plan or system to incorporate this angler-collected data into management decisions, and referenced the work of the MAFAC Electronic Reporting Taskforce.

In addition to the discussion on incorporating fishery-dependent data, there was a discussion about whether fishery-independent studies sufficiently represent the spatial and temporal shifts that are occurring. NOAA Fisheries mentioned that there are several species for which fishery-independent data could be improved, and budget requests should include funds to expand this type of data collection. The compatibility between state and federal fishery-independent data is also an area that needs improvement in order to bring these datasets together into assessments and make them more useful for management.


**Climate panel**
PHOTO BY SEAN LAWLER

Building on this discussion of more species-specific data collection and adaptation, concern was expressed about an apparent lack of ongoing, high-level discussion regarding the impacts of climate change and how that may impact broader management strategies, such as allocation. There seem to be similarities between what occurred with Atlantic cod and is now happening to Atlantic striped bass and Pacific salmon, and there needs to be a discussion about how to respond to unavoidable declines in a fishery. NOAA Fisheries noted that there are regional NOAA leaders at the Summit who are having this conversation on a broader scale, but that it will be necessary to implement outcomes at a regional level.

It was noted that climate change scenario planning creates a forum to have strategic, big-picture conversations about addressing external drivers, including socioeconomic impacts. A discussion followed about how to incorporate a social science approach to management and use consensus building to talk through trade-offs when there is not enough of a stock to support the fishing demand. One presenter mentioned that MAFMC had an East Coast governance workshop in 2014 that did not achieve the intended outcomes, and thought a scenario planning effort could result in better outcomes. Other regions could learn from these initiatives. Another presenter emphasized the importance of building

stakeholder understanding around what scenarios and approaches are scientifically realistic, while also keeping an open mind to suggestions. They noted that fisheries are a public resource and should be managed for the maximum socioeconomic benefit. The discussion wrapped up with acknowledgement that these discussions are interrelated with governance, and that this is an opportunity to participate in the council process and influence the guidance that NOAA is developing.

## *Break-out Groups*

Following this discussion, attendees were divided into break-out groups by region to discuss climate-resilient fisheries and better understand the challenges and needs within their region. Each group's discussion was centered around the following guiding questions:

1. What are the recreational fishing community's key concerns about climate change impacts on fisheries?
2. What does it mean to have climate-resilient fisheries?
3. What is needed to achieve climate-resilient fisheries?
   a. What information do we need?
   b. What management tools or system(s) do we need to prepare and adapt?
3. How can education/outreach and/or community science help advance climate-ready fisheries?

The intended outcomes for these discussions included:

1. Understand the recreational community's vision for climate-resilient fisheries.
2. Identify activities/strategies to achieve the vision.

A summary of each break-out group is provided in this Section. The opinions and suggestions included in these summaries represent the participants in the break-out groups and not the Summit organizers, including the authors of this report.

**Climate break-out group**
PHOTO BY JESSICA JOYCE

## New England

The New England Group started by discussing their key concerns regarding climate change impacts on the recreational fishery. The discussion centered around the need to increase nimbleness and flexibility as the availability of different species change, both from a management perspective and an angler perspective. As there are temporal and spatial shifts in species availability, data collection methods must be adapted to represent what is happening in the water. Some participants were concerned about surveys that occur at the same locations and do not capture the spatial shifts of species, and also that calculation methods do not accurately estimate rare species. The season for some species has expanded, but this also presents a danger of overfishing. Another concern centered on the ability of anglers to adapt to how, when, and which species they fish, as availability changes. This would allow for-hire operators to set the expectation with customers for a different experience. There is also a need to expand and protect waterfront infrastructure as rising sea levels threaten existing infrastructure.

As these changes occur, management needs to keep pace and become more responsive. However, it was noted that there is a difference between deliberately building systems to increase flexibility, and allowing changes without due consideration. As with the management of Pacific salmon, the process to make these changes should include plenty of time to engage the public at the beginning and establish clear priorities. Management strategies should also incorporate more fishery-dependent data and fishery-independent data, and incorporate a broader understanding of the relationship between species through ecosystem-based fisheries management. Establishing mechanisms to incorporate knowledge from public input, as well as research, will make for more responsive management.

The discussion ended with the need for better outreach to the recreational fishing community to foster participation and investment in management changes. Community leaders should leverage existing relationships to build trust, make management processes more accessible, and encourage data sharing. Technology creates an opportunity for anyone to collect and share data, but there must be a clear incentive for anglers. For example, communicating the importance of data for increasing access and improving management. More compelling and accessible communication around management and enforcement could also increase the willingness of the community to engage in informing better management strategies.

## Mid-Atlantic

The Mid-Atlantic Group began by discussing key concerns related to climate change, which were similar to those voiced by the Northeast Group. A primary theme concerned the ability of data collection to accurately represent changes, and whether existing regulatory practices are flexible and rapid enough to adapt to these changes. A need was expressed to better understand the impacts of climate change, including through the lens of oceanographic processes and basin-level hydrological changes, temporal and spatial shifts in stocks, and habitat degradation.

The Group highlighted the importance of creating mechanisms to incorporate anecdotal evidence and social science into the decision-making process, as these sources of knowledge are key to recognizing rapid shifts and building consensus around future priorities. Stock assessments should be adapted to incorporate these new streams of knowledge and anglers must become partners in data collection, extrapolation of conclusions, crafting management measures, and, finally, enforcing and evaluating those measures. Another challenge will be the limited availability of resources and funding to implement new strategies, especially at a regional level.

Climate change may offer new opportunities as stocks shift northward, especially since recreational fisheries, in some cases, emphasize the value of the fishing experience over the availability of specific species. The management framework will have to be more flexible to allow anglers to take advantage of these opportunities, while also holding space for deliberate public engagement and conservation priorities for the habitats that support these fisheries. Another challenge will be incorporating new regions, states, and jurisdictions into existing management structures where a future abundance of stocks or entirely new fisheries are forecasted.

Ultimately, participants felt that climate-resilient fisheries and effective management call for a much greater degree of collaboration between management and stakeholders than traditional, more stable fisheries. Communication and understanding between each group, along with breaking down the distrust that has historically hampered this process, is vital in pushing this process forward. Fishery managers must find mechanisms to accept more input and non-traditional data sources, with an emphasis on anecdotal data from fishery participants, while participants must collaborate to a much larger degree with management groups.

### South Atlantic, Gulf Coast, and the Caribbean

This Group began with a discussion of the regions' key concerns relating to climate change impacts on recreational fisheries. The themes that emerged included a need for greater regional investment in research and for a more supportive and adaptable management system. Some participants felt that the existing stock assessment process may not be sufficient to understand or predict the movement of species. Participants suggested that assessments should be supplemented by incorporating local observations from anglers and investing in more fishery-independent regional research. Understanding basin-wide ecosystem effects (such as harmful algal blooms) and food webs were noted as vital to preparing for and mitigating changes, and will require more research as well as more flexible management and streamlined regulations.

**Climate break-out group**
PHOTO BY SEAN LAWLER

In response to the question on what a climate-resilient fishery would mean, the Group developed the following list of priorities:

- To have healthy stocks
- Foster diversity in fishing communities
- Form better partnerships and collaboration with state, federal, and other agencies
- Conduct region-specific scenario planning
- Improve council structure to manage climate-driven changes
- Create tools to address increased fishing pressures
- Incorporate more impactful community education and outreach

Participants felt that the recreational fishing community is adaptable and will take advantage of new opportunities presented by climate change. However, they recognized that this will require better collaboration between the industry, regulators, and scientists to ensure that practices are sustainable and beneficial to the community. Cooperation between state and federal agencies will also be

needed to integrate fisheries management with water quality improvement and habitat enhancement. An ecosystem-level approach to regulation will require better regional research and funding. This could be supported, in part, through the expansion of citizen science and cooperative research programs, but there should be a clear framework for incorporating that research into management decisions.

Another concern that emerged was ensuring that businesses and anglers have the resources to prepare for, and respond to, the increased risks associated with climate change (such as hurricanes), as well as the tools to adapt to increased pressures on the fishery from a growing regional population. Outreach and education should be a key part of this effort. This may be a challenge due to the politicization of climate science, but it is helpful for community leaders to engage in conversations that focus on consequences and how to prepare for them on a more localized scale.

### Alaska, Hawaii, Pacific Coast, and Guam

This Group discussed common concerns for their regions regarding climate change impacts on the recreational fishery. These concerns included uncertainty around shifting stocks, displacement, the loss of resources, and the way that this could impact opportunities for the recreational fishing community. Some participants expressed that management strategies may not be flexible enough to respond to rapid changes or to the cyclical nature of the fishery. They acknowledged that there is a need for more fishery-independent research and local knowledge to inform these strategies.

Several participants noted a decline in certain fisheries in their area (e.g., rockfish, salmon, and halibut), which may necessitate difficult conversations and creative approaches to management. This may involve more consistent regulation across commercial and recreational fisheries, but participants highlighted the importance of recognizing the unique needs and strengths of the recreational fishing community. These conversations should be informed by research and models that evaluate the intrinsic value of recreational fisheries (i.e., the value of human connection and recreation). Throughout these regions, non-commercial fishing is not solely for recreation, and is intertwined with local culture and survival. Regulations do not always reflect this, and the Group called for more socioeconomic research on non-commercial fisheries.

Climate change impacts may also include new opportunities, such as groundfish resources faring better in warm water, but the recreational fishing community must have access to a diverse portfolio of resources to stay sustainable. Education around alternative fishing techniques and the promotion of alternative species will be necessary to help anglers adapt.

There is a need for communication and balance around land-based policies that impact fisheries (such as agricultural water use), as well as more resources to help anglers get involved in these issues. Communication and outreach with the recreational fishing community could also be improved through more consistent messaging and education about the management process.

## *Session Summary*

This Session shed light on the myriad of changes in the physical environment that in turn affect the biological environment. Habitat is changing and degrading in some cases. Land-based impacts including drought and farming practices, and impacts of more frequent and/or severe storms are affecting habitat and water quality. Stocks are shifting, expanding, and contracting and productivity is changing. It is no longer sufficient to focus on predator species; habitat and forage fish also need to be protected. In addition, coastal infrastructure needs to be sufficiently resilient to maintain access,

opportunity, and safety. In light of these challenges, several suggestions were offered throughout this Session:

- Take advantage of current federal funding opportunities for habitat restoration and coastal resiliency
- Leverage partners, technology, and available tools to assess climate vulnerability; and prioritize funding and action
- Coordinate with land-based organizations and agencies to address downstream impacts on the watershed and coastal waters

Management needs to be nimble and more quickly adapt to changes. In general, anglers want to maintain broad fishing opportunities over catching a certain amount of a target species, but this approach is not yet a standard practice, and requires adaptability in management systems. The climate change scenario planning process provides a template to plan for, and adapt to, different futures; however, the length of time to carry out the scenario planning process is not well aligned with the response time desired by anglers. There is the perception that there are no ongoing, national discussions about the impacts of climate change and broader management considerations, such as allocation. To address these challenges, the following opportunities were suggested:

- Councils should prioritize the development of FEPs
- Anglers should participate in scenario planning initiatives
- Follow the MAFAC discussions around guidance for co-management strategies to address shifting stocks
- Incorporate new management and governance structures for state, regional, and federal agencies that manage species that cross multiple jurisdictions
- Create flexibility/adaptability in management to allow fishing opportunities for new stocks that are present as a result of climate change

Fishery-independent data does not always accurately reflect changes in spatial or temporal distributions, and neither the scientific nor the regulatory systems are able to adapt to these changes in a rapid manner. Mechanisms need to be established to integrate more local, anecdotal knowledge that leads to more responsive management and more accurate science for stock assessments. Anglers can participate in providing more fishery-dependent data; for example, in Oregon, where data collection is required for certain species. Technology can be a helpful tool, but incentives are needed. At the same time, money is needed to improve the compatibility of state and federal data. To address these challenges, the following ideas and opportunities were offered:

- Invest more funding in fishery-dependent research at the regional level
- Identify avenues to utilize more fishery-dependent data and research
- Define common terms for shifting, contracting, or expanding stocks, and differentiate these trends for more informed decision making
- Explore how to integrate local knowledge into management and science
- Consider citizen science and software applications designed to collect these data

Intrinsic and non-commercial values, including social science data, are not well or regularly incorporated into management. Social science data are not readily available, and can be challenging to collect through surveys and other methods. Participants suggested several ideas to address these challenges:

- Collect and utilize social science data, including cultural information and other intrinsic values to recreational and non-commercial fishing

- Develop incentives for anglers to provide more anecdotal information and social science data

All of these topics compound the need for more frequent and more robust community outreach and engagement. MREP was seen as one approach to engage and educate the recreational fishing community, although it is important to meet anglers on their terms to arrive at shared understandings and to enhance stewardship of the fisheries.

## Session II: Balancing Ocean Uses

While the ocean may seem expansive and endless, many coastal areas are facing increasing demands for offshore space. Ocean spatial planning plays an increasingly important role in balancing the growing number of ocean users and uses. This Session focused on two of the rising ocean uses: offshore wind energy and marine aquaculture installations.

Offshore wind energy development has the potential to play an important role in U.S. efforts to combat the climate crisis and build a clean energy economy. In March 2021, the Administration set a goal of deploying 30 gigawatts of offshore wind energy by 2030 while protecting biodiversity and promoting cooperative ocean use. Many coastal states have set similar ambitious goals. Until recently, most of the planning and activity has occurred in the Atlantic Outer Continental Shelf from Massachusetts to North Carolina. However, in October 2021, the Department of the Interior announced holding up to seven new offshore wind leases along the East Coast, in the Gulf of Mexico, and in the Pacific, with the first of those new lease sales concluding in late February in the New York Bight.

Marine aquaculture (or ocean farming) allows the nation to build on its success in wild-capture fisheries and is vital for supporting seafood production, year-round jobs, rebuilding protected species and habitats, and enhancing coastal economic resilience. Aquaculture is one of the most resource-efficient ways to produce protein and has helped improve nutrition and food security in many parts of the world. Currently, the U.S. imports 70% to 85% of its seafood, and nearly 50% of this imported seafood is produced via aquaculture.

It is critical to ensure planning, siting, and development of new projects minimize or avoid user conflicts and maintain NOAA's commitment to ocean stewardship. These new and expanding uses of marine waters require substantial scientific exploration, regulatory review, and monitoring, while posing new challenges for fishery managers, scientists, recreational anglers, and other traditional ocean users.

In this Session, agency, industry, and angler representatives shared their perspectives on offshore wind energy and marine aquaculture. The first portion of this Session included presentations with an opportunity for audience questions to better understand the status of these uses and the opportunity for managers to learn from angler's first-hand experiences. The second portion of this Session included a facilitated discussion and question and answer with an expert panel of representatives from BOEM, NOAA Fisheries, state agencies, as well as anglers. The panelists discussed how the recreational fishing community can have a voice in the process as these industries expand, as well as how to maintain fishing opportunities, and understand potential impacts. Please refer to Appendix C for a background paper on this topic that was distributed at the Summit, which includes additional resources.

In this Session, the guiding questions included:

1. What are the impacts recreational anglers are seeing on the water with these industries?
2. What steps need to be taken to maintain sustainable recreational fishing opportunities?
3. What are best practices for ensuring meaningful and robust involvement of recreational stakeholders in the process and how do agencies reach stakeholders?
4. In situations where impacts to fishing cannot be avoided, are there preferred mitigation measures or best management practices?

The outcomes for the first part of this Session include:

1. Shared understanding of current activity and plans regarding offshore wind energy and marine aquaculture.
2. Listen to experiences, concerns, and needs from the recreational fishing community.

## *Presentations and Discussion*

This Session was moderated by Bob Beal, ASMFC Executive Director.

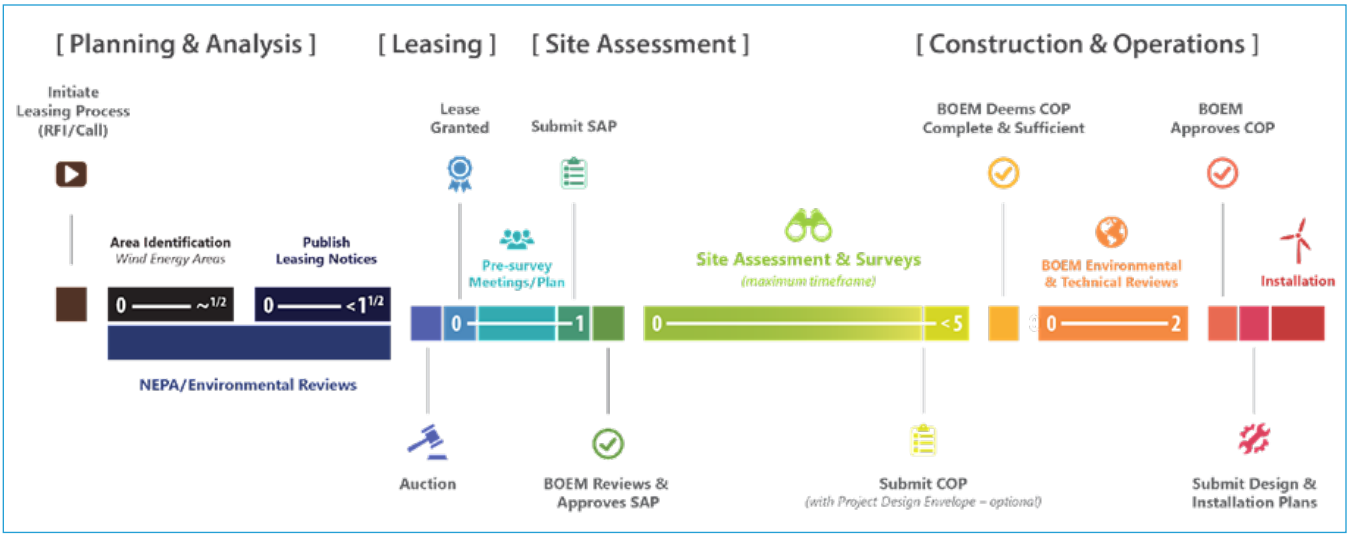
### Brian Hooker

Brian Hooker, a marine biologist with BOEM, gave a presentation titled, 'What's Happening on the Water - Offshore Wind Energy.' BOEM is in the Department of the Interior and is the lead federal agency responsible for offshore wind energy permitting on the outer continental shelf. This authority is granted through amendments to the Outer Continental Shelf Lands Act via the Energy Policy Act of 2005. In January 2021, Executive Order 14008 called for a review of offshore renewable energy siting and permitting processes. Following this, the Departments of the Interior, Energy, and Commerce committed to a target to deploy 30 gigawatts of offshore wind by 2030, which would create nearly 80,000 jobs.

This goal represents a government-wide approach to offshore wind permitting, with a commitment to take stakeholder ideas and concerns into consideration throughout the process. At the time of the Summit, there had been nine competitive lease sales, 18 active leases issued, two research leases issued, and 14 site assessment plans approved. These projects are rapidly multiplying; there were six additional areas under consideration for leasing at the time.

The authorization process for offshore wind projects involves four stages: 1) planning and analysis, 2) leasing, 3) site assessment, and 4) construction and operations (see figure on the following page). The first stage, planning and analysis, starts with a request for information, followed by the identification of wind energy areas for potential leasing. During this stage, environmental assessments required through the National Environmental Policy Act (NEPA) are conducted. Once leasing notices are published, an auction is held to award the lease. During the leasing stage, a proposed sale notice is published for review and comment, followed by a final sale notice. Site assessment planning then begins. Once this plan is reviewed and approved by BOEM, it should be implemented within 5 years. At the end of the survey and assessment stage, a construction and operations plan is submitted for approval. Once the plan undergoes environmental and technical reviews and is approved by BOEM, installation may begin.

Input is collected at several intervals in the process, including comment periods and meetings during all phases of the planning and analysis stage, and during the construction and operations plan review stage. There are more focused consultations during the site assessment stage. Throughout the process, input is sought from the perspectives of fisheries, navigation, and marine science. BOEM's process is a product of public input and compromise between different ocean users. BOEM works to constantly improve this process, and it recently published the 2022-2023 Studies Development Plan and the National




**Four stages of wind energy project approval**

Studies List for 2022. Study ideas are reviewed by the Standing Committee on Offshore Science and Assessment, which is convened under NASEM. Results of these studies are incorporated into the BOEM environmental assessment and decision-making process.

### Claire Richer

Claire Richer, the Director for Offshore Wind for American Clean Power (ACP), shared a presentation on the intersection of 'Offshore Wind and Recreational Fishing.' ACP is a national renewable energy trade association that represents onshore and offshore wind and solar storage. Ms. Richer represents the perspectives of offshore wind developers and turbine manufacturers. Currently, there are seven offshore wind sites under development in the U.S., including two off the coast of Virginia and five off of Rhode Island's coast. Her presentation provided an overview of the stakeholder engagement process for projects currently under development and the new recreational fishing opportunities already being provided by existing projects.

Starting with the New York Bight project as an example, Ms. Richer discussed the process for narrowing down the potential sites for offshore wind development and highlighted the importance of engaging the recreational fishing community to learn which areas are priorities for protection or development. In this project, the original area for one project was reduced by 72% in the final sale notice. During the process, BOEM received comments from the public as well as representatives from commercial fisheries, maritime industries, federal/state/local agencies, industry groups, offshore wind developers, non-profit organizations, and universities. The final sale notice offered six leases instead of the proposed eight to address concerns expressed through the comment period. In another example, the Massachusetts and Rhode Island wind energy area incorporated feedback on navigational impacts to realign the turbine layout. These examples highlight how willing developers are to engage with all of the relevant stakeholders and incorporate their feedback throughout the planning process so these projects can coexist with all ocean users.

Ms. Richer wrapped up the presentation with a video on the increased fishing opportunities that the Block Island Wind Farm and Virginia sites are providing for recreational anglers. This video highlighted the ability of the underwater structures of the turbines to provide habitat for fish and marine organisms. In these examples, recreational fishing in these areas

has increased, with positive impacts rippling out to bait shops, marinas, hotels, and other tourism-dependent industries.

### Danielle Blacklock

Danielle Blacklock, the Director of NOAA's Office of Aquaculture, presented on 'NOAA's Work to Foster Marine Aquaculture.' Aquaculture has become a focus for NOAA because the global demand for seafood is growing. Based on current trends, there will be demand for an additional 40 million tons of seafood in the next 20 years, and aquaculture is one of the most efficient ways to produce protein. The Department of Homeland Security has recommended the growth of domestic aquaculture as a national priority to support domestic food system resilience, since 70% of seafood consumed in the U.S. is currently imported. Half of that seafood is produced through aquaculture, though quality and health standards may not be the same as in the U.S.

Currently, 50% of the world's seafood is produced through aquaculture, and this proportion is growing. The U.S. has a vibrant industry, but there is room to grow, particularly in the Northeast, Gulf of Mexico, Southern California, and the Pacific Islands. Aquaculture methods have expanded and improved greatly in the past several years. Since 1990, the use of fish meal and oil used in aquaculture feed has decreased by 90% as alternative food sources have been developed, meaning that fewer resources are being taken out of the ocean to sustain farms. Computer programs can now track when and how fish are feeding to make the use of feed more precise and limit waste going into the ecosystem. The feed itself is better designed now, meaning that the calories are used more efficiently by the fish, and less energy is being disposed of in the marine environment.

AOAs are defined geographic spaces that have been determined to be appropriate for aquaculture. 'Appropriate' encompasses the consideration of environmental impacts (proximity to endangered species and fish habitat), economic efficiency (proximity to ports), and social acceptability (proximity to shipping lanes and traditional fishing grounds). These areas are relatively small, taking up 500-2,000 acres, and are not exclusive to other ocean uses. This two-step initiative to identify AOAs is being spearheaded by NOAA, starting with the creation of atlases of these areas through spatial analysis, which is based on extensive outreach and research. The second phase of the process is preparing an environmental impact statement in accordance with NEPA, which involves more public engagement. Currently, there are atlases for Southern California and the Gulf of Mexico, which identified 10 and nine potential AOAs, respectively. This will be followed by the NEPA process, which will include the consideration of biosecurity, economics, social science, genetics, marine spatial analysis, engineering, and environmental science. Public comment will be solicited throughout a two-year process, beginning in the spring of 2022.

### Neil Sims

Neil Sims, the Founder and CEO of Ocean Era, presented on offshore aquaculture in Hawaii, and the risks and benefits of aquaculture for recreational fisheries. Mr. Sims began his career in aquaculture by co-founding Kona Blue Water Farms from 2005-2008, which produced around 500 tons of Kona kampachi annually. Traditionally, the use for this fish was limited due to disease and parasites, but through the protective environment provided by aquaculture, they were able to produce a sashimi-grade fish. The U.S. permitting process at that time took 3 years and was prohibitive. At the time of the Summit, a series of experimental projects in federal waters off of Kona, including an anchored net pen and an aquapod, were culminating in the Velella Epsilon project to bring these approaches to the mainland U.S. This demonstration project is off the coast of Sarasota, Florida, and is intended as an educational tool for

recreational anglers, residents, journalists, and public officials to understand the benefits and risks of marine aquaculture.

For recreational fisheries in particular, the risks can be controlled through modeling, management, and monitoring. Water quality and substrate impacts of the phosphorus and nitrogen particulates can be modeled based on water circulation, and deep areas with brisk currents are ideal. The pen design can also be optimized through modeling to minimize escapes, and the potential impacts of escapees on fish stocks can be modeled by NOAA's Offshore Mariculture Escapes Genetics Assessment model. Throughout the permitting and management process, there are many opportunities for public input and documentation so that people are aware of aquaculture facilities and their impacts.

There are also benefits specific to the recreational fishing community, including the role that aquaculture pens play as fish-aggregating devices (FADs). This is supported by anecdotal evidence from both the Kona and Florida locations. The development and research undertaken to improve aquaculture stocks may also be used in the future to benefit wild stock enhancement. For example, grouper, giant trevally, and snapper stock enhancement has benefited from the hatchery technology advances made by offshore aquaculture development.

### Rick Bellavance

Captain Rick Bellavance, Owner of Priority Fishing Charters and President of the Rhode Island Party and Charter Boat Association, provided his perspective, as a charter boat captain, on the approval and installation process for the Block Island Wind Farm. This was the first offshore wind installation in the U.S. The wind farm was constructed in 2015 and commissioned in December 2016, and consists of five wind turbines located 3 miles southeast of Block Island, Rhode Island. During the construction period, opportunities for recreational fishing were limited by an exclusion zone around the operation, the underwater noise produced by driving the pilings, and a longer schedule than planned. However, the exclusion zone was reopened post-construction and fishing activity returned to normal levels. For-hire vessels also had the opportunity to help monitor impacts to protected species.

After construction, the area became very popular for recreational fishing because the pilings acted as FADs for black sea bass, striped bass, bluefish, and dogfish. However, anglers felt that there are fewer cod present now than before the turbines were constructed. The turbines can be difficult to navigate around, especially due to strong currents in the area, but they have increased opportunities for spearfishing, SCUBA, and free diving.

Future projects in the Rhode Island area include the South Fork Wind Farm, Revolution Wind, Sunrise, and Vineyard Wind. These locations are more frequently used by for-hire vessels, since they are further from the shore, in rougher environments, and are more costly to fish. In these areas, it will be important to consider the ecological impacts of construction, as they include EFH for over 30 species. There is also a limited amount of refined data on recreational fishing to inform offshore wind projects. It is important for anglers to share their fishing habits and locations, concerns, and the observed benefits of wind farms to ensure adequate consideration in project development. Other considerations include the impacts of these projects on forage fish, EFH, and the cumulative impacts on recreational fishing. The wind farms that have been completed went through the permitting process before it was refined, and as the community learns more about EFH and the changing diets of different species, this needs to inform future projects.

### McGrew Rice

Captain McGrew Rice, a charter fisherman from Kona, Hawaii, shared his perspective on the benefits

and disadvantages of offshore aquaculture structures. He fished off of Kona before there were any FADs. In particular, his presentation focused on the impacts of the FAD installed by Ocean Era 15 minutes offshore from Kona. This FAD was much more successful than FADs installed by the State of Hawaii because it was a larger structure, which attracted tuna, baitfish, marlin, and sharks. In Hawaii, there are natural FADs created by the island's ledges, which accumulate baitfish under different current conditions. However, he commented that Ocean Era's FAD may have disrupted the aggregation of baitfish on natural structures. Since the aquaculture structure was removed, the baitfish have returned to the ledges.

These structures change the movement of fish, though it does make fishing more accessible for those who do not know how to fish the ledges or for smaller boaters that cannot travel far from the port, such as kayakers. One deterrent is that the structures attract dolphins, which eat the bait and make fishing nearly impossible. Overall, Captain Rice prefers fishing the traditional way, but understands that the ocean should be used in a way that benefits the entire community.

### Audience Discussion

One audience member inquired about the agreement between BOEM and NOAA to address the impacts of offshore wind projects on fishery surveys, and how this would benefit research. Mr. Hooker referenced the implementation strategy released by NOAA and BOEM in March of 2022 and encouraged anglers to engage in the public input period.

This was followed by a discussion on the impacts of ongoing construction for offshore wind projects, including the estimated 10-year timeline for construction of all of the projects off Massachusetts and Rhode Island. Captain Bellavance raised the need for noise mitigation during the driving of pilings, especially because of the number of projects and increased size of the turbine bases. An audience member inquired about any studies that have been conducted on the impacts of pile driving on fish activity. Mr. Hooker clarified that there will not be active construction for the entire 10-year period, but that it is well-documented that fish will not bite during piling installation. An audience member raised a concern that recreational anglers are only engaged in the third step of the siting process for offshore wind projects, and recommended that engagement starts earlier in the process. Captain Bellavance concurred but emphasized the importance of being involved in the process in any way possible.

Another participant raised a concern about the impacts of transmission cables on certain species and asked about research on the topic. Mr. Hooker referenced studies done in the Atlantic and a fact sheet published on the BOEM website that explains the animals can sense the cables even though they are shielded, but that it is not impeding their movement.

An audience member suggested that aquaculture and offshore wind projects be sited together. Mr. Sims explained that normally, an ideal location for an offshore wind site is not ideal for aquaculture, which is usually located in deeper, calmer waters. The conversation wrapped up with an inquiry about the progress toward identifying AOAs in the Northeast. Ms. Blacklock clarified these processes are driven by stakeholder interest, and since there was less interest in the Northeast, the Gulf of Mexico and Southern California AOA processes will be completed first.

## *Panel Discussion*

The outcomes for the second part of this Session included:

1. Identify strategies for stakeholder involvement with issues coordinated by multiple agencies.
2. Identify strategies and actions to maintain sustainable fishing opportunities.

The moderator for the panel Session, Mr. Beal, introduced the panelists. There were four panelists from the previous Session, including Mr. Hooker, Ms. Blacklock, Captain Bellavance, and Ms. Richer. Three additional panelists joined: Marcos Hanke, the Chair of the Caribbean Fishery Management Council; Dr. Jason McNamee, the Deputy Director of the Rhode Island Marine Fisheries Division; and Dr. Caren Braby, the Manager of the Marine Resources Program for the Oregon Department of Fish and Wildlife. Each of the new panelists gave a brief opening statement on their background related to alternative ocean uses.

### Opening Statements

Mr. Hanke highlighted his 30 years of experience as a charter captain and his role in bringing the Caribbean perspective to the conversation around aquaculture and offshore wind projects. In the Caribbean, there is a mosaic of sensitive habitats, strong recreational and sport fishing potential, and very deep waters close to shore. There are also different backgrounds and different fishing approaches represented by each of the three islands in the Caribbean Fishery Management Council. For example, a cobia farm was installed in Puerto Rico, and from an industry perspective, this was a missed opportunity to raise a species for local consumption, like mutton snapper, to engage with trade in traditional fishing villages and markets. It also could have had a greater impact on local capacity building through a partnership with the University. There are concerns among the commercial and recreational fishing communities about maintaining food security and avoiding gentrification. Mr. Hanke also mentioned the importance of discussing aquaculture in the context of ecosystem-based management in addition to measuring the volume of product produced.

Dr. McNamee is from the Rhode Island Department of Environmental Management, which is a state agency that is responsible for natural resource management, as well as aquaculture and offshore energy projects. In the Department's experience with aquaculture projects, the permitting process has been complicated by shared responsibilities with Rhode Island's Coastal Zone Management Agency. The permitting process for the first wind farm was more streamlined because there was an Ocean Special Area Management Plan already in place that brought together fishing, habitat, and other relevant data. The takeaways from this example for other states are that planning ahead of time pays off, and having mechanisms in place to gather local knowledge is vital to informing projects like these.

Dr. Braby has been working in ocean uses for over a decade in Oregon as a marine biologist and natural resource manager. Oregon has many rural coastal communities that rely on sport and commercial fishing to drive their economies. There is not much development in the water yet and offshore wind and aquaculture installations are viewed as an effort to privatize a natural resource. Responsible development will require an approach that is tailored to these communities through extensive local outreach and a deep understanding of the science, fisheries, local culture, and economics. The state has also embraced a planning-first approach and has been a part of a taskforce with BOEM since 2011 to ensure that the state is involved in offshore project planning. Additionally, the West Coast must use floating turbines instead of monopile. This nascent technology raises concerns about rough ocean conditions and impacts to fishing activities. Since these projects cannot be easily reversed, efforts to limit fossil fuel consumption should be balanced with care for the impacts of offshore energy projects on the ocean's ecosystems.

### Discussion

Following the panelist introductions, the moderator asked the panel initial questions, and then opened the floor to a discussion with participants and panelists. The discussion is organized by topic throughout the remainder of this Section.

**Maintaining sustainable recreational fishing opportunities**

There was a discussion around the importance of having good data and stock assessments to monitor ecosystem health over time. Commentors noted that decisions about the installation of structures need to be backed up with long-term monitoring to ensure that negative impacts of wind or aquaculture farms can be recognized and corrected as they arise. There is also a need for data on the human dimension of fishing activity in the areas around offshore projects to better understand how recreational uses may be impacted. As these impacts are better understood, there is a need for flexibility and creativity on the part of anglers to embrace new opportunities (such as increased availability of new species), as well as on the part of fisheries managers to support anglers as they adapt. There are opportunities to be creative.

Angler participation in the planning and permitting processes for aquaculture and offshore wind projects is also important. Each of these processes, including AOA designation and individual project permitting, is designed to incorporate local knowledge through multiple opportunities for public participation, which will make projects more beneficial to the fishing community and other stakeholders. There is a perceived lack of knowledge about recreational and for-hire industries in these discussions. This magnifies the importance of anglers documenting their knowledge, and working to ensure that proposed projects are tailored to the local conditions.

**Mitigation approaches for unavoidable impacts to fishing**

When identifying the potential impacts of a project, there first needs to be an understanding of which impacts are due to climate change or other reasons, and which are associated with the project itself. Another consideration to frame mitigation discussions is whether impacts are acceptable or unacceptable to stakeholders. It can be difficult to quantify impacts for recreational fisheries because there is no single monetary measure of the value of recreational angling. Mitigation can apply to the effects of the project on the resource itself or to the fishing access or activity. Measures to address changes to fishing activity could involve minimizing the direct impacts by adjusting construction timing, design, tools, siting, or decommissioning plans. Alternatively, compensatory measures could be used to offset the lost value due to a project and could include monetary restitution to anglers for lost business, funding for an industry-wide advertising campaign, repairing public infrastructure used by anglers, or commissioning research relevant to recreational anglers or detailed maps of the bottom, among others. One panelist shared the need for a federally mandated compensation and mitigation scheme funded by lessees to help recreational fisheries coexist with these projects. BOEM is working on a guidance document to inform lessees about their expectations regarding mitigation measures for impacts to fishing activity.

**Using data to inform offshore projects**

An audience member expressed concern about having insufficient baseline data on sites before the installation of wind or aquaculture projects, and noted that without these data, it is impossible to monitor long-term impacts. Dr. Braby validated this concern and mentioned that while there are good data for some stocks, others may require stakeholders to gather more information before final decisions are made. It is important to conduct a pre-project survey of stocks before the geological survey, which may disturb fish movement in the area. New technology is available to support fish population studies, such as acoustic receivers to track the movement of tagged fish. For efficiency, it was suggested to select a few factors about which to collect more thorough data. Sufficient data are needed to reasonably understand the implications of a project. During the environmental assessment process, BOEM identifies information gaps and fills those gaps where possible.

**Understanding the cumulative impacts of offshore structures**

It is not clear what the cumulative impacts of multiple wind farms will be for recreational fisheries in an area. As FADs, these installations may impact fish movement, and there were concerns around the potential for these FADs to prevent fish from swimming closer to the shore. There are some BOEM data on the species composition impacts for these artificial reefs, and the actual impact on fish movement near shore depends on the ocean bottom and distance to shore for a site. This is exemplified in the oil rigs in the Gulf of Mexico. Anticipating cumulative impacts and creating an adaptive management plan will aid in addressing issues as they arise.

## *Session Summary*

Increasing growth in two key marine industries – offshore wind energy and marine aquaculture – must be balanced with physical, ecological, and economic considerations of the recreational fishing community. The national goals and policies around clean energy and increasing domestic production of seafood are driving forces that will increase development in these sectors. Each proposed lease site or AOA comes with a need for engagement with the recreational fishing community. Experience has shown that this engagement does make a difference, and that the developers want to work with the affected industries to balance these uses. Further, BOEM is committed to science-based decision making and regularly reviewing opportunities for stakeholder engagement and input.

There is limited fine-scale data on recreational fishing to inform offshore wind projects. Other considerations include the impacts of these projects on forage fish, EFH, as well as the cumulative impacts on recreational fishing. Differentiating between impacts caused by climate change and anthropogenic impacts is important as well. In order to have local knowledge incorporated in the planning and permitting processes for offshore wind and aquaculture, stakeholders must navigate long and complicated public involvement processes. To address these challenges, there must be increased collaboration around:

- Collecting baseline data early in the process can help understand changes and impacts from these projects. This should include data on human dimensions, in addition to physical and biological data.
- Ensuring anglers are aware of scoping and public comment opportunities to share their fishing locations, concerns, and the observed benefits of wind farms that can inform the siting and monitoring processes.
- Creating state task forces (or similar groups) that can help to coordinate local involvement in these federally-permitted processes.
- Establishing federal guidance around mitigation and compensation.

There are tradeoffs with the intersection of offshore marine aquaculture and traditional recreational fishing opportunities. As long as there is a willingness to try something new, there may be opportunities presented by these structures to serve as FADs, for example. Technology is improving, which is reducing the ecological impacts from aquaculture. Similarly, offshore wind presents short- and long-term tradeoffs associated with fishing displacement and potential shifts in species during construction. However, post-installation, offshore wind turbines can provide new habitat that attracts different species and opportunities. Along with these challenges, the following considerations were presented:

- While the long-term, cumulative impacts are largely unknown at this time, robust monitoring strategies and adaptive monitoring may help mitigate these impacts.

- The research and development around offshore aquaculture could potentially translate to efforts to enhance wild stocks in the future.
- Demonstration aquaculture sites may be used to improve public understanding of these systems.

## Closing Remarks

Tim Sartwell, Recreational Fisheries Specialist with NOAA Fisheries, offered closing reflections on the Day One sessions. He noted that participants and presenters discussed how to create climate-resilient fisheries, and balance ocean uses with growing wind and aquaculture industries. Mr. Sartwell expressed hope that as wind energy and aquaculture continue to develop, attendees will be able to take lessons learned and be better prepared to address these topics in their own communities and represent recreational fisheries constructively.

In the climate discussions, nimbleness of management arose as one of the key themes, particularly in discussions around how to increase the responsiveness of the management system to climate change impacts. He stressed the importance of seeking out local knowledge, since people on the water are the most attuned to rapid changes. Another common theme in every discussion was data, from backing up public comments with data, to identifying data gaps, to implementing better long-term monitoring on wind farms. He noted a need to be creative in the ways recreational anglers are empowered to collect and share data. Habitat restoration was another topic that rose to the surface as a key tool for climate resilience and mitigating the impacts of alternative ocean uses.


**Closing remarks**
PHOTO BY KELLY STOLL HESPEL

Finally, communication and engagement were noted as key elements to all of the issues discussed. Mr. Sartwell urged recreational anglers to use their regional recreation coordinators to stay informed of opportunities for public comment and to engage with state and federal scientists to make sure data gaps are addressed. Collaboration will be key to addressing all of the challenges posed by the changes recreational fisheries are facing.

# Day Two: March 30, 2022

4

## Opening Remarks

Tina Berger, ASMFC Director of Communications, offered opening remarks. She noted that the issues discussed on Day One were complex and highly charged given the real and potential impacts they may have on recreational fishing and the sustainability of fishery resources. Ms. Berger recognized the need to face the issues head on, through open dialogue, collaboration and partnerships, and a shared vision for recreational fisheries, now and into the future. She shared the reason for being here together is to identify challenges and opportunities, seek solutions and potential paths forward, and to recommit to working with each other towards the goal of high quality, sustainable recreational fisheries.

Ms. Berger then introduced the agenda for Day Two, which included two tools to help recreational fisheries more nimbly adapt to changes in the marine environment, data collection and alternative management approaches. She encouraged participants to think about the actions they can take within their organizations, businesses, regions, and agencies to move the needle forward on the ideas and progress from the Summit. Ms. Berger invited participants to build upon that momentum by committing both individually and collectively to make real progress on achieving a shared vision of sustainable recreational fisheries.

## Guest Speaker

Spud Woodward, ASMFC Chair, gave a presentation on 'Atlantic States Marine Fisheries Commission's Ecosystem Approach to Atlantic Menhaden Management: From Idea to Reality.' Menhaden are an important part of the ecosystem as forage fish for aquatic, terrestrial, and avian species. Menhaden support the largest fishery by volume on the Atlantic coast, as both a reduction fishery (i.e., fish meal and oil) and a bait fishery. Menhaden have historically been managed using quotas. Managers recognized the ecological role of menhaden, and in 2015, a workshop identified objectives for ecosystem management of menhaden. Then, as part of a management action in 2017, managers took a more conservative approach, as compared to the single species reference points, to incorporate a buffer for the ecosystem services provided by menhaden. Ecological reference points (ERPs) were developed for menhaden based on the recommended Northwest Atlantic Continental Shelf Model of Intermediate Complexity for Ecosystems, which evaluates tradeoffs between predators (like striped bass) and prey (menhaden). There is an ERP target and threshold that take into account that predator-prey tradeoff.

The ASMFC Atlantic Menhaden Board adopted the ERPs unanimously in August 2020. In setting the total allowable catch, the Board had to evaluate the uncertainty and risk of exceeding the ERP reference

**Summit participants on Day 2**
PHOTO BY KELLY STOLL HESPEL

points for different catch levels. The Board accepted the lowest risk option and moved forward with that catch level.

The menhaden fishery is the first fishery on the Atlantic coast to be managed with a quantitative ecosystem model. This was a collaborative effort involving many partners along the coast. The goal is to eventually broaden the current ecosystem approach to a full ecosystem-based approach and eventually integrate spatial components. In closing, Mr. Woodward noted that, while the issues facing recreational fisheries are difficult, it is possible to make progress by including diverse perspectives and working towards a common goal.

Following the presentation, there was an opportunity for questions from the audience. A participant asked if ASMFC was planning on utilizing this approach to manage any other species and, if so, what would the timeline be, and how should the ASMFC adapt? Mr. Woodward replied that ASMFC would likely focus on species already in the model (for example, bluefish, weakfish, striped bass), and better describe the relationships with those predators, while also always looking for opportunities to add new species. As far as the timeline, he replied that it does take a lot of work and data, and that 5- to 10-year planning horizons are needed to move things to the next level. He recognized that there is an outstanding question around how ASMFC can synchronize efforts of the striped bass and menhaden boards to facilitate these decisions.

## Session III: Data Collection and Use

Successful fisheries management is dependent on the data collected about fishing activity. Saltwater recreational fishing is an important industry, supporting hundreds of thousands of American jobs and billions in sales. Abundant ocean fisheries are the engine that drives these economic benefits. A fundamental component of sustainably managing any fishery is understanding anglers' catches. More accurate and timely data will benefit fisheries stock assessments by improving the information used to manage them sustainably.

Understanding recreational catch depends on detailed and accurate data from the recreational fishing community. Recreational fishing surveys vary from region to region, state to state, and, in some cases, species to species. Generally speaking, in the federal system and most regional surveys, catch rates (the average number of fish caught per angler trip) are measured through in-person interviews, and effort (the number of fishing trips anglers take) is measured through mail and telephone surveys. In many regions, electronic trip reports collect additional information about for-hire fishing activity. Estimation methods are complex, but can be understood at a high level as multiplying the catch rate by effort to estimate total recreational catch. Recreational catch estimates are just one of the many pieces of information fisheries managers must consider during their science-based decision-making process.

Stock assessments are the scientific foundation of successful and sustainable fishery harvest management. Stock assessments estimate the health and status of fish stocks and allow scientists to gauge the impact of fishing on fish and shellfish stocks. Each stock assessment produces a report that provides fishery managers with a scientific basis for setting sustainable harvest policies. For NOAA Fisheries and the eight regional fishery management councils, assessments are conducted to aid in the management of nearly 500 fishery stocks. Stock assessments are also conducted at the interstate and state levels for the species that predominantly reside in state waters. Please refer to Appendix C for a background paper on this topic that was distributed at the Summit, which includes additional resources.

The presentation portion of this Session provided an overview of marine recreational fisheries data collection, stock assessments, and catch monitoring processes, as well as the role that uncertainty plays in each topic. The panel discussion portion of this Session covered strategies for improving public confidence and participation in recreational fisheries data and data collection, as well as the potential roles of government, stakeholders, and new technologies in doing so.

In this Session, the presentations and discussion focused on the following guiding questions:

- How can confidence in/understanding of recreational fishing data be improved among the recreational fishing community?
- What role can NOAA Fisheries/councils/commissions/states play in increasing understanding of how recreational data are collected and used?
  - What role can the recreational fishing community play in addressing misconceptions?
- How can participation in data collection be improved?
- What role can electronic reporting play, and what are the challenges?

## *Presentations and Discussion*

The moderator for this Session was Dr. Evan Howell, Director, Office of Science and Technology, NOAA Fisheries. The format for this part of the Session included three presentations, each followed by an opportunity for audience questions. Both the presentations and discussions are summarized in this Section. The outcomes for this part of the Session included:

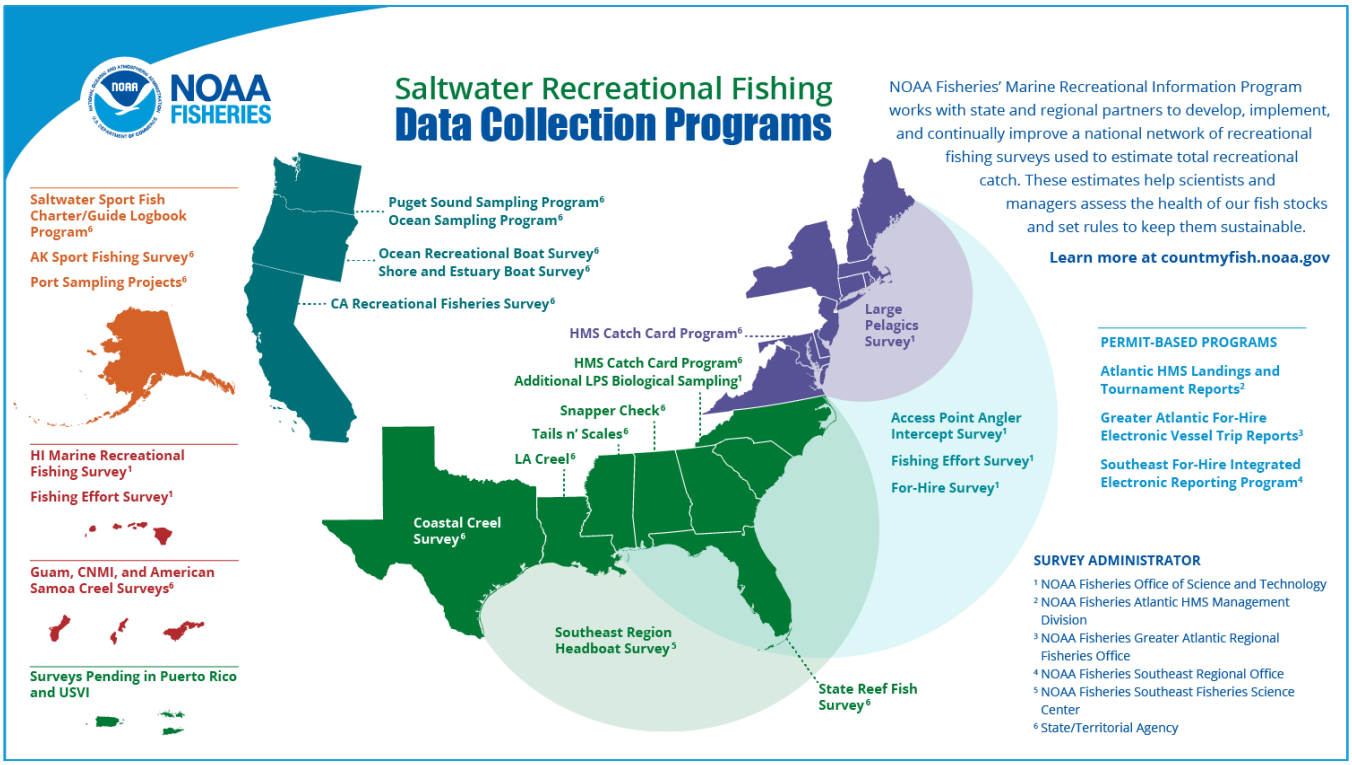
1. Improved understanding of current data collection, stock assessment, and catch monitoring processes
2. Shared understanding of the data sources, appropriate uses of recreational data and their limitations, and the role of uncertainty

### Dr. Richard Cody

**Presentation**

Dr. Richard Cody, Chief, Fisheries Statistics Division, Office of Science and Technology, NOAA Fisheries, gave a presentation on 'Understanding Recreational Fisheries Data Collection, Monitoring, Assessments, and Uncertainty.'

NOAA's recreational data collection programs are founded on science, and while they are largely perceived as federal surveys, they are actually a partnership. In 2006, the NASEM reviewed the Marine Recreational Fisheries Statistics Survey (MRFSS). Since this time, several external and internal reviews have been conducted, resulting in recommendations for improvement, some of which have been mandated through legislation. From these reviews, significant changes were made to MRFSS, which resulted in a new program, MRIP, as well as other changes, including substantial improvements to APAIS. The latest NASEM review (2021) evaluated the compatibility of the MRIP survey with in-season




management. Among other findings, this review highlighted the importance of addressing regional needs in these programs.

MRIP is the state-regional-federal partnership that develops, improves, and implements a national network of recreational fishing surveys to estimate total recreational catch and effort. This program is built on a collaborative approach toward implementing carefully designed surveys, collecting high-quality data, and producing sound fisheries statistics that meet science and management needs. MRIP is a national network of regional surveys, including:

- 28 data collection programs within the partnership
- 10 programs administered by NOAA Fisheries
- 18 programs administered by states or territories
- Eight specialized programs designed to collect data for a target species

Each of these data collection programs have competing needs, which include the monitoring of catches and annual catch limits (ACLs), as well as providing state level data and trend data for use in stock assessments. One challenge is balancing differences in scale with census or statistical sampling. It is also important to establish compatibility of methods used across regions, determine whether catch estimates are comparable, and decide whether the data are being used appropriately.

Dr. Cody then reviewed the 2020 MRIP Data Standards, which provide guidance on survey design and implementation, quality assurance, publication standards, and certification of survey designs and transition. For every point estimate NOAA produces, they also publish measures of uncertainty, which provides an understanding of how much a survey estimate is likely to deviate from the actual number. There are two metrics used to express uncertainty - percent standard error (PSE) and confidence intervals.

Whether it is expressed as a PSE or a confidence interval, uncertainty is an important factor that

scientists and managers must consider when interpreting an estimate. High levels of uncertainty indicate low levels of statistical confidence, suggesting an estimate should be used with caution. To improve precision, the sample sizes need to be increased. Therefore, NOAA recommends data users view their estimates at the annual and regional levels, rather than at the two-month sampling wave or state-specific scales.

Uncertainty exists in all data collection programs, but there are also steps that survey administrators can take to ensure they are producing high-quality data products. Administrators follow best practices in data collection and estimation, and have demonstrated a commitment to:

- Pilot testing survey designs
- Establishing complete sample frames
- Where possible, using tools to increase response rates ($2 incentive) and aid recall (calendars)
- Weighting sampled units to ensure they are representative of the target population
- Establishing quality assurance and quality control procedures to reduce the potential for data processing errors

In summary:

- Recreational fisheries-dependent data collection methods vary in scope and scale.
- Different census and statistical sampling methods present challenges related to validation, comparability, and compatibility.
- The challenge is to balance stock assessment (long-term trends) and monitoring (fine-scale data) needs related to management.
- Recreational fisheries data comprise part of the information used in stock assessments to provide management advice.

**Discussion**

There was a question about what PSE value is ideal for science and management. Mr. Cody replied that PSEs used for stock assessments should be below 40%. However, most large-scale surveys will not publish data unless they have PSEs less than 30%, but the 10-20% range is ideal. NOAA uses survey techniques to meet an overall level of precision, but they do not get enough samples to achieve this level of precision for all species because of seasonality and management measures. NOAA supports getting more samples to achieve better PSEs.

A participant offered an example of a fishery where the MRIP recalibration of MRFSS data made the catch estimate very high. Dr. Cody responded by offering that there are certain characteristics of surveys, such as a small sample size, that may result in very large, unreliable estimates at times, although the longer-term trend of landings is more stable. NOAA provides information to management on the context for those estimates, and also relies on stakeholders to be involved in the council process to provide that context as well. Regardless, NOAA makes the data available because there may be other parts of the data sets that are useful for management and assessments.

Another participant commented on the differences between surveys, and suggested the recreational fishing community should advocate for more stewardship and information from those accessing the resource. Dr. Cody replied that accountability is definitely something NOAA Fisheries tries to promote and foster, and that it is a difficult process. MREP has really helped the for-hire sector understand this process. NOAA looks at other ways to take stock of the recreational angler universe and it is large, diverse, and difficult. The participant followed up with a suggestion for NOAA to have a registry that anglers are required to call-in to and improve effort data, which could improve catch-per-unit-effort estimates.

## Dr. Katie Drew

### Presentation

Dr. Katie Drew, ASMFC Stock Assessment Team Lead, gave a presentation on 'Recreational Data and Stock Assessments.'

Dr. Drew started her presentation with a graphic demonstrating the different range of stock assessments from data rich to data poor. There are two key pieces of information that go into a stock assessment:

1. ***Catch:*** How many fish were killed? This number includes landed fish, discards, release mortalities, and commercial and recreational fishery-dependent data.
2. ***Population Index:*** An index of relative abundance from a survey or a fishery. Catch goes up and down for a lot of reasons, such as fluctuations in populations, changes in regulations, or effort changes. Scientists need a way to separate out population effects from effort or regulation effects. They achieve this through fishery surveys, which catch fish annually using the same exact methods, in the same areas, at the same time of year. This helps measure if the population is going up or down year-to-year, and results in an index of relative abundance.

From these two sources, catch provides the scale of the population (e.g., how big is it in absolute numbers), and the population index provides a trend of the population (e.g., increasing, decreasing, or stable). Dr. Drew provided a simplified example of a stock assessment.

If the catch amount is wrong, the scale of the population from the stock assessment will be wrong (even if the trend is correct). Higher catch rates result in higher population size in assessments, even if the population trends stay the same. This occurred with the MRIP recalibration.


**Dr. Katie Drew**
PHOTO BY TIM SARTWELL

There are other sources of data used in stock assessments. Biological information, for example, includes what percentage of the population dies every year from natural causes, how fast fish grow, and when they mature. This information is provided through federal, state, and academic research and surveys, as well as citizen science efforts, including tag reports and rack donations. Catch-at-age data estimate how many fish of each age are removed each year. These data are collected through length samples for landed fish (through MRIP for recreational data and port agents for commercial fisheries), observer programs for commercial discards, and citizen science (through angler logbook programs).

Dr. Drew reviewed the various outputs from stock assessments, then shared how projections help managers set regulations for the future. Scientists run projections by taking the status quo and predicting what will happen to the population in the future under different levels of catch. Projections incorporate uncertainty about population size in the most recent year, future recruitment, and other factors. The model sorts through the known sources of uncertainty, and projections provide the probability of being above or below the reference point under different scenarios. Buffers are utilized to reduce the risk of overfishing. The continuous cycle of data collection informs stock assessments, which in turn, supports management changes.

**Discussion**

The first question was about how climate change is affecting MRIP and trawl survey data collection. The question was based on concerns that fish are arriving sooner or leaving later, and may be missed in APAIS. This participant asked how this can be addressed in the stock assessment process. Dr. Drew responded that assessment scientists pay attention to those changes in the data, and hope that if it is missed in one survey, it is picked up in another one. However, climate change is a source of uncertainty.

A second participant inquired about including uncertainty buffers specific to climate change, and how scientists can better predict changes in effort. Dr. Drew responded that the climate uncertainty buffer is a management decision on what level of risk is acceptable. Tradeoffs should be considered, which will vary by species. With regards to predicting fishing effort, it is difficult, and is based on fish availability as well as other considerations. Scientists are trying to develop models that take varying levels of effort into consideration, along with regulations and other factors, to better predict effort.

There was a question about MRIP estimates, which the commenter felt were too high, and they shared the ramifications of overestimates. Dr. Drew conceded that when catch estimates are high, it does have a management impact; it affects the scale of the estimated population and quotas. However, the trend is what is important, and that is affected less by total estimates of catch.

## Dr. Luiz Barbieri

**Presentation**

Dr. Luiz Barbieri, Program Administrator, Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission, gave a presentation on 'Recreational Catch Monitoring.'

Dr. Barbieri explained the importance of catch monitoring in allowing managers to track fishery removals relative to biological reference points. The


**Dr. Luiz Barbieri**
PHOTO BY TIM SARTWELL

regional fishery management councils' scientific and statistical committees provide councils with overfishing limits, and a recommendation for an acceptable biological catch (ABC), which cannot be exceeded by the regional fishery management councils. From the ABC, a council specifies an ACL and, in some instances, an annual catch target (ACT). Conceptually, it is a simple process; scientists and managers monitor landings by modes, fleets, and fisheries across different habitats. Because there is a national level program that is already set up to do this, it should be a simple process.

The reality is much more complex, in part because there are eight regional councils managing approximately 500 species or stocks in varying environments. Councils have different needs, which stretches MRIP's capabilities to provide timely, precise data. Some councils have short seasons or a need to manage at smaller spatial scales. Others have problematic situations, including specialized, small-scale fisheries, rare event species, and pulse fisheries. There is an emerging need for data on recreational catch that are accurate, precise, and timely, and of sufficient resolution to inform in-season management. Dr. Barbieri then provided regional examples for specific species, and posed a rhetorical

question: how do you combine the different scales for management and assessment?

There are additional timing concerns with different recreational landings datasets that are available at different times of the year. For example, MRIP is in two-month waves, whereas other datasets in various state fisheries are provided annually, monthly, weekly, or daily.

Fish stock projections forecast what will happen to a population in the future, which is strongly dependent on future recruitment and subject to high uncertainty. There is a potential disconnect between projected catch levels and angler experience on the water, which creates frustration. There is a need for discussion around managing expectations of variable populations, expecting uncertainty, and considering multi-year, long-term outcomes.

The 2021 NASEM review focused on how well MRIP meets the needs of in-season management of fisheries with ACLs. The report covers some relevant topics:

- Optimizing use of MRIP data and complementary data for in-season management
- Recreational reform initiative
- Generalized carryover of recreational catches
- Modifications to recreational accountability measures (AMs)
- Use of OY framework to identify and prioritize recreational fisheries objectives

**Discussion**

There was an audience comment that MRIP is being used in ways that it is not designed for. This participant inquired whether there were guidelines on what MRIP can and cannot be used for. Dr. Barbieri responded that this question was the primary reason for the 2021 NASEM review. The outcome was not prescriptive but the recommendation was to develop stronger institutions within each of the regions, to better coordinate the science and management framework that meet specialized needs. There are surveys in each region that already address these specialized needs, but the coordination among these surveys to make them compatible is lacking.

A participant questioned how anglers can have confidence in the stock assessment because of the uncertainty of whether the dockside data (on the West Coast, in this example) are representative of the stock distribution. They noted that groundfish is short on fishery-independent data, which has a big impact on the recreational fishery. Dr. Barbieri responded that the survey design should account for the survey to be appropriately indexed and representative, and then reviewed to ensure it is adequate.

A participant asked what the survey is designed to do and not do in the context of calibration, allocation, and system limitations. Dr. Barbieri stated that it is inevitable that surveys evolve because scientists need to improve as they learn, so there will always need to be a calibration process. When a variety of specialized surveys are utilized, they may not be developed in a way that considers the needs of other surveys, which leads to inconsistencies. Institutions should be strengthening coordination at the regional level to better identify priorities and plan how to develop compatible surveys.

## *Panel Discussion*

The intended outcome for the panel discussion in the Data Collection and Use Session was to identify pathways for improving confidence in data and participation, and the potential role of outreach and electronic technology in doing so.

Dave Donaldson, Executive Director of the Gulf States Marine Fisheries Commission, was the moderator for this panel discussion. The three presenters from the first part of the Session, Dr. Cody, Dr. Drew, and Dr. Barbieri, were joined by two additional panelists. Joshua DeMello, Fishery Analyst with the Western

Pacific Fishery Management Council, and Kenneth Haddad, Marine Fisheries Advisor with the ASA.

The new panelists were given an opportunity to introduce themselves and their perspectives on the Session topics. Mr. DeMello explained that in the Pacific Islands region, they define what is typically referred to as recreational fishing, as non-commercial. This term highlights the role fishing plays in providing for the community, supplementing food provisions, and continuing cultural and traditional practices. Recreation is just a by-product. These regional differences need to be considered in policy and legislation to retain flexibility. In their region, he explained that they like to meet fishermen where they are, and understand how to engage with them. This engagement varies by the angler's age and the island; some anglers communicate on social media, others on more traditional media, and some by word-of-mouth.

Mr. Haddad shared his perspective as an individual angler. He shared a perception that many anglers are reluctant to get directly involved in management, although they will get involved through associations or clubs that actively engage in the regulatory process. Mr. Haddad believes that a majority of anglers prefer to focus their time on enjoying their past time, and not participating in management. At times, anglers do get involved in other local aspects, including data collection, water quality, and habitat restoration.

Following the panelist introductions, the moderator started by asking the panel a question about improving confidence in data. Then Mr. Donaldson opened the floor to a discussion with participants and panelists. The discussion is organized by topic throughout the remainder of this Section.

**The relationship between trust, understanding data, and managing expectations**

There were sentiments that the real issue with data is stakeholder trust, not uncertainty. The confidence of anglers in the data and assessments is built on trust. There was also the perspective that trust can be built with an improved understanding of what uncertainty is, and how to better manage expectations around variability. A panelist acknowledged that it is not just trust, it is about building relationships as well and connecting anglers to people who they can share concerns with.


**Data panelists**
PHOTO BY TIM SARTWELL

NOAA participants noted the Agency's belief that transparency helps build trust. As such, NOAA provides transparency in its surveys, documentation of data and assessments, and has tools to help people understand the data. NOAA is working with recreational fishing associations to demonstrate this transparency, explore data limitations, and build trust. As trust is built, the Agency could use help from these organizations to carry this understanding forward to their members.

One common example that has a tendency to erode trust is when there are regional, species-specific data estimates that do not reflect what anglers are seeing on the water. NOAA provides guidance on how to use these data, and endeavors to improve sample sizes to reduce these occurrences. It is the scale with which the data are sometimes applied (regionally and/or seasonally) that is the challenge, and NOAA is working to address this.

**Scale of regional data needs and consistency**

A panelist acknowledged that there is tension between national consistency and incorporating all

the specialized small-scale fishery surveys. Scientists need to identify which fisheries can be handled with a general survey and which require additional surveys. There was interest in further exploring regionalized implementation of MRIP through regional teams to identify these priorities and provide more opportunities for local input.

**Balancing data needs with funding and utilization of cooperative research**

A participant expressed the need for fishery-independent data for recreational species, especially in the West Coast groundfish fishery. The commercial trawl surveys target different species, and the science centers do not have the funding for additional and regular surveys in habitat that cannot be sampled by trawl. How then, do scientists get the data they need? Fishery-dependent data can be analyzed to better identify trends that would be apparent from fishery-independent data; however, there are data-poor species where it may ultimately come down to a management decision on risk assessment. This connected back to the topic of trust in that it will be challenged by uncertainty and tradeoffs around risk, which may leave some stakeholders uncomfortable with the outcomes.

A participant mentioned that Congress has called for better data, although NOAA has struggled to get adequate funding to deliver these data. There was a call by non-governmental participants for stakeholders to advocate for better federal funding for data collection.

The following discussion thread centered on available data that is collected, but is not used in management, and how the fishing community can serve a role to address gaps in data and funding. Cooperative research is one avenue to filling data gaps; however, there is a criticism that it is often not utilized in stock assessments. NOAA, regional commissions, and states need congressional funding for data collection and stock assessment scientists. There is insufficient federal funding, especially for recreational species surveys, which can be remedied in part with assistance from the fishing community, if the data would be utilized. A for-hire owner operator offered the following suggestion to address this disconnect, "we are collecting data, help us to help you."

There was a discussion about the need to smooth statistical outliers, with an example shared about black sea bass. Scientists are working to address outliers for other fisheries, but there was a caution that outliers can go both ways.

**Angler engagement, outreach, and education**

There were several suggestions that data workshops and meetings with staff of the MRIP program could help connect stakeholders and start to build trust. There was a call for leadership within NOAA and fishing associations to step up their education of anglers, and underscore the sustainability, accountability, and stewardship of the resource. The nuance that needs to be considered in this education and outreach is understanding the different motivations of the for-hire and private angler modes. There is an inherent difference in fishing for sport versus making a living, which social scientists should help figure out how to address for more meaningful and productive engagement. There was a suggestion for a more collaborative effort between federal and state agencies to communicate with anglers.

**Management tradeoffs**

A participant made an analogy to the requirements state governments have for hunters being more stringent than those for anglers. A panelist offered that uncertainty can be reduced, but it comes with a higher burden of data collection, similar to commercial fisheries, and is a judgment call on the acceptable level of burden.

## *Session Summary*

This Section summarizes overarching themes, challenges, and opportunities from the Data Collection and Use Session.

On the topic of data and trust, there are differing definitions and perspectives around trust. Some presenters discussed the relationship between trust and confidence or uncertainty in data, while others highlighted that data reflecting their experience on the water are critical for trust. A few participants equated trust to building relationships and face-to-face interactions. Others underscored the importance of transparency in data collection and management processes to gaining trust. Through discussion, differing perspectives became apparent as to what creates or erodes trust in data, science, and management, and how scientists and managers can build trust with the angling public.

The challenges surrounding trust building are centered on both biological and social factors. From a scientific perspective, data poor stocks, uncertainty, and limited sample sizes may always be present for some stocks and regions. However, additional funding and/or alternative approaches to data collection can help reduce the adverse impacts of these factors on regulations. From a human dimension perspective, managing expectations and providing educational opportunities to better understand data limitations and appropriate use may offer an improvement in trust and relationships. This trust will form a more solid ground to address ongoing issues with variability and uncertainty in data and management. The following ideas were offered to address these challenges:

- Convene data workshops with stakeholders
- Offer opportunities for stakeholders to meet with MRIP staff
- Improve coordination of federal, regional, and state agencies/organizations in communicating directly with anglers and associations

Given the number of data collection programs throughout the U.S., it is a challenge to reconcile differences in the scale of data collection across states, regions, and small-scale fisheries. There was a discussion stemming from a recommendation from the 2021 NASEM report around the role of regions in data collection and the need for compatibility and comparability across these scales. The following was suggested to address these challenges:

- Institute more regionalized approaches to MRIP through regional implementation teams to identify different needs and priorities for fisheries, and provide more opportunity for local input

Many participants recognized the need for more data on recreational fisheries. Some attendees asked for more accountability at the individual angler level, others offered assistance through cooperative research, and participants and panelists both identified the basic need for additional federal funding for recreational data collection. Accordingly, the following suggestions were offered:

- There was a call among non-governmental Summit participants for the stakeholders to advocate for better federal funding for data collection
- There was an offer to utilize the for-hire fleet to collect fishery-dependent and fishery-independent data from their vessels. While collecting fishery-independent data on for-hire vessels would be a departure from long-term sampling protocols on research vessels, it could serve as a potential cost-saving alternative to federal surveys if data could be calibrated and utilized in certain ways.

# Session IV: Management Reform, Flexibility, and Optimum Yield

Developing recreational management measures that meet angler needs while ensuring that fishery resources are sustainable has become increasingly complex. Major drivers in current efforts for recreational management reform include: concerns related to uncertainty and variability in the recreational fishery data, the need to change measures (sometimes annually) based on those data, the perception that measures are not reflective of current stock status, and that management measures do not always have the intended effect on overall harvest.

On December 31, 2018, the MFA was signed into law. While the law did not fundamentally change the MSA, it did authorize fishery managers to use certain management approaches in recreational or mixed-use fisheries that some consider to be alternative approaches to traditional poundage-based catch limits. In practice, efforts to expand fishing opportunities by applying alternative management approaches are perceived as having limited success.

Further, as required by the MFA, the recent review of MRIP by the NASEM recommended the following:

> *NOAA Fisheries and the Councils should develop a process for engaging recreational fisheries stakeholders in a more in-depth discussion of OY and how it can be used to identify and prioritize management objectives that are better suited to the cultural, economic, and conservation goals of the angling community.*

The first part of the Management Session provided an overview of ongoing efforts to develop and apply management flexibility in the context of improving fishing opportunities and seeking to better understand the fishing public's vision for management reform/flexibility.

This second part of this Session was a preparatory first step in the NASEM recommended process. It was intended to develop a common understanding of OY as defined in statute, regulation, and in practice. Presentations also included anglers' perspectives on OY, human dimensions in considering OY, and the potential for OY to guide management from the council perspective. Please refer to Appendix C for a background paper on this topic that was distributed at the Summit, which includes additional resources.

## *Presentations*

The moderator for this Session was Barry Thom, Executive Director of the Pacific States Marine Fisheries Commission. The format for this part of the Session was an introduction to the topic, followed by brief presentations, and an audience discussion. Both the presentations and discussions are summarized in this Section. The outcomes for this part of the Session included:

1. Shared understanding of existing flexibilities and ongoing work to develop/utilize management flexibility
2. Understanding constituent vision for management reform/flexibility

### Dr. Michelle Duval

Dr. Michelle Duval is the Principal of Mellivora Consulting, a member of the NASEM Committee on Recreational Fisheries Data and Management, and a member of the Mid-Atlantic Fishery Management Council. She presented on 'Recommendations from the 2021 NASEM Consensus Study Report – Data and Management Strategies for Recreational Fisheries with Annual Catch Limits.'

Dr. Duval started by highlighting the charges to the Committee and context for the recent study, which included recommendations from the 2017 NASEM review of MRIP and the MFA (2018). The MFA

mandated an evaluation of MRIP's ability to meet in-season management needs for fisheries with ACLs.

Management needs vary by region and fishery, with different situations requiring different approaches; however, MSA requirements, including ACLs, still apply. Through the MFA, councils and NOAA can use alternative management approaches consistent with MSA. This recognizes that not all recreational fisheries are focused on harvest, and can include depth-based fisheries management approaches (e.g., area closures), conservation equivalency, permits, endorsements, and harvest tags, among other approaches. The potential benefits and challenges of each approach varies. Many of these alternative management approaches have been implemented in one or more region(s).

Dr. Duval highlighted some of the Committee's key recommendations from the 2021 report:

1. NOAA Fisheries and MRIP should coordinate with the regional fishery management councils, interstate fisheries commissions, and states, on a region-by-region basis, to test:
   - Harvest tags for low-ACL, rare event species, or others that may not be well-suited for sampling by MRIP
   - Implementation of a private recreational fishing license endorsement focused on the subset of anglers that target council-managed fisheries
2. NOAA Fisheries and MRIP should further evaluate approaches to establishing criteria for the use of carry-over provisions, as well as limits on unused ACL or ABC that could be carried forward.
   - Generalized carry-over applied equally to recreational underages and overages.
   - Could offset uncertainty associated with implementation of management measures
   - Could reduce need for precise catch management in season
3. NOAA Fisheries should review the National Standard (NS) 1 guidelines to ensure agency guidance with respect to recreational AMs alignment with timeliness and precision of MRIP estimates.
   - Design and application of AMs is challenging, particularly in season
   - AM approaches vary regionally
   - Exploration of modeling tools and multi-year approaches could mitigate uncertainty and/or refine AM application
4. NOAA Fisheries and the councils should develop a process for engaging recreational fisheries stakeholders in a more in-depth discussion of OY and how it can be used to identify and prioritize management objectives that are better suited to the cultural, economic, and conservation goals of the angling community.
   - OY framework explicitly accounts for social, ecological, and economic factors
   - Address multiple motivations across the recreational community
   - Integrate angler satisfaction into the process
   - Could increase participation and improve trust

### John Carmichael

John Carmichael, Executive Director of the South Atlantic Fishery Management Council, spoke about the "Joint Gulf of Mexico and South Atlantic Fishery Management Councils' Alternative Management Work Group." The MFA reiterated science-based


**John Carmichael**
PHOTO BY TIM SARTWELL

conservation and management, and granted the authority to apply alternative management approaches. It mentioned extraction rates, fishing mortality targets, HCRs, and traditional or cultural practices, which, it was noted, is not that different from what is done now.

The Work Group is composed of council members. They held three virtual meetings in 2020 and 2021. They reviewed many documents, including: discussions from the 2019 Council Coordination Committee; reports from the South Atlantic Recreational Fisheries Conference in 2018 and the National Saltwater Recreational Fisheries Summit in 2018; as well as a review of regional tools and data collection programs. They shared information between Gulf and South Atlantic managers, which is important because of the regions' overlapping stocks. Mr. Carmichael reviewed the Work Group's findings, and mentioned they may meet one more time and wrap up the report.

### Julia Beaty

Julia Beaty, MAFMC Fishery Management Specialist, gave a presentation on the 'Recreational Harvest Control Rule Framework and Addenda' as part of their Recreational Reform Initiative. This is an action of the MAFMC and the ASMFC. It addresses all four recreational species that are jointly managed by the Council and the Commission. This includes summer flounder, scup, black sea bass, and bluefish, and at the time of the Summit, was a proposed management action that was in the public hearing phase. This action was developed in response to several challenges with the current process, including concerns around uncertainty and variability that result in annual changes to management measures, as well as perceptions of management measures not being reflective of current stock status.

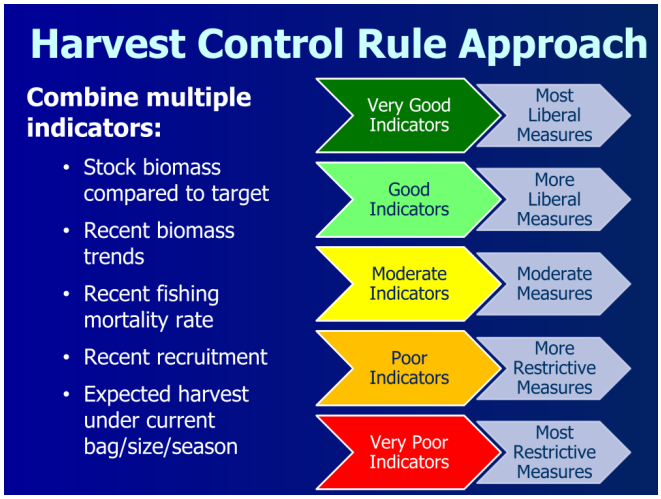
The goal of the proposed action is to establish a process for setting recreational bag/size/season limits that:

- Prevents overfishing
- Reflects stock status
- Appropriately accounts for uncertainty in the recreational data
- Takes into consideration angler preferences
- Provides an appropriate level of stability and predictability in changes from year-to-year

Ms. Beaty reviewed the current process for setting bag, size, and season limits. The changes under consideration through the HCR approach aim to rely less on a single comparison to MRIP catch estimates and instead more explicitly tie the selection of bag, size, and season limits to stock status. The HCR options under consideration would use various combinations of two or more of the following indicators: stock biomass compared to the target level; recent trends in biomass; recent fishing mortality rates (i.e., is overfishing occurring or not); recent recruitment estimates; and estimates of expected harvest under the current bag, size, and season limits.

The combination of metrics would then be grouped into categories or "bins," ranging from a very good combination of indicators to a very poor combination of indicators. Each bin would have a set of pre-assigned bag, size, and season limits. The bin associated with the most positive grouping of indicators would have the most liberal measures, and the bin associated with the worst indicators would have the most restrictive measures. The illustration on the following page is an example of the concept, but the details vary with the different specific options under consideration. Each time managers get updated information for the indicators, they would reassess the combination of indicators, determine the appropriate bin, and implement the pre-determined measures associated with that bin.

MAFMC and ASMFC are supporting the development of new recreational fishery models for these species




to better predict future harvest under different bag, size, and season limits. The models would also better account for stock status and changes in angler effort when making those predictions. Stakeholder input will also be very important in selecting the appropriate measures. For example, the models could suggest that 10 different combinations of measures could be appropriate for a given bin, and stakeholder input could help managers select the preferred measures.

### Mike Burner

Mike Burner is the Deputy Director of the Pacific Fishery Management Council. He provided a case study of how its region rebuilt groundfish stocks and fisheries while balancing conservation and fishing opportunities. The Council has rebuilt nine rockfish species. Mr. Burner used bocaccio as an example of rebuilding, where catch was not maximized during rebuilding, but fishing opportunities were provided that minimized release mortalities.

After the stock was declared overfished in 2000, there were several options for rebuilding on different timelines. The target and threshold allowed some flexibility to consider community impacts, economics, tradeoffs, and access to healthy stocks. The fishery was successfully rebuilt in 2017, earlier than forecasted (in 2026). Once the target was set, the Council selected the ACLs.

To achieve avoidance and reduce release mortality, but not exceed these ACLs, the Council took a variety of management approaches, including seasonal closures and depth-limit restrictions of areas with high bocaccio concentrations. Enforceability was important, as was in-season management and continuous catch monitoring. Dockside monitoring gave them real-time information to consider in management.

In order to minimize release mortality of a deep-water species, the Council required descending devices. The Council also developed a program where the fishery received credit for certain releases (through the dockside sampling program). In addition to this incentive, environmental factors also supported the recovery; cooler, highly productive waters were present during the end of the rebuilding period.

### Forrest Braden

Forrest Braden, Executive Director of the Southeast Alaska Guides Organization, shared 'Alaskan Perspectives on Recreational Catch Shares.' The Alaska halibut catch sharing plan is one of only a few in the nation for recreational fisheries, and includes roughly 1,000 for-hire vessels. They fish to an allocation, are managed by harvest measures, and do not have individual fishing quotas like the commercial sector.

The catch share plan only includes the recreational for-hire and commercial longline sector. Subsistence, private recreational catch, and commercial bycatch are taken off the initial allocation. This approach demonstrates management flexibility in that the recreational fishery does not need to expand harvest at higher abundance to provide satisfaction, but it may need relatively more allocation to maintain opportunities at lower abundances. For improved stability, managers should revisit static percentages assigned to recreational fisheries.

There are two tools that allow transfer of allocation from commercial to recreational under this catch

share plan. The first is the Guided Angler Fish (GAF) program that allows for leasing of quota from the commercial industry. In 2022, 74-lbs leased equates to one additional recreational halibut with no size limit. At the time of the Summit, the current lease rate was $6.50/lb, which is about $450 per fish. There was still demand for the resource at that price point.

The second tool is an industry-sponsored concept that is being utilized after 15-years of development, an RQE. While the North Pacific Fishery Management Council approved the RQE, there is no funding without formal Congressional authorization. This is a transfer of allocation from commercial to the RQE through market-based transactions with willing sellers and buyers. The base allocation plus the RQE holdings provides the total allocation, which is intended to relax harvest measures. There is a maximum annual transfer cap and maximum cumulative cap. A halibut stamp is required for each guided angler on a for-hire trip to fish halibut, with stamp revenue going towards RQE.

### Tony Friedrich

Tony Friedrich, Vice President and Policy Director of the American Saltwater Guides Association (ASGA), spoke to the organization's mission and perspectives on management, flexibility, and fishing opportunities. He noted that abundance equals opportunity, and that is what drives fishing trips (i.e., people want to fish when fish are around). The bulk of its membership is on the East Coast, where the decline of striped bass has significantly reduced fishing trips, and thus opportunities. Stock abundance drives the economy, and businesses cannot make critical decisions without more certainty and stability.

One example of management reform is the development of the HCRs by the MAFMC and ASMFC (spoken to by Ms. Beaty). He expressed that the HCR is a complex initiative that considers factors, including stock status and trends in the fishery, rather than solely comparing catch estimates against catch targets. It may offer some solutions to challenges currently facing the fishery; however, it must still effectively prevent overfishing, and needs to adhere to ACLs and AMs. The process to develop HCRs needs to include stakeholder involvement throughout.

He noted that recreational anglers have become incredibly efficient at harvesting fish, and this needs to be recognized. The ability to fish down a stock has never been as great with current technology, gear, and knowledge. ASGA as a whole is risk-averse, but they are open to other flexible management approaches, as long as they do not jeopardize stock stability. He noted the concern that as one species declines, effort shifts to other species, creating a boom-and-bust cycle of effort. Mr. Friedrich ended with some questions for the audience:

- What concerns do you have when hearing about flexibility in fisheries management?
- Are you comfortable with risk or are you more risk averse?
- What data can we provide to create more stability?
- How many anglers are actually out there?
- How do you incorporate human dimensions to better understand effort shifts?

### Discussion

A participant commented about his concerns around flexibility, noting that there is a disconnect between managers and stakeholders on the East Coast, with whether or how flexibility should be applied to certain species. A panelist expressed concerns about how HCRs will perform with declining stocks, and since the process is still in development and under review, it is not known. Another panelist clarified that while HCRs still have to prevent overfishing, they can incorporate more information that has potential to increase fishery stability and opportunity with more proactive measures. In the Gulf and South Atlantic, some species are not assessed, and there is very limited data on other species, which complicates


**Management panel discussion**
PHOTO BY TIM SARTWELL

applying flexibility to these species/stocks. A participant shared their perspective that flexibility could be applied more broadly by managers, but is limited by the availability of science and data. So, some objections to flexibility are based more in the availability of data and less about the overall approach. This premise led the South Atlantic and Gulf Councils to explore these issues in their Work Group.

A participant shared that generally speaking, they do not have enough information to determine whether the HCR approach will work. Stakeholders are being asked to select alternatives, but they do not know the outcomes of those alternatives. This approach is being addressed through a framework process that is shorter, and represents a paradigm shift in management that this participant thought should be moved forward as an FMP amendment, with broader opportunity for public input. Another panelist reiterated that any rules adopted under this HCR will meet MSA standards.

A participant offered a comment and question around the management flexibility process. Stock assessment scientists are using the information they are given; however, when this information does not capture the problem, how can the councils and agencies reconcile disparities and still address flexibility? They suggested adding a "pause" button on processes to allow managers and stakeholders to come together to address what has been identified as wrong, and build trust. A panelist offered that the councils also struggle with assessments, and there is frustration with the data they have for data-poor and data-moderate stock assessments. Catch-only stock assessments have their pitfalls, but it is also a struggle when assessing previously unassessed stocks with limited data, which results in limited flexibility in working with the assessment results. There is a need for an investigation of what the 'best scientific information available' means when there is a data paucity.

A commenter spoke to the need for science-based management in the HCR framework, with respect to the models not being ready at the same time the framework action is progressing. Several panelists offered responses. While the MAFMC and ASMFC

are developing these models, they are going to go through the process of developing appropriate measures for each bin and receiving stakeholder input. The measures can be revised once the models are available. When needed information is not available, the precautionary approach applies, and this is what MSA promotes. The less information available, the larger the buffers. The need for flexibility is greatest in the fully utilized fisheries (e.g., where there is full harvest of available quota).

A participant spoke to the importance of approaching flexibility in a way that it will not jeopardize stocks. Alternative management has been a part of the discussion around data; where can, and how can, the data be better used? MRIP could be used for long-term management and trends, but not, as currently configured, for fine-scale monitoring, which is where many challenges lie. Other metrics besides those produced by MRIP could be used to evaluate the status of the fishery and resources that provide a more holistic approach. A panelist referenced Chapter 4 of the NASEM report, which offers a number of different approaches for in-season monitoring approaches. These approaches could be used to improve precision in MRIP estimates, and bring in ancillary sources of data through a regional approach with MRIP implementation teams. In summary, the moderator stated that flexibility can mean many things to many people, but still has the same guardrails as MSA to guide alternative management measures outcomes.

## *Plenary Discussion: Management and Optimum Yield*

The moderator for this Session was Michael Ruccio, Division Chief, Office of Sustainable Fisheries, NOAA Fisheries. The format for this part of the Session was an introduction to the topic, followed by brief presentations, and an audience discussion. Both the presentations and discussions are summarized in this Section. The outcomes for this Session included:


**Optimum Yield plenary discussion**
PHOTO BY JESSICA JOYCE

1. Initiate discussions with the recreational community around OY
2. Shared understanding of OY in the statute and regulations
3. Gain perspectives of anglers and managers on OY, while learning about human dimension aspects

### Marian Macpherson

Marian Macpherson, Management and Program Analyst, Office of Sustainable Fisheries, NOAA Fisheries, provided an overview of the 'OY Requirements in the MSA: balancing competing goals and objectives.' She started by referencing the MSA NS 1 provisions for OY, "The determination of OY is a decisional mechanism for resolving the MSA's objectives, achieving a fishery management plan's objectives, and balancing the various interests that comprise the greatest overall benefits to the Nation" 50 CFR 600.310(b)(2)(ii).

MSA defines OY using several terms and approaches to achieve the greatest benefit to the nation. The values to consider include food production, recreational opportunities, and ecosystems. Along these lines, fisheries must be managed to achieve

OY, which is based on the maximum sustainable yield (MSY) as reduced by economic, social, and ecological (ESE) factors. NS 1 provides further guidance, and includes a mandate to prevent overfishing while achieving, on a continuing basis, the OY, from each fishery. FMPs are the vehicles that address all of these requirements, and must specify MSY and OY, prevent overfishing and rebuild overfished fisheries, and establish ACLs and AMs.

The regulatory guidance defines MSY as a long-term average, and therefore OY, which is derived from MSY, is also typically a long-term average. In contrast, the MSA's limits pertaining to ACLs and AMs are typically annual constraints, and the focus on complying with annual limits can make it challenging to focus on longer-term OY targets. While there are flexibilities to utilize tools like 3-year rolling averages to monitor for overfishing, various types of AMs, and phased in reductions; there are also annual constraints. Ms. Macpherson's presentation focused on links to FMP objectives and the "decisional mechanism" for determining the greatest benefit to the nation.

The NS 1 guidelines explain how to consider the values and ESE factors described above, and specifically mentions enjoyment for recreational fishing and non-consumptive uses. The documentation and process of OY assessment should:

- Summarize the information considered
- Document how "greatest benefits" were determined
- Review on a continuing basis

Councils have used several different approaches in their FMPs for considering the ESE values, including:

- ESEs are considered throughout the public process for development of FMPs/amendments, and OY is specified within the FMP or amendment.
- The FMP establishes default control rules, but reference points, including OY, are reviewed through a public process for setting specifications.
- OY is specified through the stock assessment process via a control rule that buffers down from MSY.

The key take-aways included: the MSA sets up the process for determining OY as a mechanism for balancing competing interests and values through the council process; managers must understand the "what" needs to be considered (consideration of recreational interests); identify the "how" (process to consider input and integrate OY in FMPs); and as the fishery evolves over time, regularly review how the FMP characterizes stakeholder objectives and how the expression of OY reflects those objectives.

### Dr. John Froeschke

Dr. John Froeschke, Deputy Director of the Gulf of Mexico Fishery Management Council, spoke about 'Is OY used in management?' His assessment was, overall, yes, but not how most people think.

OY is derived from MSY, which is a value that can be calculated. OY is less than MSY, but there is no specific formula; it is based on people's judgment of value. Mixed-use fisheries equate to wide perspectives of what that value might be. In terms of application in the Gulf of Mexico, there is a contrast between the ACLs, and long-term MSY and OY values. Councils spend a lot of time setting ACLs and AMs (if ACLs are exceeded), monitoring compliance, and developing rebuilding plans. One challenge is the assumption that if ACLs are achieved year after year, it would eventually lead to achieving OY, but that is not necessarily correct. Another challenge is how this is communicated to the public. The Gulf Council has developed infographics and videos to help communicate their specification setting processes.

There is a staff capacity issue with the amount of time councils spend in the required annual specification setting process and finding time to assess what stakeholders value as part of OY, to integrate into management. Desirability of particular fisheries over others is also part of that consideration. Ecosystem

management also further complicates challenges with OY, with regards to species at various trophic levels that would affect OY considerations.

### Mike Leonard

Mike Leonard is the Vice President of Government Affairs for the ASA. He highlighted a distinction between recreational and commercial fishers. In many commercial fisheries, they are generally seeking to maximize harvest, and MSY and OY are going to be close. Recreational fisheries sometimes focus on maximizing harvest and sometimes it is about maximizing abundance/encounters and fishing opportunities.

MSA and the National Standards specify that setting catch limits below MSY is allowable when other factors are considered. However, Mr. Leonard believes this has not been put into practice by most councils. A review and analysis of the use of OY in U.S. fisheries management found that current ACL and OY specification processes rarely account for social and economic factors, or ecosystem considerations, and if they do, it is on an ad-hoc, species-specific basis.

Catch and release is being viewed as underutilizing the resource just because they are catching below the ACLs. This may drive a desire to transfer allocation. However, there are different motivations within and across fisheries that should be considered. ASA supports the NASEM recommendation to convene stakeholders around OY; although there is concern with having enough data to drive the decisions, and specifically the socioeconomic data.

### Scott Hickman

Captain Scott Hickman is the owner of Circle H Outfitters and founding board member of the Charter Fishermen's Association in Texas. Captain Hickman started by identifying the need to start addressing shifting stocks and other issues caused by climate change. The Gulf Council's FEP process will be important, as well as mapping out future possibilities.

In order to apply OY, better data collection systems are needed. There is the potential for a national registry and/or other tools akin to a duck hunting stamp, endorsements, or licenses. This will help define the universe of private recreational anglers.

Similar to commercial fisheries and some for-hire vessels, Mr. Hickman believed a limited access program for private recreational anglers would help address the increasing number of anglers. The Gulf of Mexico's limited access program helped develop a robust data collection system. OY can work, but only if managers first identify the universe of anglers, forecast growth, and constrain that growth.

### Dr. Jorge Holzer

Dr. Jorge Holzer, Associate Professor in the Department of Agriculture and Resource Economics at the University of Maryland, spoke about the challenges with OY.

Dr. Holzer began with a general statement that managers should focus less on OY as a quantity and more as a process. OY should be adjusted by adopting management that takes anglers' preferences into account. First, the desired quality of a fishery should be determined, and then the quantity.

To determine OY, there is a need to understand anglers' preferences on:

- What determines the quality of trips (and by type of angler), and the importance of the number of fish caught?
- What are the tradeoffs anglers face in their choice of when or where to go fishing?
- Are the regulations (e.g., bag, size, or season limits) just restrictions or do they convey additional information?
- Does trip quality depend on the type of angler (e.g., catch-and-release vs. home consumption)?

Economists can use bioeconomic models to help incorporate this information into council decision making. However, it is not easy to determine anglers'

preferences. Focus groups and design surveys are tools to evaluate behaviors. These help economists to understand motivations and preferences (assessment of values). There is a need to assess which anglers catch what and when over the season (sort of values). Time dimensions also have to be considered: how does the fishing experience, partly determined by regulations, impact participation over time (if that is a policy goal)?

## Discussion

A participant commented on the differences between intrinsic values for the recreational fishery that cannot be translated into pounds, which are difficult to compare against the commercial fishery that has a specific dollar value per pound of fish. To address this, more socioeconomic data needs to be collected on the value of a fish, but the question remains around how that can be quantified so apples can be compared to apples. A panelist responded that the common metric is dollars, and it is evaluated by 'willingness to pay' for a fishing trip and harvest of a fish, versus the commercial price of that species.

Another participant offered a perspective on the public and private line with recreational fishing, which is a fine line. In waterfowl hunting, there is no allocation in hunting; there is no set difference for a shore versus a lodge hunter. He referenced Amendment 6 to the Interstate FMP for Atlantic Striped Bass, and the perceived inequity between recreational sectors. There is an economic burden associated with maintaining for-hire business and vessels, which is generally recognized by managers, but management also needs to acknowledge the drivers and needs of private vessels. A participant responded that generally, it is the non-boat owning public that rely on for-hire services, many of whom may not have sufficient economic means to own a private vessel. Some participants stated that regulations should be fair and equitable across sectors. One example of this is sector separation for red snapper in the Gulf of Mexico, which kept the fishery open to the non-boat owning public.

On the topic of uncertainty in data, a participant referenced their frustration, and suggested building trust through communication and talking to fishing clubs. A parallel discussion followed around the recreational fishing community being resistant or reluctant to report data. A few examples of angler-reporting apps were shared to demonstrate whether these reporting opportunities are utilized by anglers.

**Summit participants**
PHOTO BY SEAN LAWLER

With respect to managing to OY, an audience member noted that they struggled to find examples of a mixed-use fishery where the recreational sector was allocated a higher proportion of the quota and is neither being overfished nor failing to meet rebuilding timelines. The speaker then commented that regular exceedance of recreational ACLs raised questions of how managers might constrain effort and rebuild a fishery, and suggested that exploring OY through an experimental fishing permit could address this. A participant commented that managers need to better understand catch by modes to be able to calculate OY, and underscored the importance of accurate MRIP data to meet this need.

In Rhode Island, one participant has worked to convince the state fisheries council to address OY. Intrinsic value of fisheries is extremely important, and relating this to dollars is important. The participant asked the panelists whether it is possible to assign an economic value to intrinsic values. A panelist clarified that the economic value/benefits are different than impacts. For example, if the cost of a project increases, net benefits or contribution to society decreases. Economic benefits (willingness to pay dollars) are the appropriate metric for allocation, where economic impacts are a metric for something else, like Gross Domestic Product.

## *Break-out Groups*

On Day Two, participants were randomly assigned to four break-out groups to discuss recreational management flexibility and OY, and share insights across regions. Each group had facilitators that led a discussion around a series of guiding questions:

1. What does successful management reform look like to you? How can that vision be achieved?
2. Has management flexibility been used in your region?
   a. Has it been successful? If not, what has limited its success?
3. What does OY look like for the recreational community in your region?
4. What are the next steps the angling community and management partners should consider to advance recreational fisheries management and consideration of recreational OY perspectives?

The outcomes for this part of the Session were:

1. Understand anglers' visions of management reform, implementation challenges, and needed actions
2. Understand anglers' perspectives of OY and how to advance its application as a tool to guide management

**Management break-out group**
PHOTO BY KELLY STOLL HESPEL

A summary of each break-out group is provided in this Section. The opinions and suggestions included in these summaries represent the participants in the break-out groups and not the Summit organizers, including the authors of this report.

### Group One

Group One discussed the economics of OY first. They felt there were no refined techniques to determine the scope of the economic impact of any fishery, especially those in the recreational sector. Attempting to define how far the economic impact of a fishery traveled inland (e.g., tackle shops, marinas, motels, gas stations, etc.) has proven challenging. While it is clearer in the commercial sector, there are no foolproof methods for determining what any one recreational fishery is worth or generates. There were varying levels of agreement within the Group around how to compare and utilize economic data for the recreational and commercial sectors.

Regarding management flexibility, the initial conversation focused on the definition of flexibility. The Group came to the consensus that "flexibility" is an extremely vague and broad term. What ensued was a conversation of individual states that successfully used flexibility within their region's FMPs. The Louisiana Creel program allowed for more accurate estimates of their offshore effort and catch through an endorsement, and was less restrained by data collected by MRIP. Florida is taking a similar approach with its reef fish survey.

Conservation equivalency has allowed for management flexibility between states. Rhode Island chose to use more restrictive size limits on its striped bass fishery to get their catch numbers in line with their FMP. New Jersey adopted a shortened season to achieve similar results. There was a perspective that these types of flexibility utilized by states must come with back-end AMs.

However, management flexibility is not always seen as a positive tool. On the West Coast, anglers expressed that they are feeling adversely affected by management flexibility measures. Copper rockfish stocks have made it virtually impossible for anglers to target any species of rockfish.

Other states are looking into different approaches to account for, and/or reduce discard mortality. The Gulf red snapper fishery was raised again, with regards to perceived discard mortality affecting the stock numbers. The South Atlantic Fishery Management Council is working on conservation credits for the required use of descending devices, which decrease the impacts of discard mortality.

On the topic of successful management reform, one of the first items raised was the concept of using species' biology to determine a time frame for rebuilding a stock, rather than simply the standard 10-year approach. For example, just a small fraction of dolphinfish (mahi mahi) will ever see their third or fourth birthday, while king mackerel and other species are much longer-lived fish. Management plans need to be tailored to what generates the most conservation impact for a particular species based on their biology.

Managing factors other than just overfishing was a discussion item as well. Striped bass, in many cases, are much more susceptible to habitat loss and water quality degradation, resulting in poor spawning success. In this case, addressing overfishing is just part of the issue in a larger ecosystem.

Finally, Group One discussed how management reform needs to incorporate better methods of data collection, especially data that is generated from stakeholders. Technology such as electronic logbooks allows for more timely and accurate monitoring of a fishery, regardless of locale, but the data generated has to be incorporated into stock assessments and actually used. Unfortunately, when stakeholders put time and effort into assisting with the process, and the data are not ultimately used, it only leads to distrust between anglers and managers.

### Group Two

Group Two started with a discussion around the elements of successful management. To some, the vision was fisheries being restored to their historical highs, and maintaining sustainable stocks, clean water, and healthy habitat. There was interest in taking the intrinsic value of recreational fishing into account, and assigning a quantifiable economic metric to monitor the health of the fishery. This information can build upon the basic fundamentals of fisheries management. There are differences between anglers that managers should consider. Some fish for food, some fish for sport, and equal access is needed for all anglers.

A discussion ensued about different avenues of flexibility, from fishing effort, opportunities, and the relationship to OY, to working towards stability and rolling over quota. Flexibility means very different things depending upon the region. Definitions of access mean different things to different people as well. Higher abundance may be some people's vision of access, and ability to harvest a fish may be important for another person's idea of access.

The Group also discussed the need for flexibility to allow measures to stay in place for longer periods of time. Participants commented that fixing data needs is expected to take a longer period of time, but felt that work towards a more responsive management system can begin now by utilizing new tools.

Successful management reform needs to account for diversity in the reasons why people go fishing in the first place. Managers should ask the angling public what their preferences are and what a successful trip means to them, and consider that when implementing measures. This is the micro-scale in trying to understand what OY means for that customer. Managers also need to consider the macro to scale this up and provide funding to support this level of socioeconomic data collection.

There are two things that participants felt are not discussed enough: habitat and clean water. With better habitat, spawning will be more successful. This core issue needs to be addressed to better incorporate ecological factors into OY.

Group Two next discussed how management flexibility has been applied in their region, and shared several examples of approaches that they considered successful. Examples ranged from expediting the rulemaking process for annual adjustments in the Alaskan halibut fishery, to a head boat collaborative program for red snapper and gag grouper in the Gulf, where state management flexibility was used. To some participants, success in management flexibility translates to fishing access and opportunity. In Alaska, the management reform measures that have worked include a measure for the recreational and commercial fisheries to transfer quota to each other to provide stability. They felt that if more of these progressive management regimes are to be adopted, managers will need to have the data to support that kind of reform.

Switching gears to what OY means for the recreational communities, Group Two started by discussing tradeoffs based on economic, social, and biological considerations. They felt that OY should incorporate the bigger picture, and that the current system of overfishing limits, ABCs, and ACLs does not always work. These measures should be considered as a starting place, although they may also be used in reverse. For example, participants suggested defining the desired outcomes, and then calculating the ACL to achieve those outcomes.

When discussing next steps to advance recreational fisheries management and consideration of recreational OY perspectives, there were several ideas exchanged: economic value of fish left in the water, understanding what satisfaction means for different stakeholders, what the values are for a particular fishery, and prioritizing spawning protections in management measures.

### Group Three

Group Three offered the following ideas around what successful management reform looks like:

- Healthy stocks
- Flexibility that maintains those healthy stocks within the constraints of MSA
- Performs well in a crisis (i.e., appropriate management measures at low abundance)
- Management that better aligns with what people are seeing on the water
- Reflective of current stock distributions
- Science-based management that includes climate change considerations
- Balance between not overfished, but also not 'underfished'
- Timely management – better decisions faster

Group Three shared examples of how management flexibility has been utilized in their regions, including successes and challenges. In the Gulf states, management flexibility has resulted in increased timeliness in regulations, more fishing days, states managing day-to-day; and has allowed for more access for more people. In Alaska, the GAF program only has one for-hire representative on the Council, although there is a committee that assesses how potential management measures may impact their business before making recommendations to the Council. The GAF program is evaluated every year to take this into account and consider different ways of achieving management goals.

One participant expressed concern that ASMFC conservation equivalency is a form of flexibility that is intended to address variability in states' needs, but can liberalize measures more than appropriate and may lead to overages. Some participants discussed how the MAFMC is exploring flexibility, but has strong sideboards for how far that flexibility can go. Whereas other participants perceived the ASMFC as having more discretion. Flexibility can come with additional

**Management break-out group**
PHOTO BY JESSICA JOYCE

responsibilities, which may include states requiring additional data reporting. In the South Atlantic, they grouped multiple species into a single ACL. The South Atlantic Council struggled because of a lack of data, although anglers may say it is successful because they have not triggered management changes.

Other examples of management flexibility include commercial state quotas and a trimester program for fluke and scup. The Group discussed a perception that a lower burden of proof is required to increase restrictions on a fishery, versus the burden of proof required to liberalize measures. A participant shared an example that the current management system works primarily for slow growing, long lived fish.

The language around discard mortalities and release survivability was seen as important, and anglers should strive to reduce the mortality of releases. The challenge is when high discard mortality constrains the available harvest. Anglers want access and opportunity, which is aligned with OY, but it is hard to pivot from the current mindset around MSY.

When discussing OY, Group Three acknowledged that it is hard to define because the answer is different for each fishery and varies by community. Generally, managers regulate fisheries by pounds, and should consider using numbers of fish for recreational

fisheries. The number of fish that are left in the water is also important. A discussion followed on various management measures, including catch targets and minimum sizes, and implications, including how these changes influence how anglers perceive a stock. Models are a decision support tool, but when they are not accurate, it is important to reach out to anglers to help understand why.

Participants discussed that OY in many FMPs is set equal to, or nearly equal to, MSY. There are some species (e.g., king mackerel) where the recreational community does not land their full quota; however, 'underfishing' can be seen as not achieving MSA requirements. The thresholds for MSY and/or OY are hard to reconcile if not well defined. Angler satisfaction is key to defining OY, and it is especially difficult to achieve in mixed-use fisheries where anglers value access, not necessarily a yield of a single species. OY needs to better encapsulate access and encounters, moving beyond a catch limit.

Group Three wrapped up its discussion with general ideas around the timeliness of management and willingness to change methodologies when they are not working. However, the fear of litigation leads to risk avoidance. The management system should consider expanding the focus of recreational reform to spatial or regional abundance changes, to better account for climate change impacts.

### Group Four

Group Four shared the following ideas around what successful management reform looks like:

- Flexibility was a big theme with discussions around the pros and cons.
- Improving state and federal cooperation and coordination; states can sometimes be more agile, but it is important to coordinate for success
- Fishing when and where anglers want to, as long as they are held accountable
- No overfishing, management tools that are enforceable, all needs are taken into account (harvest, catch, and release), accounting for differences across mode through specific regulations by mode
- Explore opportunities for charter boats to gather fishery-independent and -dependent data
- Addresses data constraints, especially management's use of the finer-scale MRIP data
- Improving data collection needs, especially for private anglers (e.g., West Coast salmon reporting on cell phones is required by law)
- Has a long-term plan for permitting to account for the universe of anglers
- Needs to be quantifiable; develop a vision first and then determine how to measure success within a timeline
- Review regulatory structure to see if existing tools are still warranted

Group Four had a brief discussion around the use of management flexibility in its region. In the Mid-Atlantic, there has been a decision to allow mortality to exceed the recreational harvest limit as long as the overall ABC has not been exceeded. Flexibility worked for black sea bass in the Mid-Atlantic for a few years before it was taken off the table.

On the topic of OY, Group Four expressed the desire to address it regionally to account for differences, rather than solely by species. There is a need to sit down and methodically walk through the NS 1 guidelines for a better understanding since there is no uniform guidance or definition of OY yet. However, more information is needed to assess OY and learn what all users value about recreational fishing. Right now, OY is generally characterized by words and qualitative judgements, and not values. For implementation, these concepts need to be converted into numbers of fish or dollars.

The following ideas were offered as next steps to advance recreational fisheries management and consideration of recreational OY perspectives:

- Need for data on valuing non-consumptive uses, like catch and release
- Need for funding to gather socioeconomic data in order to use OY in the right way
- Need to stop focusing on fishing mortality to achieve stock size, and instead focus on the greatest benefit to the country
- Develop regional guidance for councils on how to develop OY. They need concrete examples (nationally, for example, red crab, and perhaps internationally) because people are having a hard time determining what should be included in OY.

## *Session Summary*

Management flexibility means different things to different people. It also should ensure regional differences are taken into account when managing fisheries. Some stakeholders are concerned by the concept of flexibility, and feel there is not sufficient science or data to support the development of flexible management measures in certain fisheries. Others suggested there is a disconnect between managers and anglers in how flexibility is being applied. Regarding HCRs, some participants viewed current approaches to determining HCRs as a path forward. Others thought it was "putting the cart before the horse," by asking stakeholders for feedback before the models are developed and without knowing the outcomes of the various alternatives. A participant expressed uncertainty about the performance of HCRs with declining stocks. To address these challenges, the following suggestions were offered:

- Anglers should collaborate with NOAA Fisheries, regional councils and/or interstate commissions, and regional MRIP implementation teams.
- Review the role of the state natural resource agencies and their use of conservation equivalencies in adapting flexibility.
- Consider the use of electronic data collection to fill data gaps, and allow for a finer-scale or in-season catch monitoring.
- Utilize all available data sources, particularly in partnership with the recreational fishing community. This will build trust and in turn, confidence in management decisions.

Regarding OY, participants heard a lot about the value of a fish and the importance of socioeconomic data in the decision-making process. It is important to understand how different anglers value fish, what motivates anglers to choose certain trips, and whether quality or quantity is more important. Values can be intrinsic or monetary, and these differing interests need to be balanced. Also, managers need to consider that many anglers are interested in access and opportunity over catch and yield.

While the MSA defines OY, it does not include what specifically should be accounted for in determining OY, leaving its interpretation subjective. ESEs also need to be understood and better incorporated into management decisions such as harvest rules, or inter-/intra-sector harvest guidelines or allocations. However, it was noted that the councils have limited capacity to collect the requisite data and undergo a stakeholder-informed process to develop refined definitions of OY. There is also the difference in time scales and regulatory mandates around setting ACLs annually, which is misaligned with longer-term considerations inherent in OY and MSY. Many of these considerations circle back to the theme of needing more data and incorporating those data into the management process. The following suggestions were offered in response to these challenges:

- Convene stakeholders or utilize surveys to understand their preferences
- Determine how to translate intrinsic values into pounds or the dollar value of fish
- Expand a national registry to understand the universe of anglers
- Define OY at the regional level

# Closing Panel

Mr. Dunn moderated the Closing Panel, and he began by introducing the panelists who reflected on the Summit: Jenni Wallace, Acting Director, Office of Sustainable Fisheries, NOAA Fisheries; Dr. Evan Howell, Director, Office of Science and Technology, NOAA Fisheries; Andy Strelchek, Regional Administrator, Southeast Regional Office, NOAA Fisheries; Ryan Wulff, Assistant Regional Administrator, West Coast Regional Office, NOAA Fisheries; Dr. Robert Foy, Director, Alaska Fisheries Science Center, NOAA Fisheries; Kristen Koch, Director of Science and Research, Southwest Fisheries Science Center, NOAA Fisheries; and Robert Beal, Executive Director, ASMFC.

Mr. Dunn asked the panelists for general reflections to start.

Mr. Wulff opened with an acknowledgement of the differences and similarities between regions, and events like these that put things into perspective. The major themes put forward by the event were very timely. Regarding climate-ready fisheries and balancing ocean uses, the West Coast has a lot of momentum underway including scenario planning and priority initiatives in its FEP. There is an AOA on the West Coast, as well as lease call areas for wind. It was good to hear similar concerns around collecting baseline biological and socioeconomic data with respect to wind and aquaculture, and getting this information before construction and mitigation. Regarding data collection and management reform, he heard about certain gaps in West Coast assessments, which highlights the importance of fisheries-independent data and management flexibility.

Dr. Foy commented that there was a thread in the key topics, which was no different from large commercial fisheries all the way to the subsistence fisheries in Alaska. In defining resilience, he heard four definitions. There is a contrast between maintaining the status quo versus adapting. The perspectives are different among all groups. To be resilient, fisheries also need adequate allocation. Adaptation to change is needed to consider changes in stocks and equitable access. Participants discussed the value of recreational fish from various perspectives: money, culture, food, and experience. Weighing conservation versus risk is an ongoing process, and managers must balance the mandates while reducing risk. Climate change is going to accentuate all of the contrasts that have been discussed. This is


**Closing panel**
PHOTO BY KELLY STOLL HESPEL

the reason to come together and participate in the process.

Dr. Howell acknowledged MRIP was a topic of interest. People are scrutinizing the data, and ultimately NOAA understands it has to do better. How does science and management coalesce together so that it is possible to provide real-time data and make effective decisions? He heard there are concerns with using flexibility in management, although this approach can be used to shift baselines. The community needs transparency, credibility, trust, and flexibility. NOAA and its stakeholders need to close that credibility gap and continue the conversations. There is a need to come together to move towards more alignment in data between scientists and the angling community.

Mr. Strelchek noted that the recreational sector is incredibly diverse, which is important. OY and driving factors, including socioeconomic considerations, are underutilized in the council process. There is a need to talk about shifting baselines, climate, and effort increases. These themes tugged at all the other discussions with the understanding that effort and demand are growing in the sector. The Southeast is working on how to make management more nimble. Management is often slow to react to science and data, and there is interest in speeding up the science that informs the process, perhaps by relying on alternative sources. Data need to keep up with management, despite limited resources. There is no one-size-fits all approach. NOAA now has 28 recreational surveys. However, communication and outreach will be the key to doing this work effectively and building trust.

Ms. Koch commented that this work is complex, and that complexity will be increasing dramatically moving forward. She heard concerns about climate, but also opportunities for positive changes. The West Coast has an ecosystem science report on the state of the California current. This year, the report was a tale of three systems: 1) a terrestrial system on fire that resulted in habitat changes to salmon; 2) upwelled productive waters that resulted in positive fishery changes; and 3) the offshore Pacific marine heatwave that adversely affected fisheries.

There is a need to go back to state partners and local recreational anglers who are willing to engage in data collection. The discussion around OY highlighted the nuances across regions, and the importance of values around where and how anglers fish. The U.S. is still the gold standard for fisheries management around the world and should continue to be a leader. Complexity makes it challenging to communicate on the science-side, and NOAA needs to do a better job on this. COVID demonstrated the need for a variety of new data streams (after losing fishery-independent data) and partnerships to fill in the gaps.

Mr. Dunn asked the panelists to speak to opportunities. The Summit brought people together to advance opportunities in recreational stewardship.

Mr. Beal responded that there is not a roadmap for making recreational data better. Developing these ideas by breaking them down into smaller items can be helpful. He urged attendees not to forget what happened at the Summit, and to follow through with commitments, including timelines and steps. Data use and collection is one factor that can be changed, unlike challenges such as climate change. Understanding how fisheries are operating is manageable with the appropriate data, and it takes financial resources, but the people in the room can do that.

Mr. Foy called for stakeholders to participate, collaborate, and compromise, with a commitment to unity. The recreational community should define what data are needed, and how to prioritize these data collections. Another opportunity is around organizing to identify data sources, ensuring they are equitable and specific to each region. There are opportunities to build on, related to success stories, for example, scenario planning to consider how climate change

is impacting fisheries. It circles back to strategically thinking through what data need to be collected, prioritizing it, and how to get it into the hands of those that need to do the analysis.

Ms. Wallace highlighted the opportunity for additional education and outreach around scientific knowledge, and the need to continue learning from each other's successes. NOAA and participants should look at these opportunities. There is also a recognized need to increase the diversity of stakeholders having these conversations.

Mr. Dunn asked the panelists if they heard anything they did not expect.

Mr. Wulff expected to hear more about electronic reporting, outside of a break-out-group. He did not hear too much of it filtering through the discussions.

Dr. Howell did not expect to hear as much about the human dimensions and socioeconomics of the fishery. His break-out group discussed how to better assess the values of a fishery. It is a livelihood and used for sustenance, the values of which can be both direct or indirect. He sees an opportunity to continue these conversations.

Mr. Strelcheck commented that in the Southeast, they have maxed out the effectiveness of bag limits and seasons, and acknowledged that classic management is becoming more challenging. He expected to hear more about innovative management measures. The Southeast will be exploring how to convert discards and releases into landed catch. Current management measures are inefficient and are not achieving MSA goals around maximizing yield.

## Closing Remarks

Mr. Dunn offered reflections directly following the closing panel. He noted the clear need for flexibility in management. There are frustrations on the use of data, for example, data that are collected but does not fit into the assessment process, and its application (beyond the capacity of those data). He heard about gaps in fishery-independent data, and an interest for more fishery-dependent data. There is a need for better socioeconomic data, and data to better determine OY, particularly to follow the path laid by the NASEM recommendations. There was a clear articulation of management needing to recognize tradeoffs, and balance between risk and rewards. There was a call for leadership and guidance in addressing climate resilience, from governance and jurisdictional perspectives. The big wins will be when everyone comes together in the same direction.

Ms. Coit expressed her appreciation for the Summit organizers, NOAA, ASMFC, and consultants. She reiterated the importance of collaboration, roles of commissions/councils, conservation organizations, businesses, and writers, and the fact that everyone in attendance is accountable for following through on the takeaways from this Summit. One of her favorite quotes is, "when everything is said and done, a lot more is said than done." This dialogue needs to continue, and she is eager to get this important work done. It was a memorable experience to get together again in person.

# Appendices

5

# Appendix A:
# Summit Agenda and Steering Committee Members

2022 NATIONAL SALTWATER

# RECREATIONAL FISHERIES SUMMIT

# Agenda

March 29-30, 2022

Westin Crystal City
Arlington, Virginia

# 2022 NATIONAL SALTWATER RECREATIONAL FISHERIES SUMMIT

We are witnessing unprecedented changes to the ocean environment as we emerge from extraordinary circumstances brought on by a global pandemic. The challenges resulting from these parallel occurrences are exceptional and compound pre-existing issues. For recreational fisheries to thrive, we must come together with a common purpose. Recognizing this, the goals of the **2022 National Saltwater Recreational Fisheries Summit** include:

- Identify and investigate solutions to issues jointly identified as significant.
- Re-establish lines of communications that waned during the COVID-19 pandemic.
- Strengthen rapport and collaboration between the saltwater recreational fishing community, fishery managers, and scientists.
- Share knowledge and perspectives.

Each of the four sessions address these goals through presentations, expert panels, discussion, and break-out groups. The Summit organizers and members of the Steering Committee endeavored to include diverse speakers and panelists, both in geography and sector. In addition, breaks, meals, and the reception offer opportunities for connection and networking.

The anticipated overall **outcomes** for the Summit include:

1. A shared understanding of specific challenges, opportunities, and areas for collaboration.
2. Mutual commitments to work together on Summit outcomes and initiatives.
3. Identification of potential next steps to advance key issues.

## MONDAY, MARCH 28, 2022

5:00-7:00 p.m. **Registration** — **Jefferson Conference Room Atrium**
Check in early. *Please allow sufficient time to check in.*

## TUESDAY, MARCH 29, 2022

7:00 a.m. **Registration and Breakfast** — **Jefferson Conference Room Atrium**

8:00 a.m. **Opening Remarks*** — **Jefferson Conference Room**
Russell Dunn, *National Policy Advisory for Recreational Fisheries, NOAA Fisheries*
Jessica Gribbon Joyce, *Principal, Tidal Bay Consulting*

8:20 a.m. **Keynote Speakers***
Whit Fosburgh, *President and CEO, Theodore Roosevelt Conservation Partnership*
Don Graves, *Deputy Secretary of Commerce, Department of Commerce (Pre-recorded video)*
Janet Coit, Esq., *Assistant Administrator for Fisheries, NOAA Fisheries*



*Agenda items with an asterisk are plenary sessions that will be livestreamed

8:45 a.m. **Reflections Since the 2018 Summit and the Path Forward***
Russell Dunn, *National Policy Advisor for Recreational Fisheries, NOAA Fisheries*

9:15 a.m. **Break** **Jefferson Conference Room Atrium**

## Session I: Climate Resilient Fisheries

The plenary part of this session covers a range of topics, including: the state of science on changing climate and oceans; tools, investments, and the importance of habitat for climate-resilient fisheries; on the water perspectives from the recreational fishing community; and climate scenario planning. Following the presentations, there will be an opportunity for audience questions. The **outcomes** for this session are:

1. Share current climate work and knowledge.
2. Listen to climate observations, experiences, concerns, and priorities from the recreational fishing community.
3. Understand the recreational community's vision for climate resilient fisheries.
4. Identify activities/strategies to achieve the vision.

9:30 a.m. **Plenary — Presentations and Discussion*** **Jefferson Conference Room**

**MODERATOR**: Janet Coit, Esq.
*Assistant Administrator for Fisheries, NOAA Fisheries*

| | |
|---|---|
| Jon Hare, Ph.D. | *Science and Research Director, Northeast Fisheries Science Center, NOAA Fisheries* |
| Richard Heap | *Recreational Fisheries Advisor to several Federal and State Councils and Commissions; Port Commissioner (Oregon)* |
| David Sikorski | *Executive Director, Coastal Conservation Association - Maryland* |
| Carrie Selberg Robinson | *Director, Office of Habitat Conservation, NOAA Fisheries* |
| Kiley Dancy | *Fishery Management Specialist, Mid-Atlantic Fishery Management Council (MAFMC)* |

11:00 a.m. **Break-out Groups**
After brief instructions, attendees will relocate to their respective rooms.
Please attend the break-out group that corresponds to your region(s).

| | |
|---|---|
| Mid-Atlantic | Jefferson Room *right side, facing the front* |
| South Atlantic, Gulf Coast, and the Caribbean | Jefferson Room *left side, facing the front* |
| New England | Crystal V |
| Alaska, Hawaii, Guam and the Pacific Coast | Crystal VI |

12:00 p.m. **Lunch** **Jefferson Conference Room Atrium**

## Session II: Balancing Ocean Uses

In the presentation part of this session, we will share agency, industry, and anglers' perspectives on offshore wind energy and marine aquaculture. There will be an opportunity for audience questions to better understand the status of what is happening on the water, and an opportunity for managers to learn from angler's first-hand experiences. The **outcomes** for this session are:

1. Shared understanding of current activity and plans regarding offshore wind energy and marine aquaculture.
2. Listen to experiences, concerns, and needs from the recreational fishing community.

1:00 p.m. **Plenary — Presentations and Discussion*** **Jefferson Conference Room**

**MODERATOR**: Robert Beal
*Executive Director, Atlantic States Marine Fisheries Commission (ASMFC)*

| | |
|---|---|
| Brian Hooker | *Marine Biologist, Bureau of Ocean Energy Management (BOEM)* |
| Claire Richer | *Director, Offshore Wind, American Clean Power Association* |
| Danielle Blacklock | *Director, Office of Aquaculture, NOAA Fisheries* |
| Neil Sims | *Chief Executive Officer, Ocean Era* |
| Rick Bellavance | *President, Rhode Island Party and Charter Boat Association; Owner/ Operator, Priority Fishing Charters; NEFMC Member* |
| Capt. McGrew Rice | *Owner, Hooked on Kona Fishing Charters* |

2:30 p.m. **Break** **Jefferson Conference Room Atrium**

### Panel Discussion

The panel part of this session includes a facilitated discussion and Q & A with an expert panel of representatives from BOEM, NOAA Fisheries, the states, as well as anglers. The panelists will discuss having a voice in the process as these industries expand, maintaining fishing opportunities, and understanding potential impacts. There will be an opportunity for the audience to interact with the panelists. The **outcomes** for this session are:

1. Identify strategies for stakeholder involvement with issues coodinated by multiple agencies.
2. Identify strategies and actions to maintain sustainable fishing oppportunities.

2:45 p.m. **Plenary — Panel Discussion*** **Jefferson Conference Room**

**MODERATOR**: Robert Beal
*Executive Director, ASMFC*

| | |
|---|---|
| Brian Hooker | *Marine Biologist, BOEM* |
| Danielle Blacklock | *Director, Office of Aquaculture, NOAA Fisheries* |
| Marcos Hanke | *Council Chair, Caribbean Fishery Management Council* |
| Rick Bellavance | *Owner/Operator, Priority Fishing Charters* |
| Jason McNamee, Ph.D. | *Deputy Director for Natural Resources, Rhode Island Department of Environmental Management* |
| Caren Braby, Ph.D. | *Marine Resources Program Manager, OR Department of Fish and Wildlife* |

3:45 p.m. **Report from Break-out Groups***
We will hear from the rapporteurs from the climate-resilient fisheries break-out groups. Building on these recommendations and others from the balancing ocean uses session, we will facilitate a discussion around shared and cohesive next steps.

Jessica Gribbon Joyce, *Tidal Bay Consulting*
Break-out Group Rapporteurs

4:45 p.m. **Closing Remarks**
Tim Sartwell, *Recreational Fisheries Specialist, NOAA Fisheries*
Jessica Gribbon Joyce, *Tidal Bay Consulting*



**Agenda items with an asterisk are plenary sessions that will be livestreamed*

5:00 p.m. **Adjourn**

6:00 p.m. **Reception** — **Jefferson Conference Room Atrium**
*Join Summit attendees in the atrium for appetizers and a cash bar.*

## WEDNESDAY, MARCH 30, 2022

7:30 a.m. **Breakfast and Registration** — **Jefferson Conference Room Atrium**

8:00 a.m. **Opening Remarks*** — **Jefferson Conference Room**
Tina Berger, *Director of Communications, ASMFC*
Jessica Gribbon Joyce, *Principal, Tidal Bay Consulting*

8:15 a.m. **Guest Speaker***
Spud Woodward, *ASMFC Chair*

### Session III: Data Collection and Use

The presentation part of the data session will provide an overview of marine recreational fishery data collection, stock assessment, and catch monitoring processes, as well as the role that uncertainty plays in them. There will be brief presentations on each topic, followed by an opportunity for audience questions. The outcomes for this session are:

1. Improved understanding of current data collection, stock assessment, and catch monitoring processes.
2. Shared understanding of the data sources, appropriate uses of recreational data and their limitations, and role of uncertainty.

8:30 a.m. **Plenary — Presentations and Discussion*** — **Jefferson Conference Room**

**MODERATOR**: Evan Howell, Ph.D.
*Director, Office of Science and Technology, NOAA Fisheries*

| | |
|---|---|
| Richard Cody, Ph.D. | Data Collection<br>*Chief - Fisheries Statistics Division, Office of Science and Technology, NOAA Fisheries* |
| Katie Drew, Ph.D. | Stock Assessments<br>*Stock Assessment Team Lead, ASMFC* |
| Luiz Barbieri, Ph.D. | Catch Monitoring<br>*Program Administrator, Fish and Wildlife Research Institute (FWRI), Florida Fish and Wildlife Conservation Commission (FWC)* |

9:45 a.m. **Break** — **Jefferson Conference Room Atrium**

### Panel Discussion

The panel discussion part of the data session will cover strategies for improving public confidence and participation in recreational fisheries data and data collection, as well as the potential roles of government, stakeholders, and new technologies in doing so. There will be an opportunity for the audience to interact with the panelists. The **outcome** for this session is:

1. Identify pathways to improving confidence in data, participation, and the potential role of outreach and electronic tecnology in doing so.

10:00 a.m. **Plenary — Panel Discussion*** **Jefferson Conference Room**

**MODERATOR**: Dave Donaldson
*Executive Director, Gulf States Marine Fisheries Commission*

| | |
|---|---|
| Richard Cody, Ph.D. | *Chief - Fishery Statistics Division, Office of Science and Techology, NOAA Fisheries* |
| Katie Drew, Ph.D. | *Stock Assessment Team Leader, ASMFC* |
| Luiz Barbieri, Ph.D. | *Program Administrator, FWRI, FWC* |
| Joshua DeMello | *Fishery Analyst, Western Pacific Fishery Management Council* |
| Kenneth Haddad | *Marine Fisheries Advisor, American Sportfishing Association* |

## Session IV: Management Reform, Flexibility and Optimum Yield

The first part of the management session will provide an overview of ongoing efforts to develop and apply management flexibility in the context of improving fishing opportunities and seeking to better understand the recreational fishing community's vision for management reform/flexibility. There will be an overview of the recent National Academy of Sciences review on the Marine Recreational Information Program (MRIP), followed by lightening talks, and an opportunity for audience questions. The **outcomes** for this session are:

1. Shared understanding of existing flexibilities and ongoing work to develop/utilize management flexibility.
2. Understanding constituent vision for management reform/flexibility.

11:15 a.m. **Plenary — Presentations and Discussion*** **Jefferson Conference Room**

**MODERATOR**: Barry Thom
*Executive Director, Pacific States Marine Fisheries Commission*

| | |
|---|---|
| Michelle Duval | *Principal, Mellivora Consulting; Member, National Academy of Sciences Committee on Recreational Fisheries Data and Management* |
| John Carmichael | *Executive Director, South Atlantic Fishery Management Council* |
| Julia Beaty | *Fishery Management Specialist, MAFMC* |
| Mike Burner | *Deputy Director, Pacific Fishery Management Council* |
| Forrest Braden | *Executive Director, Southeast Alaska Guides Organization* |
| Tony Friedrich | *Vice President, American Saltwater Guides Association* |

12:30 p.m. **Lunch**

The second part of the management session is intended to develop a common understanding of optimum yield (OY) as defined in statute, regulation, and in practice. We will then learn about anglers' perspectives on OY, human dimension aspects in considering OY, and the potential for OY to guide management from the Council/Commission perspective. After the presentations, there will be an opportunity for audience questions. The **outcomes** for this session are:

1. Initiate discussions with the recreational community around OY.
2. Shared understanding of OY in the statute and regulations.
3. Gain perspectives of anglers and managers on OY, while learning about human dimension aspects.



**Agenda items with an asterisk are plenary sessions that will be livestreamed*

1:30 p.m. **Plenary — Presentations and Discussion*** **Jefferson Conference Room**

**MODERATOR**: Michael Ruccio
*Division Chief, Office of Sustainable Fisheries, NOAA Fisheries*

| | |
|---|---|
| Marian Macpherson | *Management and Program Analyst, Office of Sustainable Fisheries, NOAA Fisheries* |
| John Froeschke, Ph.D. | *Deputy Director, Gulf of Mexico Fishery Management Council* |
| Mike Leonard | *Vice President of Government Affairs, American Sportfishing Association* |
| Capt. Scott Hickman | *Owner, Circle H Outfitters; Charter Fishermen's Association* |
| Jorge Holzer, Ph.D. | *Associate Professor, Department of Agricultural and Resource Economics, University of Maryland* |

2:30 p.m. **Break-out Groups**
Small groups discuss recreational management flexibility and OY, sharing insights across regions. The **outcomes** for this session are:

1. Understand anglers' visions of management reform, implementation challenges, and needed actions.
2. Understand anglers' perspectives of OY and how to advance its application as a tool to guide management.

Group 1 Jefferson Room *right side, facing the front*
Group 2 Jefferson Room *left side, facing the front*
Group 3 *Crystal V*
Group 4 *Crystal VI*

3:30 p.m. **Break** **Jefferson Conference Room Atrium**

3:45 p.m. **Report from Break-out Groups***
We will hear from the rapporteurs from the management reform/flexibility, and OY break-out groups. Building on these recommendations, we will facilitate a discussion around shared and cohesive next steps.

4:15 p.m. **Closing Panel*** **Jefferson Conference Room**
This panel of regional leadership from Commissions and NOAA Fisheries will share reflections and next steps.

**MODERATOR**: Russell Dunn, *NOAA Fisheries*

| | |
|---|---|
| Jenni Wallace | *Director, Office of Sustainable Fisheries, NOAA Fisheries* |
| Evan Howell, Ph.D. | *Director, Office of Science and Technology, NOAA Fisheries* |
| Andy Strelcheck | *Regional Administrator, Southeast Regional Office, NOAA Fisheries* |
| Ryan Wulff | *Assistant Regional Administrator, West Coast Regional Office, NOAA Fisheries* |
| Robert Foy, Ph.D. | *Director, Alaska Fisheries Science Center, NOAA* |
| Kristen Koch | *Director of Science & Research, Southwest Fisheries Science Center, NOAA Fisheries* |
| Robert Beal | *Executive Director, ASMFC* |

5:00 p.m. **Adjourn**

2022 NATIONAL SALTWATER RECREATIONAL FISHERIES SUMMIT

## Steering Committee Members

**Trip Aukeman**, FL
*Coastal Conservation Association Florida*

**Luiz Barbieri**, FL
*Florida Fish and Wildlife Conservation Commission*

**Lucas Bissett**, National / Gulf
*American Fly-Fishing Trade Association*

**Kevin Blinkoff**, NE-MA
*On-the-Water*

**Forrest Braden**, AK
Southeast Alaska Guides Organization

**Chris Burrows**, NC
*Carolina Sportsman MagazIne, SAFMC Dolphin and Wahoo Advisory Panel*

**Jamie Diamond**, CA
Stardust Charters

**Willy Goldsmith**, National / NE-Mid-Atlantic
*American Saltwater Guides Association*

**Richard Heap,** Pacific NW
*Pacific Fishery Management Council - Salmon Advisory Subpanel, Oregon Ocean Policy Advisory Council, and Port of Brookings Harbor Commission*

**Mike Leonard**, National
American Sportfishing Association

**Matt Ramsey,** HI
*Conservancy International, recreational representative on Western Pacific Fishery Management Council*

**Charlie Robertson**, Gulf of Mexico
*Gulf States Marine Fisheries Commission*

**David Sikorski**, MD
Coastal Conservation Association Maryland

# Appendix B:
# Speaker and Panelist Biographies

2022 NATIONAL SALTWATER

# RECREATIONAL FISHERIES SUMMIT

## Speaker & Panelist Biographies

### LUIZ BARBIERI

Luiz Barbieri, Ph.D., directs the Marine Fisheries Research Program for the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute, based out of St. Petersburg, FL. He has an extensive background in marine fisheries science and policy and serves as a key representative on several scientific advisory panels and committees including the Gulf States Marine Fisheries Commission, the Scientific and Statistical Committee (SSC) for the Gulf of Mexico Fishery Management Council, and as a senior advisor for the Fisheries Leadership & Sustainability Forum for the Nicholas Institute for Environmental Policy Solutions at Duke University. Dr. Barbieri served on two National Academies of Science studies on recreational fisheries survey methods and the use of recreational fisheries data for assessment and management. He holds a Bachelor of Science in Biology, a Master of Science in Biological Oceanography, and a Ph.D. in Marine Fisheries Science.

### ROBERT E. BEAL

Robert E. Beal has been the Executive Director of the Atlantic States Marine Fisheries Commission since 2012. He has been with the Commission for almost 25 years and served as the Director of the Interstate Fisheries Management Program before his current role. As Executive Director, Mr. Beal guides the Commission's day-to-day operations and provides leadership to all of its programs – Interstate Fisheries Management, Science, Communications, Atlantic Coastal Cooperative Statistics Program, and Finance and Administration. He represents the Commission at meetings of the New England, Mid-Atlantic and South Atlantic Regional Fishery Management Councils and ensures Congressional support for the Commission and its member states. Mr. Beal has led the Commission's efforts to strengthen the states' partnerships with the National Marine Fisheries Service and other Interstate Commissions to garner support for issues of mutual interest. Bob earned his undergraduate degree in Landscape Architecture from the University of Maryland in 1992 and graduated with a Master of Science from Duke University in Fisheries, Coastal Environmental Management in 1995.

### JULIA BEATY

Julia Beaty has been a Fishery Management Specialist with the Mid-Atlantic Fishery Management Council (MAFMC) since 2015. She is the MAFMC staff lead for the Recreational Reform Initiative, a project of MAFMC and the Atlantic States Marine Fisheries Commission, which considers improvements to management of the recreational summer flounder, scup, black sea bass, and bluefish fisheries. She is also the staff lead for black sea bass, chub mackerel, and offshore wind energy development. She holds a Bachelor of Science in Biology from Smith College, as well as master's degrees in both marine policy and marine biology from the University of Maine.

### RICK BELLAVANCE

Captain Rick Bellavance is a lifelong Rhode Island resident and has been fishing recreationally and commercially for over 35 years. He owns and operates Priority Fishing Charters based in Point Judith. Capt. Bellavance is president of the Rhode Island Party and Charter Boat Association, which is a group of charter and party boat operators who work to promote the for-hire industry and collaborate with regulators and fishermen to develop sustainable and profitable fishery management practices for this industry. Capt. Bellavance is the vice-chair of the New England Fishery Management Council (NEFMC) and is a NEFMC liaison to the Mid-Atlantic Fishery Management Council and to the International Commission for the Conservation of Atlantic Tunas. He also serves on NOAA's Highly Migratory Species Advisory Panel and the South Atlantic Fishery Management Council's Dolphin/Wahoo Committee. He is the for-hire representative on the R.I. Coastal Resources Management Council's Fisherman's Advisory Board. He served as the fisheries representative for the Block Island Wind Farm and remains engaged in the state and federal permitting processes for renewable offshore energy development. He is a graduate of the Gulf of Maine Research Institute Marine Resources Education Program and earned his 100 Ton USCG Masters License in 1994.

### DANIELLE BLACKLOCK

Danielle Blacklock is the Director of NOAA's Office of Aquaculture, where she oversees the aquaculture component of NOAA's sustainable seafood portfolio. She is responsible for providing the strategic vision for developing a strong marine aquaculture industry in the United States. Specifically, she leads the office's work on several distinct priority areas including regulation and policy, science, outreach, and international activities in support of U.S. aquaculture. Ms. Blacklock came to this position after serving in various roles within the agency for the past 10 years. Most recently, she served as a Senior Policy Advisor for Aquaculture. Prior to that, she was the Senior Advisor for Operations at Fisheries, providing advice and support to the Deputy Assistant Administrator for Operations. Ms. Blacklock received her master's degree in marine affairs from the University of Washington, and her bachelor's degree in marine science from the University of Maine.

### CAREN BRABY

Caren Braby, Ph.D., is the Manager of the Marine Resources Program for the Oregon Department of Fish and Wildlife, providing strategic leadership on 'all things ocean' within the state of Oregon and across the West Coast. Dr. Braby and her staff build partnerships with industry, academic researchers, tribal governments, federal & state agencies, stakeholders, and elected officials to collaboratively define and achieve both economic and ecosystem resilience. Her work is grounded in both fishery and ecosystem stewardship, with particular focus on changing ocean conditions (including ocean acidification and hypoxia). As co-chair of Oregon's legislatively created Ocean Acidification and Hypoxia Coordinating Council and a member of the Pacific Fisheries Management Council, Dr. Braby is helping West Coast communities and fisheries develop successful strategies to adapt to and mitigate ocean change. She received her doctorate from Stanford University's Hopkins Marine Station and has conducted scientific research from estuaries to deep sea hydrothermal vents in the Pacific Ocean. Her career began by exploring West Coast tidepools, from the time she could first walk.

### FORREST BRADEN

Forrest Braden has participated professionally in the recreational fishing industry since 1985, first in warm water fisheries off the coasts of California and Mexico and shifting to Alaska's cold water sport fisheries in 1995. He is the founder of True North Sport Fishing, which has offered guided trips for salmon and halibut in Southeast Alaska for 25 years. He is on the board of directors for the Southeast Alaska Guides Organization and has served as the Executive Director since 1998. In this position, he works with state and federal management agencies for the betterment of sport fishing regulation. His duties include fishery management proposal work, consultation, and industry advocacy. He serves on the International Pacific Halibut Commission's Management Strategy Advisory Board as the Alaska sport fishing representative, providing recreational perspectives in the continuing improvement of halibut fishery management. Mr. Braden participated in the development of the Recreational Quota Entity program designed to allow transfer of Pacific halibut allocation between the commercial and guided recreational fisheries through quota share purchase, and currently serves as an officer in the program's administration.

### MIKE BURNER

Mike Burner is the Deputy Director of the Pacific Fishery Management Council (PFMC). Mr. Burner started with PFMC in 2002 and has served as a staff officer for groundfish, coastal pelagic species, ecosystem-based management, and salmon. He spent the first 10 years of his career working on Columbia River and ocean salmon fishery management issues with the Oregon Department of Fish and Wildlife. He has a Bachelor of Science in Biology from Lawrence University and completed the Boston University Marine Program. Mr. Burner and his wife, Lisa, live in Oregon wine country outside of Portland and produce three wine varietals under their own label.

### JOHN CARMICHAEL

John Carmichael is the Executive Director of the South Atlantic Fishery Management Council, where he has worked since 2003. Prior to becoming the Executive Director in 2020, he served as the Program Manager for the SouthEast Data, Assessment, and Review (SEDAR) process and then as the Deputy Director for Science. Previous positions he held included serving as a stock assessment scientist with the North Carolina Division of Marine Fisheries (where he worked with striped bass, red drum, and river herring), a Fishery Management Plan coordinator with the Atlantic States Marine Fisheries Commission, and a biologist with the Maryland Department of Natural Resources. He received a Bachelor of Science in Fisheries and Wildlife from Virginia Tech and a Master of Science in Zoology from North Carolina State University.

### RICHARD CODY

Dr. Richard Cody, Ph.D., spent more than 18 years with the Florida Fish and Wildlife Conservation Commission's (FWC) Marine Fisheries Research Section. While there, his involvement with the State of Florida's commercial and recreational fisheries-dependent monitoring programs spanned administrative and research roles. His association with NOAA Fisheries' Recreational Fisheries Information Program began in 1998 when Florida began conducting the Marine Recreational Fisheries Statistics Survey (MRFSS) and continued through the development of the Marine Recreational Information Program (MRIP). He has served on various commercial and recreational committees of the Atlantic Coastal Cooperative Statistics Program and the Gulf States Marine Fisheries Commission, as well as MRIP workgroups involved in the development of survey methods. In 2017, he left FWC to work more directly with MRIP in support of program management priorities. In 2020, he accepted the Division Chief position for Fisheries Statistics within the Office of Science and Technology, where he oversees the Commercial and Recreational Branches. Dr. Cody was born in Ireland and completed his undergraduate training at the University College Dublin. He received his master's degree from the University of West Florida and completed his doctoral studies at Louisiana State University on the ecology of intertidal fishes of the Canary Islands.

### JANET COIT

Janet Coit was named the new Assistant Administrator for NOAA Fisheries in June 2021. She has worked on environmental issues, natural resource management, and stewardship for more than 30 years. Ms. Coit directed the Rhode Island Department of Environmental Management (DEM) for more than 10 years, where she focused on improving natural resource conservation, promoting locally grown food (including seafood), and addressing the climate crisis. She also chaired Rhode Island's Seafood Marketing Collaborative and worked with stakeholders to promote supplying seafood locally and abroad. Before joining Rhode Island DEM in 2011, Ms. Coit was the state director for The Nature Conservancy in Rhode Island for 10 years. Prior to that, she was counsel and environmental coordinator in the Providence office of the late Senator John Chafee and, subsequently, former Senator Lincoln Chafee. Coit also served as counsel to the U.S. Senate Committee on the Environment and Public Works, where she advised on national environmental policy. Ms. Coit graduated magna cum laude from Dartmouth College and holds a law degree from Stanford Law School.

### KILEY DANCY

Kiley Dancy is a Fishery Management Specialist at the Mid-Atlantic Fishery Management Council (MAFMC), serving as the Fishery Management Plan coordinator for summer flounder since 2012. Ms. Dancy is also the MAFMC staff lead on the East Coast Climate Change Scenario Planning Initiative, leading a core team of representatives from East Coast fishery management organizations to explore jurisdictional and governance issues related to climate change and shifting fishery stocks. Originally from Michigan, Ms. Dancy received a Bachelor of Science in Biology from the University of Michigan and a Master of Environmental Management from Duke University. She lives in Delaware, where she enjoys spending time outside with her husband and daughter.

### JOSHUA DEMELLO

Joshua DeMello grew up on the island of Oahu in a family of watermen, tagging along on spearfishing and outrigger canoe paddling trips between islands from a young age. This early introduction to the ocean, along with a need to ensure that he could continue to pass on this knowledge and carry on these traditions, led him to work with fishing communities to continue the sustainability of coral reef, precious coral, and crustacean fisheries. He has worked for nearly 20 years with fishing communities in Hawaii, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. This includes over 10 years working as a Fishery Analyst with the Marine Recreational Information Program's Operations Team and as the Non-Commercial Fisheries Coordinator for the Western Pacific Regional Fishery Management Council. Mr. DeMello built up his knowledge at the University of Hawaii at Hilo, where he received a degree in marine science, and at the University of Southern California, where he received a Master of Public Administration degree. He continues his family's traditions of spearfishing, surfing, canoe paddling, and building papio boards with his wife and two teenage sons.

### DAVE DONALDSON

Dave Donaldson has been working for the Gulf States Marine Fisheries Commission (GSMFC) for over 30 years. During his tenure, first as the Assistant Director and then as Executive Director, he has dealt with a variety of fisheries issues, including both fishery-independent (via the Southeast Area Monitoring and Assessment Program) and fishery-dependent (via the Fisheries Information Network) data collection and management tasks. The GSMFC's regional perspective has allowed Mr. Donaldson to interact and engage with a wide diversity of people, from recreational and commercial industry folks to state and federal personnel throughout the Gulf of Mexico, Atlantic, and Pacific regions, as well as U.S. Congressmen and their staffers. Because of this perspective, he has developed a unique outlook on the numerous fisheries issues facing our nation's fisheries scientists and managers.

### KATIE DREW

Katie Drew, Ph.D., is the Stock Assessment Team Lead for the Atlantic States Marine Fisheries Commission (ASMFC). In the 12 years that she has worked there, she has been involved in stock assessments for many recreationally important species, including striped bass, bluefish, and weakfish. She is also a member of the ASMFC Recreational Technical Committee, which provides guidance on standards and best practices for recreational data collection on the Atlantic coast.

### RUSSELL DUNN

Russel Dunn is the National Policy Advisor for Recreational Fisheries for NOAA Fisheries Service. As the national policy advisor, Russ works with the recreational fishing community to safeguard and enhance the significant benefits sustainable recreational fisheries afford coastal communities and the nation. He focuses high-level institutional attention on key angling priorities while serving as the national point of contact for the saltwater recreational fishing community and other federal agencies. Russ and his team led work to develop and adopt NOAA's National Saltwater Recreational Fisheries Policy, national and regional engagement plans, and a series of national summits focusing on saltwater recreational fisheries. Russ has 26 years of public and private sector experience in national and international marine fisheries policy.

### MICHELLE DUVAL

Michelle Duval has over 20 years of diverse career experience in marine fisheries management at the state, interstate, and federal levels. Ms. Duval is currently the sole proprietor of Mellivora Consulting, providing services that include fisheries policy analysis, strategic planning, and stakeholder engagement. Prior to that, she served over ten years with the North Carolina Division of Marine Fisheries as the Executive Assistant for Councils. In that capacity, Ms. Duval was the state's designee on the South Atlantic Fishery Management

Council and the administrative proxy on multiple species management boards at the Atlantic States Marine Fisheries Commission. Before working for the State of North Carolina, she spent ten years at the Raleigh office of the Environmental Defense Fund on a variety of state and federal fisheries and coastal development issues. Ms. Duval received a Bachelor of Science in Biology from the University of Michigan and a Doctorate in Marine Ecology from Duke University.

### WHIT FOSBURGH

Whit Fosburgh is the president and CEO of the Theodore Roosevelt Conservation Partnership (TRCP). Prior to coming to the TRCP in 2010, Mr. Fosburgh spent 15 years at Trout Unlimited, playing a critical role in the organization's evolution into a conservation powerhouse. Additionally, he served as fisheries director for the National Fish and Wildlife Foundation, was the chief environment and energy staff member for Senator Tom Daschle, and was a wildlife specialist for the National Audubon Society. In 2015, he was honored as the Conservation Partner of the Year by Bass Pro Shops, and he received the 2020 Fly Fishers International Conservation Award. Mr. Fosburgh grew up hunting and fishing in upstate New York and was a member of Team USA in the 1997 World Fly Fishing Championships. He has a Bachelor of Arts in Government from Georgetown University and a master's degree from the Yale University School of Forestry. He coached crew at the collegiate level for 15 years.

### ROBERT FOY

Robert ("Bob") Foy, Ph.D., is the Science and Research Director of the Alaska Fisheries Science Center. The Alaska Fisheries Science Center collaborates and coordinates on groundfish bycatch and allocation issues with state or internationally managed recreational fisheries in Alaska. Dr. Foy joined NOAA Fisheries in 2007 as the Director of the Center's Kodiak Laboratory and Program Manager for the Shellfish Assessment Program. He led the program on assessment, biological, and ecological research of commercial crab species in Alaska. Dr. Foy earned a Bachelor of Science in Biology from the University of Michigan, as well as a Master of Science in Fisheries and a Doctorate in Oceanography, both from the University of Alaska.

### TONY FRIEDRICH

Tony Friedrich is the Vice President and Policy Director for the American Saltwater Guides Association and is a lifelong advocate for marine conservation. He has over 20 years of experience in local, state, and federal marine issues. He holds a degree in economics from the University of Maryland. Mr. Friedrich has played a key role in major fisheries decisions in the Mid-Atlantic and across the country, including decisions relating to striped bass conservation, forage fish protection, habitat restoration, clean water advocacy, federal fisheries law, and various legislative efforts. Currently, Mr. Friedrich is a fisheries consultant working on policy and resource issues in the Gulf of Mexico, Florida, the Mid-Atlantic, and the Northeast. He lives on the Eastern Shore of Maryland with his wife and son and fishes every chance he gets.

### JOHN FROESCHKE

John Froeschke, Ph.D., has been a fisheries biologist-statistician since joining the Gulf of Mexico Fishery Management Council in 2009 and was appointed Deputy Director in 2018. He earned his doctorate from Texas A&M University – Corpus Christi, where he worked on developing predictive models used to improve our understanding of environmental factors affecting fish distribution and abundance in the Gulf of Mexico. Prior to this, he completed a Master of Science in Biology at California State University, Northridge, and worked as fish biologist at Occidental College in Los Angeles. Dr. Froeschke worked as a scientific diver for several years, and he remains active as a recreational scuba diver and angler.

### KEN HADDAD

While mostly retired, Ken Haddad currently serves as a part-time consultant on marine fisheries to the American Sportfishing Association, a trade association of tackle and related manufacturers, retailers, and associated industries. Mr. Haddad is a past Executive Director of the Florida Fish and Wildlife Conservation Commission (FWC) and was chairman of the Science Coordinating Group of the Everglades Restoration Task Force, a member of the Executive Committee of the Association of Fish and Wildlife Agencies, and was president of the Southeastern Association of Fish and Wildlife Agencies. He is also a former Commissioner of the Atlantic States Marine Fisheries Commission, former council member of the South Atlantic Fisheries Management Council and former director of the FWC Florida Fish and Wildlife Research Institute and Division of Marine Fisheries. He has a Bachelor of Science in Biology from Presbyterian College and Master of Marine Science from the University of South Florida College of Marine Science. He is an avid recreational fisherman, hunter, and equestrian.

### MARCOS HANKE

Marcos Hanke is the Chairman of the Caribbean Fishery Management Council and an instructor of Fishery Resources at the University of Puerto Rico in Humacao. He has a Bachelor of Science in Marine Biology from Puerto Rico University (UPRH) and over 25 years of experience as both an inshore and offshore captain on the east coast of Puerto Rico. He is involved in multiple fishery-related educational initiatives and has a passion for sharing best fishing practices and new opportunities in fishing.

### JON HARE

Jon Hare, Ph.D., is the Science and Research Director at the Northeast Fisheries Science Center (NEFSC). He earned a bachelor's degree in biology from Wesleyan University and a doctorate in oceanography from SUNY Stony Brook. He received a National Research Council Research Associateship in 1994 to work at the NOAA Beaufort Laboratory and was hired by NOAA in 1997. Dr. Hare moved to the NOAA Narragansett Laboratory in 2005, where he was appointed Oceanography Branch Chief in 2008 and Lab Director in 2012. He started as NEFSC Director in 2016 and is now located at the NOAA Woods Hole Laboratory. His research has focused on fisheries oceanography: understanding the interactions between the ocean environment and fisheries populations with an aim of contributing to fisheries assessment and management. Dr. Hare also examines the effect of climate change on fish and invertebrate population dynamics. This work involves coupling the output of global climate models with population models to simulate the effects of climate change on population dynamics. Recently, he has been working to support offshore wind energy development, while protecting and conserving wildlife and promoting sustainable fisheries. He is also interested in developing collaborative scientific and management frameworks to address complex environmental issues.

### RICHARD HEAP

Richard Heap is a retired wildlife manager with 33 years of experience working for the Nevada Department of Wildlife. While there, he held positions as a Fish and Game Agent in Elko County, a Boating Safety Officer on Lake Tahoe, a Region 1 Wildlife Law Enforcement Supervisor, a Region 1 Manager, and an Agency Planner. He has a Bachelor of Science in Wildlife Management from the University of Nevada and is certified as an Angler Education Instructor in Oregon. Since retirement, he has served as the President of the Port of Brooking Harbor Commission, the chair of the Pacific Fishery Management Council Salmon Advisory Subpanel, the chair of the Oregon Department of Fish and Wildlife Restoration and Enhancement Board, and as the Sport Fishing Advisor for the Pacific States Marine Fisheries Commission. He also serves on the Executive Committee for Oregon's Ocean Policy Advisory Council and is a lifetime member of the Oregon South Coast Fishermen Club.

### SCOTT HICKMAN

Captain Scott Hickman is the owner and operator of Circle H Outfitters and Charters. He is a full-time hunting and fishing guide with 35 years' experience specializing in Cobia, Snapper, Amberjack and King Mackerel trips. Capt. Hickman is actively involved on the Gulf of Mexico Fishery Management Council's Coral Advisory Panel (co-chair), its Individual Fishing Quota Ad Hoc Advisory Panel, and its Data Collection Advisory Panel. His top priority is finding solutions for a better sustainable charter business plan in the Gulf of Mexico. Capt. Hickman is a founding board member of the Charter Fisherman's Association and the Galveston Professional Fishermen's Association. He attended both Texas Tech University and Sam Houston State University, where he studied wildlife management and criminal justice. Capt. Hickman also served in the United States Marine Corps and Texas National Guard. He was recognized as the local and national Volunteer of the Year in 2016 for the National Marine Sanctuaries Program and received the Gulf and Caribbean Fisheries Institute's Peter Gladding conservation award in 2017. He has also served on Texas Sea Grant's Advisory Committee (Jan 2020-Dec 2023, chair 2021-2023) and the Gulf and Caribbean Fisheries Institute's Gladding Conservation Committee.

### JORGE HOLZER

Jorge Holzer, Ph.D., is an associate professor in the Department of Agricultural and Resource Economics at the University of Maryland. His research interests are in the fields of natural resource economics, environmental economics, and applied microeconomics, with a particular focus on marine resources and the allocation of harvesting rights. His work ranges from the design of market-based mechanisms and conservation auctions to non-market valuation, especially in recreational fisheries. He is currently a member of the Mid-Atlantic Fishery Management Council's Scientific and Statistical Committee, a member of the Chesapeake Bay Program Sustainable Fisheries Goal Implementation Team, vice-chair of the Atlantic States Marine Fisheries Commission's Committee on Economics and Social Sciences, a member of the International Council for the Exploration of the Sea's Working Group on Economics, and an affiliate of Maryland Sea Grant.

### BRIAN HOOKER

Brian Hooker is a native of Newport News, Virginia, and graduated from Lynchburg College with a Bachelor of Science in Environmental Science. After a short stint with the Virginia Institute of Marine Science planting seagrass in the Chesapeake Bay, Mr. Hooker joined the U.S. Peace Corps in Senegal as an Agroforestry Extension Agent. Upon his return, he earned a Master of Environmental Management from Duke University. He worked for 7 years with NOAA's National Marine Fisheries Service in various fishery management capacities including coordinating fishery management plans for golden tilefish, surf clams and ocean quahogs, horseshoe crabs, weakfish, Atlantic sturgeon, and American eel. Over the years, Mr. Hooker has worked closely with U.S. Fishery Management Councils with jurisdiction in the Atlantic and the Atlantic States Marine Fisheries Commission. He began working with the Bureau of Ocean Energy Management's (BOEM) Office of Renewable Energy Programs in 2010 to aid in the assessment and study of environmental impacts from offshore renewable energy along the U.S. Atlantic seaboard. His area of expertise at BOEM is around protected species, essential fish habitat, and commercial and recreational fishing. He now leads a team at BOEM that is responsible for Endangered Species Act and Magnuson-Stevens Fisheries Conservation Act consultations and National Environmental Policy Act assessments as subject matter experts for Atlantic offshore wind projects.

### EVAN HOWELL

Evan Howell, Ph.D., is the Director of NOAA Fisheries' Office of Science and Technology. Most recently, he served as the Deputy Director for the Pacific Islands Fisheries Science Center, where he led research to better understand critical habitat and possible climate effects on highly migratory and protected species in the central North Pacific ecosystem. Dr. Howell has authored or co-authored more than 30 peer-reviewed

scientific papers and participated in eleven research missions with NOAA or research partners. During his 25 years with NOAA Fisheries, he has spent 15 years as an ecosystem scientist, three years leading IT and data management development to support scientific research, and seven years as an executive administrator.

### KRISTEN KOCH

Kristen Koch has been the Science and Research Director of the Southwest Fisheries Science Center (SWFSC) since 2018. In this role, she provides executive-level oversight of science direction, planning, and execution of SWFSC 's programs providing science advice in support of fisheries and protected species management in the Southwest. Previously, Ms. Koch was the Deputy Science and Research Director of SWFSC from 2009 to 2018. Prior to her time at SWFSC, Kristen worked at NOAA Headquarters in Silver Spring, MD in various roles, including: Deputy Ecosystem Goal Team Lead (2007-2009) where she assisted in planning NOAA's $1.5 billion ecosystem portfolio; Acting Deputy Director for the NOAA Fisheries Office of Sustainable Fisheries; NOAA Fisheries Directorate science program development (2006-2007); and Director of the Office of Scientific Support in the Office of Oceanic and Atmospheric Research (2004-2006), among others. She has received numerous awards from the Department of Commerce for her service at NOAA. An almost-native of San Diego, she graduated with a Bachelor of Arts from Mills College in California and a Master of Public administration from Columbia University.

### MIKE LEONARD

Mike Leonard is the Vice President of Government Affairs at the American Sportfishing Association (ASA), based in Alexandria, Va. ASA is the sportfishing industry's trade association, providing the industry with a unified voice when emerging laws and policies could significantly affect sportfishing business or sportfishing itself. Mr. Leonard oversees ASA's public policy activities on a variety of natural resource and trade issues at the national, regional, and state levels. He serves on several advisory bodies to promote fisheries conservation and recreational fishing access, including the National Fish Habitat Partnership Board, the Center for Sportfishing Policy Government Relations Committee, and the Theodore Roosevelt Conservation Partnership Policy Council. He first joined ASA in 2009 as the association's Policy Fellow. He holds a master's degree in fisheries management from Auburn University and a bachelor's degree in fisheries science from Virginia Tech.

### MARIAN MACPHERSON

Marian Macpherson has worked on fisheries management issues for NOAA in various capacities since 1996. Starting out as an attorney in the Office of the General Counsel for Fisheries in the year the Sustainable Fisheries Act was implemented, she participated in some of the seminal lawsuits defining our interpretation of overfishing requirements and national standards interactions, as well as novel challenges to fisheries management involving National Environmental Policy Act and Environmental Site Assessment claims. In 2003, she moved to the National Marine Fisheries Service's (NMFS) Office of Sustainable Fisheries (OSF), where she launched the Regulatory Streamlining Program that was designed to improve partnerships between NMFS and the Councils in addressing applicable laws. Since 2012, Ms. Macpherson has worked out of OSF's Policy and Guidance Department, leading team-based initiatives to develop national guidance on fishery management policy questions, such as NS1 interpretations. Ms. Macpherson is a New Orleans Saints fan and lives in Fairhope, Alabama, where she enjoys sailing a Sunfish and eating delicious Gulf seafood whenever possible. Ms. Macpherson has a LL.M in Environmental Law from George Washington University's National School of Law, a J.D. from Tulane Law School, and a B.A. in English from the University of the South.

### JASON E. MCNAMEE

As Deputy Director and previously as Chief of the RI Department of Environmental Management's (RIDEM) Marine Fisheries Division, Jason McNamee has worked for over 20 years on environmental and fisheries matters. While with the Marine Fisheries Division, Dr. McNamee served as the principal investigator for the Narragansett Bay Juvenile Finfish Seine Survey. He is also active in the Atlantic States Marine Fisheries Commission as the lead delegate for Rhode Island and as a member of numerous management boards, technical committees, and stock assessment subcommittees. Dr. McNamee was appointed in 2013 to the New England Fishery Management Council's Scientific and Statistical Committee and served as chair of that committee for several years. He graduated from the University of Rhode Island in 1996 with a Bachelor of Science in Zoology. He received a Master of Science in Biological Oceanography in 2006 from the University of Connecticut and received a doctorate from the University of Rhode Island's Graduate School of Oceanography in their Biological Oceanography Doctoral program in 2018.

### FREDERICK MCGREW RICE

Frederick McGrew Rice ("McGrew") is a sixth generation Scottish American born and raised in Hawaii. The Rice family came to the islands in 1838 as missionaries. His family has been involved in ranching and fishing all their lives. His grandfather, "Oskie," fished as an angler in the International Billfish Tournament in the 1950's and 60's. His father, Freddie, bought his first charter boat in Kona in 1968 and Capt. McGrew caught his first marlin with him when he was 9 years old. He grew up cattle ranching and fishing and chose fishing as his full-time profession. He worked as a crewman through high school and on weekends and vacations. In the 1908's, he was hired to travel to Australia, New Zealand, and Tahiti to fish tournaments for his clients. He started to work for his father in 1986 on the "Ihu Nui" as a crewman and part-time captain. When his father retired in 1991, Capt. McGrew became the captain of the "Ihu Nui" and has been fishing on the waters of the Kona Coast to this day!

### CLAIRE RICHER

Claire Richer serves as American Clean Power's (ACP) Director for Offshore Wind. She focuses on offshore wind supply chains, vessels, fisheries, Coast Guard, maritime and other offshore wind regulatory issues. She manages ACP's Offshore Maritime Subcommittee and helps manage ACP's Fisheries Subcommittee to consolidate offshore wind company views into an industry position and then socializes those positions with regulatory agencies and Capitol Hill. Previously, she worked for U.S. Senator Ed Markey of Massachusetts for over four years. During that time, she focused on a variety of maritime and ocean issues on the Senate Commerce Committee, including offshore wind, fisheries, Coast Guard, and the Maritime Administration. Ms. Richer received a Bachelor of Arts in Environmental Policy & Analysis and in International Relations from Boston University. Outside of work, she enjoys backpacking, rowing, bicycle commuting, speaking French, and baking.

### CARRIE SELBERG ROBINSON

Carrie Selberg Robinson is the Director of the Office of Habitat Conservation. She served as Deputy Director from 2015 to 2020. She was the NOAA Fisheries Chief of Staff from 2013 to 2015. She joined NOAA in 2005 as a legislative specialist after 5 years at the Atlantic States Marine Fisheries Commission. She participated in NOAA's Leadership Development Competencies Program and the National Conservation Leadership Institute. She has a bachelor's degree in environmental studies from Connecticut College and a Master of Environmental Management degree from Duke University.

### MIKE RUCCIO

Mike Ruccio is the Domestic Fisheries Division Chief for the Office of Sustainable Fisheries at the NOAA Marine Fisheries Service headquarters in Silver Spring. His entire professional career has been in fisheries

management, starting as an onboard observer in the 1990s in the North Pacific and Bering Sea, then working for the Alaska Department of Fish and Game in both Dutch Harbor/Unalaska and Kodiak. Prior to working at headquarters, he worked at the Greater Atlantic Regional Fisheries Office, including many years as the lead policy analyst on summer flounder, scup, and black sea bass management issues. Mike enjoys recreational angling, but admits he was spoiled by the unfettered access to world class fishing in Alaska and doesn't get out to fish as much as he would like.

### TIM SARTWELL

Tim Sartwell is a Recreational Fisheries Specialist with NOAA Fisheries Communications Office. Tim's expertise lies in recreational fisheries data and management and he works on the National Recreational Fisheries Initiative implementing NOAA's National Saltwater Recreational Fisheries Policy. Tim has played a key role in planning and executing numerous stakeholder engagement events and previously worked in the Office of Sustainable Fisheries. Prior to joining NOAA Fisheries, Tim was the project manager for the Atlantic Access Point Angler Intercept Survey, which collected marine recreational fisheries data on the Atlantic Coast and Puerto Rico. Tim is a lifelong recreational fisherman.

### DAVID SIKORSKI

David Sikorski is the Executive Director of Coastal Conservation Association (CCA) Maryland. He is native Marylander, a passionate and experienced sportsman, and has been a tireless volunteer for CCA Maryland. As a longtime participant and current chair of the Government Relations Committee, Mr. Sikorski has a thorough understanding of the many issues that affect Maryland's fisheries. He is a member of the Striped Bass and Atlantic Menhaden Advisory Panels for the Atlantic States Marine Fisheries Commission, the chair of the Sport Fisheries Advisory Commission to the Maryland Department of Natural Resources, and has been a frequent attendee at Mid-Atlantic Fishery Management Council meetings in recent years. In his work with these councils and commissions, Mr. Sikorski has helped CCA Maryland protect striped bass, yellow perch, menhaden, and many other species of forage along our coast. Mr. Sikorski is also a former CCA Annapolis Chapter President and is deeply involved with CCA's oyster advocacy and habitat work.

### NEIL SIMS

Neil Sims is the CEO of Ocean Era, a Hawaii-based mariculture company focused on expanding the environmentally sound production of the ocean's finest fish. Mr. Sims is a marine biologist with a Bachelor of Science from James Cook University and a Master of Science from the University of New South Wales, and has a professional commitment to "softening mankind's footprint on the seas". He worked in fisheries management and development in the South Pacific during the 1980s. He has been based in Kona since 1990, first working in pearl oyster hatchery development and pearl farming throughout Hawaii, the South Pacific, and Southeast Asia. Mr. Sims and Dr. Dale Sarver founded Kona Blue Water Farms in 2001, building a team that developed cutting-edge hatchery methods for 'difficult-to-rear' marine fish larvae, including snappers, groupers, and yellowtail/jacks. At Kona Blue Water Farms, they pioneered the first integrated hatchery and open ocean fish farm in the U.S. Ocean Era was later co-founded by Mr. Sims and Michael Bullock to continue this tradition, focusing on the global need for expanded production of high-value, marine finfish, and pursuit of "next generation" technologies, including remote offshore culture systems, more sustainable and scale-able feeds, and new species.

### ANDY STRELCHECK

Andy Strelcheck is the Regional Administrator of NOAA Fisheries Southeast Regional Office, which oversees conservation and management of federally managed fisheries, protected resources, and habitat in the Southeast U.S., Puerto Rico, and the U.S. Virgin Islands. Prior to becoming the Regional Administrator, he served as the deputy regional administrator of NOAA Fisheries' Southeast Regional Office from March 2015

through August 2021. He began his career with NOAA Fisheries in 2004 as a fishery biologist, and from 2008 to 2015, he served as chief of the Limited Access Privilege Programs and Data Management Branch. In this capacity, he oversaw analytical work used to support management decisions made by three regional fishery management councils. Prior to his time at NOAA, Mr. Strelcheck worked as a biological scientist for the Florida Fish and Wildlife Conservation Commission. He earned his bachelor's degree in biological science from Florida State University, and a master's degree in marine science from the University of South Alabama.

### BARRY THOM

Barry Thom recently accepted the role of Executive Director at the Pacific States Marine Fisheries Commission. Before his current role, he served at NOAA fisheries for 21 years, including 5 years as the Regional Administrator for the West Coast Region. He has worked extensively on salmon recovery and marine fisheries management on the West Coast. He is also an avid recreational fisherman and routinely fishes for salmon, halibut, rockfish, crab, tuna, and billfish.

### JENNI WALLACE

Jenni Wallace joined NOAA's Office of Sustainable Fisheries in August of 2011. She currently serves as the acting Director of the Office of Sustainable Fisheries. In her acting Director role as well as in her permanent position as Deputy Director, she manages and leads fishery conservation and management activities to ensure sustainable fisheries through effective national and office-level programs and policies. She came to NOAA Fisheries in 2002 as a Presidential Management Intern. Ms. Wallace holds a Bachelor of Science in Marine Biology from Eckerd College and a Master of Environmental Management from Duke University.

### A.G. WOODWARD

A.G. "Spud" Woodward retired in 2018 after 34 years with the Georgia Department of Natural Resources (DNR). He is the owner of a fish and wildlife management consulting and communications business and serves as Georgia's governor-appointed commissioner to the Atlantic States Marine Fisheries Commission, of which he is currently chair. Mr. Woodward is also serving a second term as a member of the South Atlantic Fishery Management Council. He is a member of the advisory boards of the Georgia Wildlife Federation and of Keep Brunswick-Golden Isles Beautiful. During his employment with Georgia DNR, Mr. Woodward served as a wildlife technician, a marine biologist, the Chief of Marine Fisheries, and the Director of the Coastal Resources Division. He was Georgia's administrative commissioner to the Atlantic States Marine Fisheries Commission for 16 years and agency representative on the South Atlantic Fishery Management Council for 3 years. Mr. Woodward has been a certified SCUBA diver since 1984, and a USCG-licensed vessel operator since 1995. He was a saltwater competitive angler from 1988 through 2000, participating in tournaments throughout the South Atlantic and Gulf of Mexico. He has contributed to over 200 articles about fishing, hunting, and conservation in both professional and popular publications.

### RYAN WULFF

Ryan Wulff is the Assistant Regional Administrator for NOAA's West Coast Regional Office, with responsibility for the Sustainable Fisheries Division. Mr. Wulff is also the United States Deputy Commissioner to the International Whaling Commission and an alternate United States Commissioner to the Inter-American Tropical Tuna Commission. Prior to his current role, Mr. Wulff served as the California Delta Policy and Restoration Branch Chief for the West Coast Region. He also served that as the Senior Policy Advisor to the Under Secretary of Commerce for Oceans and Atmosphere on domestic and international protected resource and fisheries issues. Mr. Wulff has a bachelor's degree from Brown University and a Master of Science from Scripps Institution of Oceanography.

# Appendix C:
# Background Papers

2022 NATIONAL SALTWATER RECREATIONAL FISHERIES SUMMIT

# Climate Resilient Fisheries

Changing climate and ocean conditions are having significant impacts on the nation's valuable marine life and ecosystems, as well as the many communities and economies that depend on them. Scientists expect environmental changes such as warming oceans, rising sea levels, extreme events (e.g., hurricanes, floods, and droughts), and ocean acidification to increase with continued shifts in the planet's climate system. We are already witnessing changes in the distribution and productivity of fish stocks, disruptions to seasonal migratory patterns, and damage to shoreside infrastructure that create new challenges for fishery participants and managers.

These environmental changes impact every aspect of marine resource management at the state, regional and federal levels — from managing fisheries and aquaculture, to conserving protected resources and vital habitats. There is much at risk, economically, ecologically, and socially (or culturally). For example, outdoor recreation represented 1.8% of the United States national gross domestic product (GDP) in 2020, with boating and fishing ranking as the largest conventional outdoor activity for the nation as a whole (in terms of contribution to GDP) (BEA, Outdoor Satellite Account 2021). Coastal habitats provide important ecosystem services including, providing nursery areas for fish and protected species, and protecting people and property from storms and flooding. Preparing for and adapting to changing ocean conditions will help sustain the nation's valuable marine resources, fisheries, and coastal communities.

The plenary part of this session covers a range of topics, including: the state of science on changing climate and oceans; tools, investments and the importance of habitat for climate-resilient fisheries; on the water perspectives from the recreational fishing community; and climate scenario planning. After the opening presentations and discussion, we will break out into regional working groups to address the following questions:

- What are the recreational fishing community's key concerns about climate change impacts on fisheries?
- What does it mean to have climate-resilient fisheries?
- What is needed to achieve climate-resilient fisheries?
    - — What information do we need?
    - — What management tools or system(s) do we need to prepare and adapt?
- How can education/outreach and/or community science help advance climate-ready fisheries?

From this session we hope to share current climate knowledge, tools, and approaches and hear anglers' observations, experiences, concerns, and priorities related to changing ocean conditions and the marine recreational fishing community. From the break-out groups we hope to understand the recreational fishing community's vision for climate-resilient fisheries and develop activities or strategies to achieve the vision.

**Additional Background Information**

NOAA Fisheries Climate Change
https://www.fisheries.noaa.gov/topic/climate-change

NOAA Climate and Fisheries Initiative
https://www.fisheries.noaa.gov/topic/climate-change#noaa-climate-and-fisheries-initiative

ASMFC: Climate Change and its Impact to Atlantic Coast Fisheries Resource
http://www.asmfc.org/fisheries-science/climate-change

US National Climate Assessment Chapter on Oceans and Marine Resources
https://nca2018.globalchange.gov/chapter/9/

East Coast Climate Change Scenario Planning
https://www.mafmc.org/climate-change-scenario-planning

2022 NATIONAL SALTWATER RECREATIONAL FISHERIES SUMMIT

# Balancing Ocean Uses

While the ocean may seem expansive and endless, many coastal areas are facing increasing demands for offshore space. Ocean spatial planning plays an increasingly important role in balancing the growing number of ocean users and uses. This session will dive deep into two of the rising ocean uses: offshore wind energy and marine aquaculture installations.

Offshore wind energy development has the potential to play an important role in U.S. efforts to combat the climate crisis and build a clean energy economy. In March 2021, the Administration set a goal of deploying 30 gigawatts of offshore wind energy by 2030 while protecting biodiversity and promoting cooperative ocean use. Many coastal states have set similar ambitious goals. Until recently, the majority of planning and activity has occurred in the Atlantic Outer Continental Shelf from Massachusetts to North Carolina. However, in October 2021, the Department of the Interior announced holding up to seven new offshore wind leases along the East Coast, in the Gulf of Mexico, and in Pacific waters, with the first of those new lease sales concluding in late February in the New York Bight.

Marine aquaculture (or ocean farming) allows the nation to build off of our success in wild-capture fisheries and is vital for supporting seafood production, year-round jobs, rebuilding protected species and habitats, and enhancing coastal economic resilience. Aquaculture is one of the most resource-efficient ways to produce protein and has helped improve nutrition and food security in many parts of the world. Currently, the United States imports 70 to 85 percent of its seafood, and nearly 50 percent of this imported seafood is produced via aquaculture.

It is critical to ensure planning, siting, and development of new projects minimize, or avoid, user conflicts and maintain our agency commitment to ocean stewardship. These new and expanding uses of marine waters require substantial scientific exploration, regulatory review, and monitoring while posing new challenges for fishery managers, scientists, recreational anglers, and other traditional ocean users. This panel will provide a shared understanding of the status of ocean wind energy development and marine aquaculture expansion, and opportunities for public engagement. We hope this session will allow the recreational fishing community to share their concerns and priorities to help safeguard recreational fishing opportunities.

In this session, we will share agency, industry, and anglers' perspectives on offshore wind energy and marine aquaculture. The first portion of this session includes presentations with an opportunity for audience questions to better understand the status of what is happening on the water and the opportunity for managers to learn from anglers' first-hand experiences. The second portion of this session includes a facilitated discussion and Q&A with an expert panel of representatives from the Bureau of Ocean Energy Management (BOEM), NOAA Fisheries, states, as well as anglers. The panelists will discuss having a voice in the process as these industries expand, maintaining fishing opportunities, and understanding potential impacts.

In this session, we hope to share and understand:

- What are the impacts recreational anglers are seeing on the water with these industries?
- What steps need to be taken to maintain sustainable recreational fishing opportunities?
- What are best practices for ensuring meaningful and robust involvement of recreational stakeholders in the process and how to agencies reach stakeholders?
- In situations where impacts to fishing cannot be avoided, are there preferred mitigation measures or best management practices?

**Additional Background Information**

BOEM Fishing Industry Engagement
https://www.boem.gov/renewable-energy/fishing-industry-communication-and-engagement

NOAA Fisheries Wind Page
https://www.fisheries.noaa.gov/topic/offshore-wind-energy

ASMFC Hot Topics
http://www.asmfc.org/habitat/hot-topics

NOAA Fisheries Aquaculture Information
https://www.fisheries.noaa.gov/topic/aquaculture

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# Data Collection & Use

Successful fisheries management is dependent on the data collected about fishing activity. Saltwater recreational fishing is big business, supporting hundreds of thousands of American jobs and billions in sales. Abundant ocean fisheries are the engine that drives these economic benefits. A fundamental component of sustainably managing any fishery is understanding of fishermen's catches. More accurate and timely data will benefit fisheries stock assessments by improving the information used to manage them sustainably.

Understanding recreational catch depends on detailed and accurate data from the recreational fishing community. Recreational fishing surveys vary from region to region, state to state, and, in some cases, species to species. Generally speaking, in the federal system and most regional surveys catch rates — or the average number of fish caught per angler trip — are measured through in-person interviews, and effort — or the number of fishing trips anglers take — is measured through mail and telephone surveys. In many regions, electronic trip reports collect additional information about for-hire fishing activity. Estimation methods are complex but, at a high level, can be understood as multiplying catch rate by effort to estimate total recreational catch. Recreational catch estimates are just one of the many pieces of information fisheries managers must consider during their science-based decision-making process.

Stock assessments are the scientific foundation of successful and sustainable fishery harvest management. Stock assessments measure the impact of fishing on fish and shellfish stocks. They project harvest levels that maximize the number of fish that can be caught every year while preventing overfishing (removing too many fish), protecting the marine ecosystem, and where necessary, rebuilding overfished stocks. Each stock assessment produces a report that provides fishery managers with a scientific basis for setting sustainable harvest policies. For NOAA Fisheries and the eight regional fishery management councils, assessments are conducted to aid in the management of nearly 500 fishery stocks. Stock assessments are also conducted at the interstate and state levels for the species that predominantly reside in state waters.

The presentation portion of this data session will provide an overview of marine recreational fishery data collection, stock assessment, and catch monitoring processes, as well as the role that uncertainty plays in them. The panel discussion portion of this session will cover strategies for improving public confidence and participation in recreational fisheries data and data collection as well as the potential roles of government, stakeholders, and new technologies in doing so.

**In this session, we hope to understand:**

- How can confidence in and understanding of recreational fishing data be improved among the recreational fishing community?
- What role can NOAA Fisheries/Councils/Commissions/states play in increasing understanding of how recreational data are collected and used?
- What role can the recreational fishing community play in addressing misconceptions?
- How can participation in data collection be improved?
- What role can electronic reporting play, and what are the challenges?

**Additional Background Information**

NOAA Fisheries Marine Recreational Information Program
https://www.fisheries.noaa.gov/topic/recreational-fishing-data

ACCSP Recreational Fisheries Data
https://www.accsp.org/what-we-do/recreational-fisheries/

NASEM Data and Management Strategies for Recreational Fisheries with Annual Catch Limits
https://www.nap.edu/read/26185/chapter/1

NASEM Review of the Marine Recreational Information Program
https://www.nap.edu/read/24640/chapter/1

2022 NATIONAL SALTWATER RECREATIONAL FISHERIES SUMMIT

# Management Reform, Flexibility & Optimum Yield

Developing recreational management measures that meet angler needs while ensuring that fisheries resources are not overfished nor experiencing overfishing has become increasingly complex. Major drivers in current efforts for recreational management reform include: concerns related to uncertainty and variability in the recreational fishery data, the need to change measures (sometimes annually) based on those data, the perception that measures are not reflective of current stock status, and that management measures don't always have the intended effect on overall harvest.

On December 31, 2018, the Modernizing Recreational Fisheries Management Act of 2018 (Modern Fish Act) was signed into law. While the law did not fundamentally change the Magnuson-Stevens Act, it did authorize fishery managers to use certain management approaches in recreational or mixed use fisheries that some consider alternative approaches to traditional poundage based catch limits. In practice, efforts to expand fishing opportunities by applying alternative management approaches are perceived as having limited success.

The first part of the management session will provide an overview of ongoing efforts to develop and apply management flexibility in the context of improving fishing opportunities and seeking to better understand the fishing public's vision for management reform/flexibility.

Further, as required by the Modern Fish Act, the recent review of NOAA Fisheries Marine Recreational Information Program (MRIP) by the National Academies of Science (NASEM) recommended the following:

> NOAA Fisheries and the Councils should develop a process for engaging recreational fisheries stakeholders in a more in-depth discussion of optimum yield and how it can be used to identify and prioritize management objectives that are better suited to the cultural, economic, and conservation goals of the angling community.

This second part of this session can be viewed as a preparatory first step in the NASEM recommended process. It is intended to develop a common understanding of optimum yield (OY) as defined in statute, regulation, and in practice. We will then learn about anglers' perspectives on OY, human dimensions in considering OY, and the potential for OY to guide management from the Council perspective.

During the entire management discussion, we hope that these and similar questions will spark discussion:

- What does successful recreational fisheries management reform look like to you? How can that vision be achieved?

- Has management flexibility been used in your region?
    - Has it been successful? If not, what has limited its success?
- What does OY look like for the recreational community in your region?
- What are the next steps the angling community and management partners should consider to advance recreational fisheries management and consideration of recreational OY perspectives?

**Additional Background Information**

NOAA Fisheries Management
https://www.fisheries.noaa.gov/topic/sustainable-fisheries#management

ASMFC Management
http://www.asmfc.org/fisheries-management/program-overview

MAFMC/ASMFC Recreational Management Reform
https://www.mafmc.org/actions/recreational-reform-initiative

NASEM The Use of Limited Access Privilege Programs in Mixed-Use Fisheries
https://www.nap.edu/read/26186/chapter/1

National Standard Guidelines
https://www.fisheries.noaa.gov/national/laws-and-policies/national-standard-guidelines

# Appendix D:
# Summit Participant List

The following individuals attended the Summit in-person. Members of the Steering Committee are denoted with an asterisk.

**Jeffrey Angers**
Center for Sportfishing Policy

**Max Appleman**
NOAA Fisheries

**Trip Aukeman***
Coastal Conservation Association

**Matt Ayer**
Massachusetts Division of Marine Fisheries

**George Baldwin**
The Connecticut Surfcasters Association

**Travis Barao**
Electric Boat

**Luiz Barbieri***
Florida Fish and Wildlife Conservation Commission, Florida Wildlife Research Institute

**Dave Bard**
NOAA Fisheries (Contractor)

**Jeff Barger**
Ocean Conservancy

**Robert Beal**
Atlantic States Marine Fisheries Commission

**Julia Beaty**
Mid-Atlantic Fishery Management Council

**Rick Bellavance**
Priority Charters, LLC

**Brian Bennett**
Wild Steelhead Coalition

**Josh Bergan**
Outdoor Sportsman Group

**Tina Berger**
Atlantic States Marine Fisheries Commission

**Danielle Blacklock**
NOAA Fisheries

**Kevin Blinkoff***
On The Water

**Heather Blough**
NOAA Fisheries Southeast Region

**Frank Blount**
Frances Fleet

**Grace Bottitta-Williamson**
National Ocean Service

**Forrest Braden***
Southeast Alaska Guides Organization

**Robert Branham**
Robert Branham, Inc

**Gregg Bray**
Gulf States Marine Fisheries Commission

**Kenneth Brennan**
NOAA Fisheries

**Chris Burrows***
Carolina Sportsman

**Shane Cantrell**
Galveston Sea Ventures

**John Carmichael**
South Atlantic Fishery Management Council

**Lisa Carty**
Atlantic States Marine Fisheries Commission

**Benson Chiles**
Chiles Consulting, LLC

**Joseph Cimino**
Atlantic States Marine Fisheries Commission

**Richard Cody**
NOAA Fisheries - Office of Science and Technology

**Janet Coit**
NOAA Fisheries

**Dustin Colson Leaning**
Atlantic States Marine Fisheries Commission

**George Cooper**
Forbes Tate Partners

**Todd Corayer**
SRI Newspapers

**Kim Damon-Randall**
NOAA Fisheries

**Kiley Dancy**
Mid-Atlantic Fishery Management Council

**Joshua DeMello**
Western Pacific Regional Fishery Management Council

**John DePersenaire**
Recreational Fishing Alliance

**Jaime Diamond***
Stardust Sportfishing

**Dale Diaz**
Gulf of Mexico Fishery Management Council

**Alex DiJohnson**
Atlantic Coastal Cooperative Statistics Program

**Dave Donaldson**
Gulf States Marine Fisheries Commission

**Katie Drew**
Atlantic States Marine Fisheries Commission

**Maya Drzewicki**
Atlantic States Marine Fisheries Commission

**Russell Dunn**
NOAA Fisheries

**Michelle Duval**
Mellivora Consulting

**Peter Fallon**
Gillies & Fallon Guide Service, LLC

**Carlos Farchette**
Caribbean Fishery Management Council

**Randy Fisher**
Pacific States Marine Fisheries Commission

**Whit Fosburgh**
Theodore Roosevelt Conservation Partnership

**Thomas Fote**
Jersey Coast Anglers Association

**Robert Foy**
NOAA Fisheries

**Emilie Franke**
Atlantic States Marine Fisheries Commission

**Steve Friedman**
Florida Keys Fishing Guides Association

**Anthony Friedrich**
American Saltwater Guides Association

**John Froeschke**
Gulf of Mexico Fishery Management Council

**Brett Gaba**
No affiliation provided

**Kevin Godes**
C&C Culinary Resources

**Marc Gorelnik**
Pacific Fishery Management Council

**Jim Green**
Charter Fisherman's Association

**Jessica Gribbon Joyce**
Tidal Bay Consulting

**Joseph Gugino**
Costa Sunglasses

**Martha Guyas**
American Sportfishing Association

**Kenneth Haddad**
American Sportfishing Association

**Marcos Hanke**
787 Fishing Charters

**Jon Hare**
NOAA Fisheries

**Monty Hawkins**
Morning Star Fishing / Ocean City [MD] - Reef Foundation

**Grayson Haynes**
U.S. House of Representatives

**Richard Heap***
Pacific Fishery Management Council

**Kerry Heffernan**
Grand Banks

**Lyndie Hice-Dunton**
Responsible Offshore Science Alliance

**Capt. Scott Hickman**
Charter Fisherman's Association

**Jaclyn Higgins**
Theodore Roosevelt Conservation Partnership

**James Hilger**
NOAA Fisheries, Southeast Fisheries Science Center

**Nicolle Hill**
NOAA Fisheries

**Rich Hittinger**
Rhode Island Saltwater Anglers Association

**Jorge Holzer**
University of Maryland, College Park

**Brian Hooker**
Bureau of Ocean Energy Management

**Chris Horton**
Congressional Sportsmen's Foundation

**Evan Howell**
NOAA Fisheries

**Clifford Hutt**
NOAA Fisheries

**Chris Jacobs**
Atlantic States Marine Fisheries Commission

**Peter Jenkins**
The Saltwater Edge

**Donna Kalez**
Dana Wharf Sportfishing

**Keith Kamikawa**
Pacific Island Regional Office

**William Kelleher**
Natural Resource Results

**Chris Kellogg**
New England Fishery Management Council

**Moira Kelly**
NOAA Fisheries, Greater Atlantic Regional Fisheries Office

**Kristen Koch**
NOAA Fisheries, Southwest Fisheries Science Center

**Thomas Kosinski**
Stembrook Asset Management

**Wayne Kotow**
Coastal Conservation Association California

**Rob Kramer**
Wild Oceans

**Jon Kurland**
NOAA Fisheries

**Sean Lawler**
NOAA Fisheries

**Mike Leonard***
American Sportfishing Association

**Carl Liederman**
Capt. Harry's Fishing Supply

**Doug Lipton**
NOAA Fisheries

**Carl LoBue**
The Nature Conservancy

**Heidi Lovett**
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**Michael Luisi**
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**Chris Macaluso**
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**Marian Macpherson**
NOAA Fisheries

**Sarah Marrinan**
North Pacific Fishery Management Council

**Jackson Martinez**
Louisiana Governor's Office of Coastal Activities

**Tom Mattusch**
(Formerly) Huli Cat

**Brad McHale**
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**John McMurray**
American Saltwater Guides Association

**Sean McNally**
NOAA Fisheries

**Jason McNamee**
Rhode Island Department of Environmental Management

**Kara Meckley**
NOAA Fisheries, Office of Habitat Conservation

**Sean Meehan**
NOAA Fisheries

**Gabe Miller**
Sportco/Farwest Sports

**David Monti**
No Fluke Fishing, LLC

**Jack Murphy**
AECOM

**Pat Murray**
Coastal Conservation Association

**Adam Nowalsky**
Mid-Atlantic Fishery Management Council

**Jay Odell**
The Nature Conservancy

**Dustin Pack**
Fly Tide Charters

**Patrick Paquette**
Basic Strategies

**Michael Pentony**
NOAA Fisheries

**Andrew Petersen**
Bluefin

**Miranda Peterson**
Congressman Frank Pallone's Office

**Larry Phillips**
American Sportfishing Association

**Michael Pierdinock**
CPF Charters "Perseverance"

**Bruce Pohlot**
International Game Fish Association

**Nicholas Popoff**
US Fish and Wildlife Service

**Clay Porch**
NOAA Fisheries

**Will Poston**
American Saltwater Guides Association

**Kellie Ralston**
Bonefish and Tarpon Trust

**Matt Ramsey***
Conservation International Hawaii

**Sam Rauch**
NOAA Fisheries

**Claire Richer**
American Clean Power Association

**Charlie Robertson***
Gulf States Marine Fisheries Commission

**Carrie Robinson**
NOAA Fisheries, Office of Habitat Conservation

**Tom Roller**
Water Dog Guide Service

**Cody Rubner**
Spring Tide Media

**Mike Ruccio**
NOAA Fisheries

**Brendan Runde**
The Nature Conservancy

**Tom Sadler**
Marine Fish Conservation Network

**Scott Salyers**
Bonnier Corp.

**Tim Sartwell**
NOAA Fisheries

**Tim Schoonover**
Maxima USA

**Jason Schratwieser**
International Game Fish Association

**Tara Scott**
NOAA Fisheries

**Michael Seki**
NOAA Fisheries

**David Sikorski***
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**Christine Silen**
Bonnier Corp.

**Carly Somerset**
Gulf of Mexico Fishery Management Council

**Scott Steinback**
NOAA Fisheries, Northeast Fisheries Science Center

**Kelly Stoll**
AECOM

**Andy Strelcheck**
NOAA Fisheries

**Daniel Studt**
NOAA Fisheries

**Dr. Greg Stunz**
Gulf of Mexico Fishery Management Council, Texas A&M University, Harte Research Institute's Center for Sportfishing and Conservation

**Patrick Sullivan**
Cornell University

**Jaclyn Taylor**
NOAA Fisheries, Office of Protected Resources

**Barry Thom**
Pacific States Marine Fisheries Commission

**Michael Tosatto**
Pacific Islands Regional Office

**Michael Waine**
American Sportfishing Association

**Jenni Wallace**
NOAA Fisheries

**Rick Webber**
South Jersey Marina

**Kevin Werner**
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**Geoffrey White**
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**Kate Wilke**
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**Charles Witek**
No affiliation provided

**Spud Woodward**
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**Ryan Wulff**
NOAA Fisheries

**Richard Yamada**
Shelter Lodge

**Louie Zimm**
Pacific Fishery Management Council

# Appendix E:
# Summit Evaluation Results

## Background

The 2022 National Saltwater Recreational Fisheries Summit was held on March 29th and 30th at the Westin Crystal City in Arlington, Virginia. After the conclusion of the Summit, the participants were asked to complete a 13-question evaluation on their experience. The online evaluation was open from March 31st through April 15th, 2022. Of the nearly 170 in-person attendees, there were a total of 29 responses.

## Demographics of Respondents

The respondents represented a diverse range of regions and affiliations, as well as a large number representing a national perspective (17%) (Figure 1). The greatest proportion of respondents were from the Mid-Atlantic (17%), Gulf of Mexico (17%), and New England (17%). There were also responses from the Continental West Coast (13%), Southeast Atlantic (7%), and Pacific Islands (7%). See Figure 1 for additional regions represented in this evaluation.

The affiliation of the respondents was well distributed, and included regional science and management (28%), recreational fishing associations (17%), federal science and management (14%), for-hire owners and operators

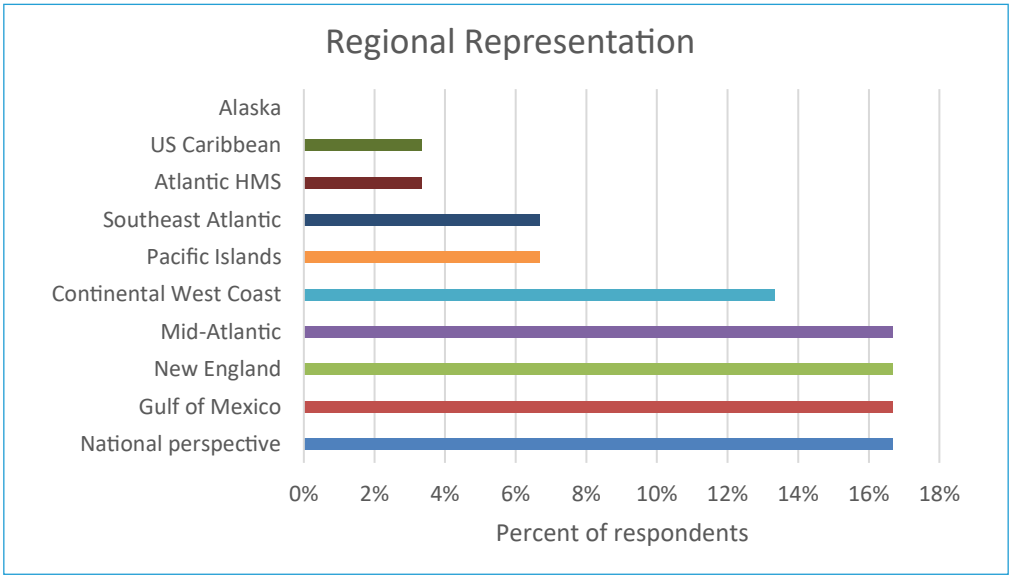


**Figure 1: Regional Representation of Respondents (n=29)**

(14%), and private anglers (10%) (Figure 2). Other responses included fishery management consultants. See Figure 2 for additional affiliations represented in the evaluation responses.

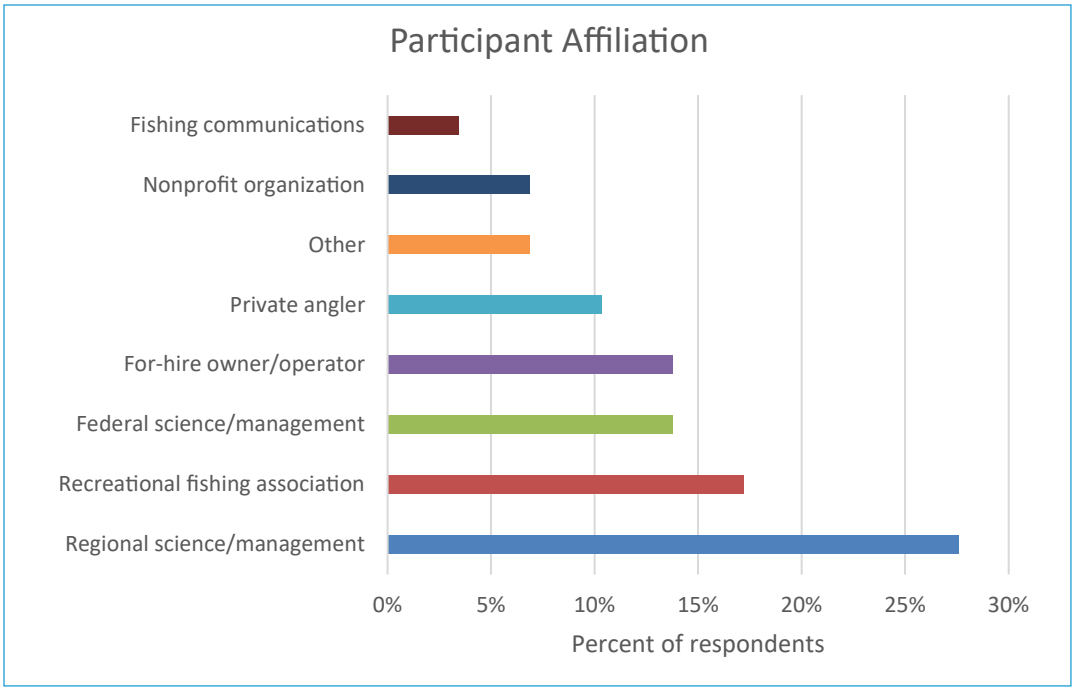


**Figure 2: Affiliation of Respondents (n=29)**

## Overall Feedback on the Summit

The evaluation asked participants to rate different components of the Summit from 'very satisfied' to 'very unsatisfied'. The topics that respondents were asked to rank included their overall satisfaction, as well as their satisfaction with the topics covered, the content, and the break-out discussions. Ninety percent were either very satisfied (52%) or satisfied (38%) with the Summit overall (Figure 3). The majority of respondents (89%) expressed that they were either very satisfied (41%) or satisfied (48%) with the topics covered. Similarly, respondents were either very satisfied (52%) or satisfied (38%) or with the content of the presentations and panel discussion. In the responses for each of these questions, less than 10% of respondents were neutral of unsatisfied. There were more mixed reviews for the break-out discussions, with 72% being satisfied or very satisfied, 21% of respondents being neutral on the topic, and 7% expressed being very unsatisfied.

The next section asked respondents to rank the individual sessions on a scale from one ('most useful') through eight ('least useful'). Eighteen participants ranked the Climate-Resilient Fisheries presentations between a one and three for usefulness, indicating that this session was highly useful. Eleven participants gave the Climate-Resilient Fisheries break-out groups a rating between one and three, and the same number selected a rating between one and three for the Balancing Ocean Uses presentations. The sessions that received the lowest rankings included the Management Reform, Flexibility, and Optimum Yield break-out groups (eight participants gave this session a rating of eight, the lowest score for usefulness) and the Management Reform, Flexibility, and Optimum Yield presentations (which 11 participants ranked as either a six or a seven).

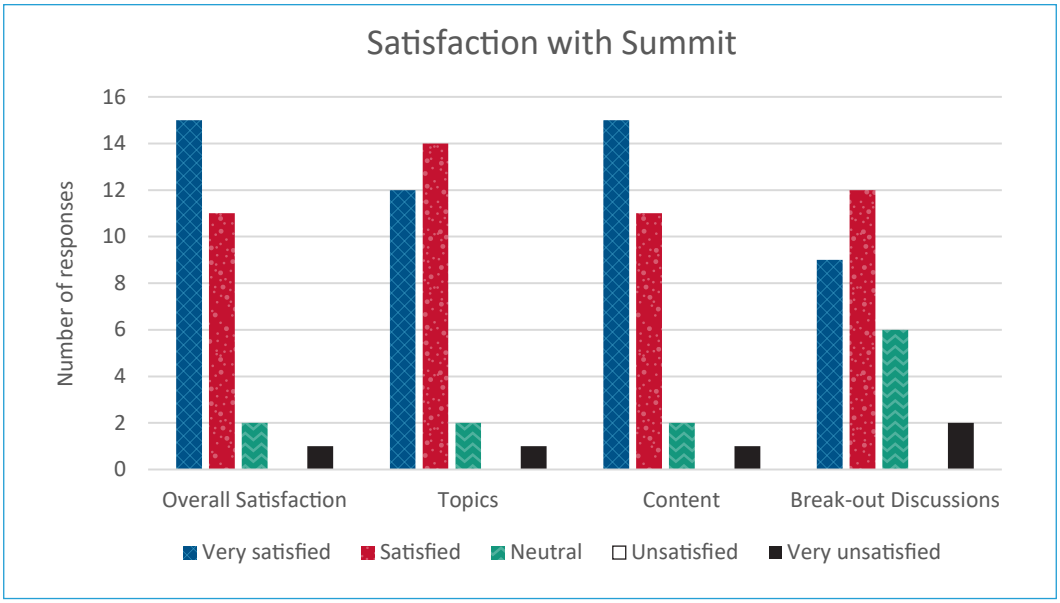


**Figure 3: Participant Satisfaction with the Summit (n=29)**

Participants were also asked to list what they enjoyed the most about the Summit. The most common themes included an appreciation for being able to discuss topics in-person, rebuild or create new relationships with and within the recreational angling community, and hearing about the challenges anglers from other regions are facing, and their management strategies. There were also commenters that expressed gratitude for the chance to discuss relevant issues with managers and regulators from multiple management bodies. One commenter was happy to see more diversity in representation and having new topics discussed at the Summit.

When asked about what could be improved about the Summit next time, many commenters mentioned the need to include more diverse voices and incorporate strategies to prevent a small number of people from dominating the conversation and topics. Other comments included a desire for the reporting from break-out groups to be more representative of the discussions, and to have more neutral break-out group facilitators. Another theme was the desire for more action-oriented discussions and limiting the amount of time dedicated to expressing frustration in the question-and-answer sessions, break-out groups, and panel discussions. One suggestion included having regional break-out groups for both days, since the regional climate break-out groups on day one had an easy time discussing action steps due to the regionality of some issues, and the plenary discussions already provided an opportunity for a national exchange. A few respondents discussed the need for more efforts to build trust between different groups, and one mentioned an underlying tension between the perspectives of for-hire and private anglers. This commenter suggested that future Summits make a more deliberate effort at bridge-building between these groups.

Many of these same themes emerged in the responses to a question asking for additional feedback for the Summit organizers. It was reiterated that there should be more strategies to prevent a few people from dominating the conversation, and to encourage more constructive conversations. There was a general call for participants and presenters alike to approach the Summit discussions with open minds and a goal to listen to alternative ideas and views. Another common thread was the desire for a more diverse regional representation, and suggestions around having rotating Summit locations or holding regional conferences.

## Summit Takeaways

The evaluation also included questions about what participants gained from the Summit. Many respondents learned new information (83%) and strengthened or expanded their networks (83%) (Figure 4). Forty-one percent of respondents felt the group made progress in identifying and developing solutions. Thirty-eight percent of respondents felt that trust was increased between managers and anglers, and identified programs or initiatives that could be replicated in their region.

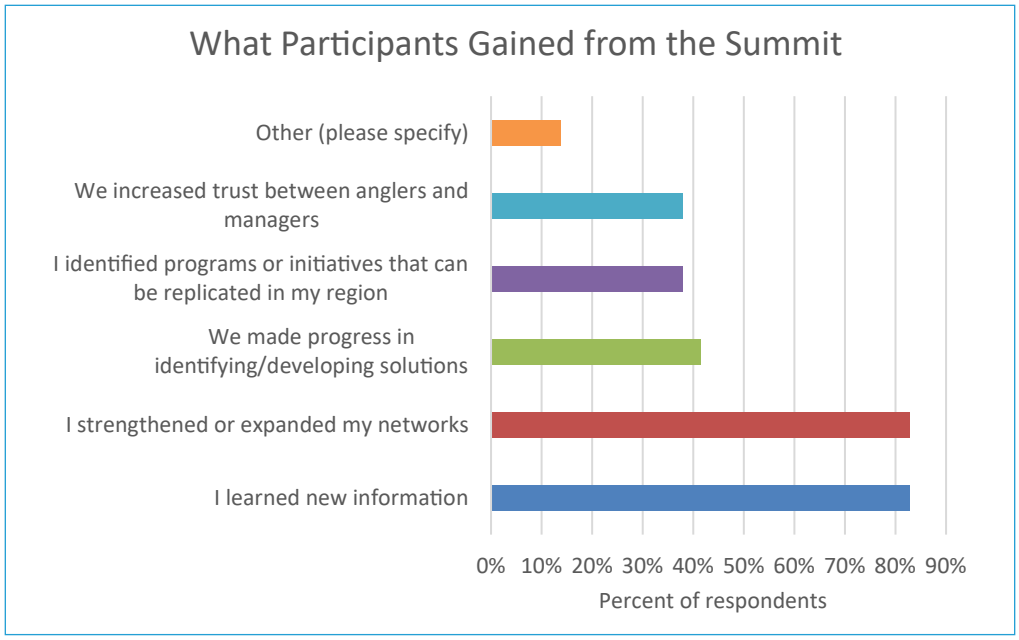


**Figure 4: Reported Gains or Benefits from Summit Participation (n=29)**

When asked about what they would take away from the Summit, there were a wide range of responses. Several participants discussed an urgency from anglers around adapting to climate change and shifting stocks, the need for more flexibility in management strategies, and more investment in data collection. Communication was also a theme in these responses, particularly around the need for more outreach to increase the understanding of data collection and interpretation. Several people walked away with a greater understanding of OY and MRIP, but many more expressed the need for an increased effort to foster collaboration between members of the recreational community and the MRIP Regional Implementation Teams. Many respondents also left with a desire for better strategies to incorporate angler-collected data into management decisions, whether through community-involved studies, reporting, or anecdotal evidence. Some participants mentioned new opportunities or strategies that they would take away from the Summit, such as climate change scenario planning and the potential benefits of offshore wind installations for anglers (with a caveat about a need for more participation of representatives from recreational fisheries in the offshore wind installation permitting process).

Finally, participants were asked about whether they thought that they would attend another Summit in the future. Most respondents answered that they were very likely (62%) or likely (28%) to attend again (Figure 5). About 10% were unsure, unlikely, or very unlikely to attend another Summit.

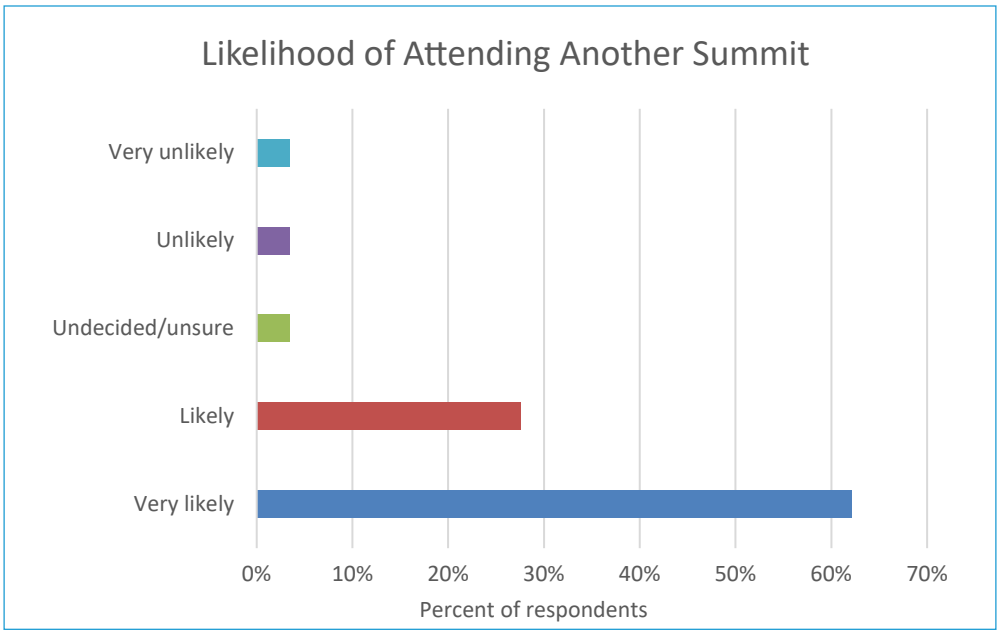


**Figure 5: Likelihood of Participant Attending a Future Summit (n=29)**

## Conclusion

The respondents to this survey expressed excitement about returning to an in-person Summit and having the chance to network with anglers, managers, scientists, and others from different regions. Many took away a better understanding of planning techniques, management strategies, and data collection methods, and as a result requested more communication around these topics to the general recreational fishing community. Building trust was a key theme throughout the evaluation responses, including a desire to address miscommunication and mistrust between different user groups, and between anglers and managers. Future Summit events could develop more deliberate strategies to prevent a small number of voices from taking over the conversations and make space for a more diverse array of individuals to take part in discussions.

While many enjoyed sharing points of view from across different regions, there may need to be more opportunities for regional discussions, as several respondents mentioned that it was difficult to walk away with actionable takeaways in multi-region break-out groups. Future summit events could also provide more training to break-out group facilitators to minimize bias and ensure that these discussions and the resulting report-out are representative of the entire group's views. There were several comments that this Summit was a step in a more productive direction, and that there were improvements over the past events in terms of representation and relevance of topics, though there are still improvements to be made.

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NOAA FISHERIES

https://www.fisheries.noaa.gov/content/national-saltwater-recreational-fisheries-program