

**Summary Record
Marine Fisheries Advisory Committee
Public Meeting
November 28-30, 2017
Silver Spring, Maryland
Proceedings**

Overview

The fall 2017 Marine Fisheries Advisory Committee (MAFAC) meeting took place in Silver Spring, Maryland, from November 28 through 30. NOAA Fisheries was represented by Paul Doremus, Deputy Assistant Administrator for Operations, Chris Oliver, Assistant Administrator for Fisheries, Francisco Werner, Director, Scientific Programs and Chief Science Officer, Heidi Lovett, NOAA's Policy Analyst, and Jennifer Lukens, Director of the Office of Policy and MAFAC Designated Federal Official.

Terri Beideman served as Chair of the MAFAC. The meeting opened by welcoming the 17 members: Bob Beal, Sebastian Belle, Roger Berkowitz, Julie Bonney, Dick Brame, Columbus Brown, Raimundo Espinoza, Rasela Feliciano, Erika Feller, Randy Fisher, Bob Gill, Liz Hamilton, Peter Moore, Mike Okoniewski, Harlon Pearce, Bob Rheault, and Pam Yochem.

Over the course of the meeting, the following priorities and activities pertinent to NOAA Fisheries were discussed in detail:

- Resilience Task 6 white paper on improving the data needed to support sound decision-making for adaptive fishery management actions.
- A written Executive Summary that ties together each of the Resiliency task products.
- Aquaculture activities and potential opportunities for engagement
- Review and comments on Draft 4th National Climate Assessment (e.g., Oceans and Marine Resources Chapter)
- Legislative, administrative, budget and transition outlook
- Columbia Basin Partnership Task Force
- Update on science activities: resilience, electronic technologies and monitoring, citizen science, and deployment of new buoys
- Communications and outreach through FishWatch and new NOAA Fisheries website
- Update on aquaculture efforts
- NOAA Fisheries grant-making processes
- Recreational Fisheries Update

This report summarizes the major actions items, recommendations and meeting discussion for the three day meeting.

Day 1 (11/28/2017)

Report from the Assistant Administrator

Chris Oliver, Assistant Administrator for Fisheries, presented the NOAA Fisheries Priorities and Annual Guidance document which lays out three overarching goals, along with a list of priorities and anticipated results. The goals have changed in subtle but significant ways to better reflect the philosophy of the current administration. NOAA hopes to find a more practical, efficient, and business-minded approach to their mission. NMFS has asked division directors to maintain this focus and emphasis of reducing burden to industry, eliminating old or outdated regulations, and reducing timelines for reviewing and implementing regulatory actions. The administration has not yet taken firm positions on a number of the issues that are the focus of the Magnuson-Stevens Act (MSA) reauthorization.

Opportunities for flexibility exist within Annual Catch Limit (ACL) applications and rebuilding schedules. Regional Councils and Commissions need flexibility to tailor their management plans in order to maximize fishing opportunities and NMFS needs to take advantage of opportunities to streamline regulatory processes, particularly overlapping authorities. Renewing the focus on basic science and data collection will be important in a time of declining budgets and an aging vessel fleet. NMFS must figure out how to better utilize industry platforms for collecting basic research. Enhancing aquaculture is a major opportunity for expanding domestic seafood production. Recommendations from December 2016 MAFAC report are consistent with many of the priorities of this administration.

NOAA leadership has discussed internally whether or when they might take formal positions on MSA reauthorization issues, as well as other bills. They have also discussed the possibility of drafting their own administration bill on reauthorization. Mr. Oliver anticipates that NOAA will resolve some of the key administration positions in the coming months.

Communications and Outreach

Introduction to the New NOAA Fisheries Website

Rebecca Ferro, Deputy Director, Fisheries Office of Communications, presented on NMFS' ongoing web transformation, currently in phase one. The two overarching goals of the transformation are to improve the user experience and to make internal web services more efficient and cost-effective. Twenty core Fisheries sites are being merged into one national user-friendly website while attempting to maintain the discrete identities and decentralized control over content. Long-term planning is being employed to ensure the website remains flexible with regards to technology and how content is structured. Priority content is being migrated in a phased approach while redundant, trivial, and out-of-date content is being eliminated. Customer satisfaction with Fisheries' web presence is currently scored at 69 and NMFS hopes to get above 75 (the U.S. government average) but it will take a few years. The lowest customer satisfaction scores come from commercial fishermen (55) and recreational fisherman (59) – NMFS is paying particular attention to these sectors. NMFS has developed three user profiles for who is utilizing the website and for what purposes:

Surfer – general public, K-12 students, other

Browsing and scanning the site to wherever their interest takes them

Swimmer – fishermen, educators

Seeking something specific, like permits or educator curriculum

Diver – government, scientists, graduate students

Looking for data and legal details they can analyze or manipulate

NMFS strives to develop a website that has better, user-centric content organization with high-quality data and that is mobile-friendly. Priority national content has already been moved to the new site and links to existing sites will be available until all of the content has migrated. Additional enhancements and gathering/addressing feedback will be ongoing for at least another year. Further user testing with fishermen will take place in January-February 2018. All old headquarters program websites will be archived on January 15, 2018, and the last of the offices and science centers' data moved over in 2019. The new website will be at [NOAA Fisheries government website](#)

Members briefly engaged in a discussion about the utility of making MAFAC meetings publicly available via livestreamed webinar. Staff is looking into this but there hasn't been a great deal of interest.

Update on Sustainable Seafood Outreach Initiatives

Laurel Bryant, Chief of External Affairs, provided an update on NMFS' outreach activities. FishNews is NMFS' weekly flagship newsletter that supplies key information to stakeholders. NOAA has put forth its own narrative concerning sustainable seafood in a manner that has resonated with the public. Last year, for the 40th anniversary of the MSA, this effort culminated in the agency being recognized as a global leader in sustainable fisheries management. Ms. Bryant went on to discuss her work in bringing together international affairs, seafood inspection, aquaculture, sustainable fisheries, and communications.

NOAA is beginning to seriously consider how to support expanding U.S. seafood production. MAFAC was asked for input on how FishWatch could be utilized and expanded to be a more effective tool in that conversation. Though NOAA is a science-based agency, they have partnered with consumer-facing organizations to get ideas about informing the culinary industry. NOAA is not interested in becoming a certifier, but may initiate an education campaign that drives consumers to a platform that provides further information.

NOAA Aquaculture Program Updates

Paul Doremus, Deputy Assistant Administrator for Operations, discussed NOAA's current status on implementing an aquaculture plan. The agency is in a position to take bold steps in promoting U.S.-based aquaculture production, which is a necessary step in meeting demand. The reflexive resistance to aquaculture has changed recently and the environmental community is seeing aquaculture in a much more positive light compared with other forms of protein production. The industry has also changed and there is demand for growth in aquaculture capabilities across the supply chain. The debate between wild

caught and farmed fish has changed as markets can be built so that both benefit. One of the Secretary's priorities is to address the nation's seafood trade deficit and he envisions greater sources of domestic supply as one way to address this. The aquaculture program would benefit greatly from MAFAC's advice and endorsement.

Michael Rubino, PhD, Director, Office of Aquaculture, provided an update on NOAA's National Aquaculture Initiative. The initiative focuses primarily on the marine sector, but NOAA has had discussions with colleagues at USDA and the freshwater sector concerning aquaculture. The key issues involved with using the marine environment include social license, conflicts in coastal areas, and a complicated regulatory environment.

The proposed National Marine Aquaculture Initiative has four components:

- Regulatory streamlining
- National legislation (federal waters, R&D program)
- Regional partnerships and pilot projects
- Science R&D technology transfer and extension to accelerate production.

In FY2017, NOAA's total aquaculture program budget was \$24,302,000. Building stakeholder coalitions has been very successful in some areas and the broader aquaculture community has stated that a similar model might work for marine aquaculture or aquaculture generally.

Columbia Basin Partnership Task Force

Barry Thom, Regional Administrator for the West Coast, presented the history of the Columbia Basin Partnership Task Force and some of the issues they are tackling. NOAA Fisheries has multiple responsibilities in the basin, such as Endangered Species Act (ESA), MSA, treaty/trust to tribes, and mitigation for the federal hydrosystem. There are 24 salmon stocks in the Columbia Basin, 13 of which are listed under ESA. Balancing of the ESA and non-ESA perspectives is one of the goals of the task force. The task force also addresses plans and processes related to habitat, the hydrosystem, harvest, and hatcheries addressing varying aspects of salmon management. Included within the basin are four states, thirteen sovereign tribes, and a wide variety of stakeholders. In January 2017, the task force began working toward a more coherent, integrated, and efficient means of addressing the complexities of salmon recovery as well as developing common, long-term goals for salmon and steelhead. Recovery levels will vary over time by species and location, but the broad goal is to get them all delisted to a healthy and harvestable status. Recovery goals go beyond abundance to include diversity and spatial structure of the stocks.

Kristin Meira, Executive Director, Pacific Northwest Waterways Association, discussed ports and navigational aspects of the basin. Commercial navigation in the Columbia Basin is limited to the Columbia and Snake Rivers, as far east as Lewiston, ID. Over 50 million tons of cargo traversed the Lower Columbia River in 2016, valued at about \$24 billion. At least 40,000 jobs are directly tied to navigation and cargo on the 105-mile channel. The Inland Columbia/Snake River extends 365 miles further inland with eight locks along the way, the highest lift locks in the U.S. This river system is one of the nation's most important export gateways. Ports are the stewards of their waterfront and are doing good works in and around

the river. They want certainty and regional consensus on long-term goals.

Urban Eberhart, Secretary Manager, Kittitas Reclamation District, provided another stakeholder viewpoint focused on the Yakima Basin, a tributary to the Columbia River. This is a highly developed agricultural area of 6,155 sq. miles and 360,000 people. Yakima Basin produces about \$4.5 billion in agricultural products each year. Reservoirs in the area were constructed without fish passages, blocking a significant amount of habitat in the Basin. There are now opportunities for going into these areas and opening up habitat that has been blocked. Resource challenges facing the area include surface water being over-appropriated, the area is not drought-resilient, and proratable irrigation districts and fisheries are struggling. Emerging solutions include ecosystem restoration, increasing drought resiliency, climate adaptation strategies, and a reliable supply for proratable users. The Yakima Basin Integrated Plan is a 30-year phased strategy consisting of \$3-5 billion in projects to utilize existing irrigation infrastructure for adapting to the lack of snow pack. These aim to keep the ecosystem alive and the canal systems running later into the year, to implement groundwater storage, and create additional surface water storage. Fish passages are also being built at all of the major reservoirs in the area. The efforts of this project are being overlain onto the Columbia Basin Partnership and he believes a consensus agreement will be reached.

Katherine Cheney, Public Affairs Specialist, West Coast Region, discussed the Partnership's progress and products to-date, as they are about half way through the two-year effort. The Task Force hopes to develop goals that address both conservation and harvest/fishing aspirations. These goals should be understandable and considerate of the various users of the Columbia Basin's resources, including their cultural and spiritual relevance. The Task Force is working toward quantitative abundance goals for both listed and non-listed stocks. One of the challenges to this goal is that the various applicable regulations concerning adult abundance use different metrics. They seek to develop common aligned goals. Once these are in place, it should allow for better coordination, more effective use of resources, and an alignment of strategic priorities. The Task Force also seeks enhanced relationships, trust, and knowledge for the partners within the Basin. Subgroups within the Task Force are collecting relevant data, existing goals and options for quantitative goals concerning five species and hope to complete information gathering for the remaining 19 species by February 2018. At the Task Force's February meeting they will begin to filter options for goals through social, economic, and cultural lenses, and begin basin-wide integration of all 24 stocks. They look to provide MAFAC with recommendations on qualitative and quantitative goals along with additional supportive information.

Report from the Acting Under Secretary of Commerce for Oceans and Atmosphere

RDML Timothy Gallaudet, PhD, Assistant Secretary of Commerce for Oceans and Atmosphere and Acting Under Secretary, provided an overview of his background as oceanographer for the U.S. Navy and discussed NOAA's direction under the current administration.

Strategic Imperatives

Megatrends shaping NOAA's future involve the exponential technology advancements in

information technology, autonomous systems, machine learning, and genomics/bioengineering. By 2050, \$1,000 worth of computational capacity will exceed that of all human brains on earth. This will present countless opportunities in terms of data collection and optimizing yields in commercial fisheries, improving stock assessments and everything else NOAA is engaged in regarding ocean and weather prediction. In the last 25 years, global shipping has increased by 400% and, in the last 10 years, coastal populations have increased by 5 million. Coasts are becoming more vulnerable and NOAA needs to take up the issue of resiliency for people and fisheries. America's competitors are also catching up to us. This administration's goal is to retain its global leadership position in all areas. For NOAA, that means resource management and environmental prediction. National security is another major focus area for the administration.

NOAA Priorities

Lead the world in earth system observation and prediction

The U.S. currently does not have a global leadership position in weather modeling. The Secretary has clearly directed NOAA to regain leadership.

Minimize extreme weather and water event impacts

The Weather Research and Forecasting Innovation Act provides authority and direction for NOAA to do what it takes to improve modeling and the decision support. NOAA can't prevent the storms, but through resilience actions and preparedness they can help to minimize the damage.

Increase the sustainable economic contributions of our fisheries and oceans

Provide data to support sustainable tourism, shipping, energy and resource extraction opportunities, while maximizing the potential for fisheries through wild caught commercial and recreational, as well as aquaculture.

Implications for NOAA Fisheries

The administration and the Secretary are very interested in the economics of the nation's fisheries. Job creation and economic growth are major priorities for all departments of the federal government. The U.S. has a \$14 billion seafood trade deficit despite having the world's second largest EEZ and the world leaders in the industry and science. Aquaculture provides an opportunity to decrease that deficit. The economic contributions of U.S. fisheries, currently totaling \$208 billion a year and 1.62 million jobs, can certainly grow.

RDML Gallaudet thanked MAFAC for its 2016 report. It has carried great weight as the Secretary continues to look for expert advice from outside the federal government. RDML Gallaudet has been pitching the idea of a National Marine Moonshot intended to rapidly accelerate America's blue economy by providing various sectors better coastal information.

In discussion with MAFAC, RDML Gallaudet expressed his views on the interface between climate and weather. Though climate change is not a priority for the administration, NOAA will continue its climate monitoring and assessment missions, which will inform the agency's

future plans. Near-term weather forecasting ability and better weather models will save lives and provide a better framework for understanding climate change in the future. Climate is rolled up in the priority on minimizing impacts of weather. RDML Gallaudet also discussed the importance of allocating resources to cover unforeseen events impacting programs.

Resilience Working Group

Terri Beideman, Working Group Chair, reviewed the final draft of the executive summary of the Resilience Working Group final report. The group began work drafting an aquaculture letter to the Secretary. In addition to MAFAC's tasks and recommendations, Ms. Beideman came up with more ideas for the committee to consider, including empowering communities to establish and maintain resiliency plans, the opportunity in Puerto Rico to look at not just adapting to gradual changes but employing technologies to new approaches to emergency response, recommendations on resiliency goals, and stating clearly that MAFAC would like to be involved in the development of future goals. Members made suggestions for enhancing the document. The final report and its executive summary will be finalized and approved later in the meeting.

Resilience Working Group Task 6 – Management Approaches

Harlon Pearce, Task Group Chair, discussed the task group's work on Task 6 and presented the draft version. A lot of work went into it and the group feels it fits well into MAFAC's thought processes around protecting communities, fishermen, and jobs in an efficient and effective way. The purpose of the task was to identify tools or strategies that are effective or could be strengthened to allow fisheries management to be more nimble, flexible, anticipatory and adaptive in mitigating changes in ecosystems and fisheries. The group focused on two topics: (1) using framework or in-season management actions to solve problems, and (2) improving the data that is needed to make sound decisions, including more real-time data. A third topic, improving communications, was already being addressed by another group. MAFAC members made suggestions for further consideration. The document will be refined and brought back to the committee.

Day 2 (11/29/2017)

Ms. Lukens announced changes to the meeting agenda due to transportation issues in the D.C. area.

Science Enterprise Update

Francisco Werner, PhD, Director, Scientific Programs and Chief Science Advisor, provided an update on NOAA's science enterprise.

Electronic Technologies Update

Brett Alger was hired as the Electronic Technologies (ET) Coordinator in July. His past experience working with the Greater Atlantic Regional Fisheries Office brings a welcome connection to the Office of Science and Technology. Key ET priorities for 2018 include developing electronic monitoring policies, developing a national data modernization strategy, and renewing electronic technology implementation plans. Regional Technology

Implementation Plans will give the regions an opportunity to provide input on applicable technologies.

Science Priorities on Ecosystem-based Fisheries Management (EBFM) and Resilience

NOAA is now going beyond ecosystems to include social and socioeconomic elements in its consideration of resilience priorities. NMFS has been working on the integration of this human dimension into ecosystem assessments and EBFM science products and are now developing human dimension and resilience indicators. Thirteen social indicators are currently in use covering 3,800 communities. The NMFS website allows users to view the vulnerability of a community from the perspective of each indicator, as well as linking different indicators. A vulnerability and resilience time series conceptual model allows users to view how communities may respond to various risk factors, resilience, vulnerability, and ultimately adapt to them. EBFM Regional Action Plans have been developed to lay out how EBFM is going to be implemented in different regions. These will be joint efforts between science centers, Regional Office Councils, and other groups. Some regions are going to have drastically different EBFM plans than others given their database capabilities.

The environmental sample processor (ESP) is an advanced, automated, quantitative, in situ biological sensing system that provides early warning of harmful algae and their toxins. Harmful algal blooms (HABs) are occurring with increased frequency and the economic impacts of HABs in the U.S. are now over \$82 million a year. The ESP has already been successful in detecting a domoic acid event which, had it not been detected, would have caused the razor clam season to be lost for the year. NOAA is looking into using Saildrones equipped with in-water technologies for ecosystem surveys that can cover large areas quickly. NOAA is beginning to utilize multiple omics to push forward the next steps in data collection.

NOAA Fisheries Budget Outlook and Administrative Update

Stuart Merrill, Acting Chief Financial Officer and Director of NMFS Office of Management and Budget, provided the NMFS budget update. The current continuing resolution is active through December 8, 2017. Under a continuing resolution, no new starts or terminations can take place, though contract activity can continue and grants can be awarded. The FY2018 Budget Blueprint set broad administration goals of enhancing programs that promote national security and public safety. \$250 million in targeted NOAA grants and programs were proposed to be cut. Mr. Merrill provided an overview of the FY2018 House and Senate marks. These demonstrate an awareness of the important work that Fisheries does and show strong support for Regional Councils and Commissions, salmon management, aquaculture, and Gulf of Mexico stock assessments. Based on current estimates, approximately \$10.2 million will be available for Saltonstall-Kennedy grants at the FY2018 House mark and Senate mark level – the President’s budget called for no funding. Flat federal budgets combined with increasing mission support requirements put considerable pressure on operational dollar use. NMFS will not waiver in focusing on their strategic goals of ensuring the sustainability of fisheries and fishing communities, recovering and conserving protected species, and improving organizational excellence. The administration has a strong focus on the analytical component, returns on investment, and GDP. NMFS is experienced in being able to communicate their value add to the nation. NMFS aims to manage

uncertainties by targeting available resources to their highest priority activities and collaborating with the states and Commissions.

Legislative Update and Regulatory Streamlining

Alan Risenhoover, Director, Office of Sustainable Fisheries, provided an update on some of the many legislative actions underway. There has been a lot of activity on MSA, including seven congressional hearings to date. Six pieces of MSA legislation are likely to form the basis for any final action. These six include: the Strengthening Fishing Communities and Increasing Flexibility in Fisheries Management Act, Discussion Draft, the Modernizing Recreational Fisheries Management Act, the Florida Fisheries Improvement Act, the RED SNAPPER Act, and the GOFISH Act. Mr. Risenhoover discussed each of the bills in some detail. The administration does not yet have a position on any of the bills. The Council Coordinating Committee of the Regional Councils has put together a detailed position paper on a number of relevant issues.

Several executive orders have been issued addressing the administration's regulatory reform agenda. Mr. Risenhoover focused on two of those: E.O. 13771 – Reducing Regulation and Controlling Regulatory Costs and E.O. 13777 – Regulatory Reform Task Force. The goal of E.O. 13771 is to eliminate two existing regulatory actions for each new significant regulatory action; the two eliminated do not have to be significant. The cost of the new significant regulation must be offset with the deregulatory actions that should have some geographic or sector similarity. Exempt actions include emergency actions, statutorily or judicially required actions, and routine MSA fishing regulations that establish annual harvest limits. Exemption requests can also be submitted to OMB's Office of Information and Regulatory Affairs. E.O. 13777 establishes task forces at each agency charged with ensuring implementation of E.O. 13771. These task forces focus on evaluating existing regulations for their repeal or modification and fostering transparency by seeking input from affected entities. Through the Council process and under statutory requirements, NMFS believes it already meets many of the requirements of the E.O. regarding public review of regulations. NMFS and NOS issued a Joint Federal Register Notice seeking public comment on all their statutes, processes, and regulations under all E.O.s. Over 160 comments were received, generally in support of regulations and environmental protection. NMFS has established a headquarters working group and has developed and implemented a cost worksheet and tracking spreadsheet to see how they're doing with the regulatory/deregulatory process. Headquarters offices are expected to complete reviews of the regulations identified in public comment by December 2017. Regional Fishery Management Councils' reviews of regulations are expected by July 2018.

Reports from the State Directors Meeting and Fisheries Commissions

David Donaldson, Executive Director, Gulf States, reported on the issues the Gulf Commission is addressing. All of the Commissions have had level funding for their programs over the last several years. It is becoming increasingly difficult to accomplish the critical work they are doing. They have been working with the agency to reduce or eliminate administrative fees and meeting with congressional staffers and emphasizing the importance of data collection activities. They hope to get funding out in early 2018 to continue work on oyster aquaculture projects. An RFP will be released soon for the Regional

Pilot Project, with work beginning in 2018. They are hoping to get clarity on the permitting process in the Gulf of Mexico. Most Gulf States have submitted for exempting fishing permits for red snapper data collection; in order for these to work there must be a decision on allocation amongst the states which has not yet happened.

Bob Beal, Executive Director, Atlantic States, reported on the issues the Atlantic Commission is addressing. Along the east coast, foraged fish management is going to be an important issue. Striking the right balance between the industry and the ecological services provided by the fish, particularly menhaden, is challenging for the states. They are moving toward ecological reference points that take into account the biology of the fish as well as the predatory demands and ecological services they provide. Allocation is always a sensitive topic, but some of the species-specific commercial data used to determine allocation are over 40 years old. States will have to work through the appropriateness of the data for each species along the east coast. The cost of doing at-sea work is going up rapidly and the Commission is struggling to figure out how to keep surveys going and prioritizing their efforts. States have taken over the site intercept portion of the MRIP program and after completing their second year, things have gone well. States have been able to collect more samples than contractors were able to at the same price and there is growing confidence in the data. There is disconnect, however, between what the MRIP program collects and the way managers want to use that data. The east coast is slowly moving toward mandatory electronic reporting for some fisheries. An ambitious effort to make the Atlantic Coastal Cooperative Statistics Program a one-stop shop for data is going well. For the first time since 1993, the Secretary of Commerce recently disagreed with the ASMFC's Fishery Management Plan findings. He did not find the state out of compliance but it was enough to raise concern throughout the ASMFC. The Secretary has assured the states that this was a set of unique circumstances that led to the decision and is not a trend. The Commission needs to work on securing the relationship between the Secretary and the east coast states over the next year or two.

Randy Fisher, Executive Director, Pacific States, reported on the issues the Pacific Commission is addressing. There were at least 78 known whale entanglements last year from Dungeness crab pots. The Dungeness crab fishery is the most lucrative fishery on the west coast (\$180 million/year). The Commission met with crab fishermen to figure out what to do but the issue is not going away. Scientists have also been monitoring at a pod of orcas off the San Juan Islands that have not been doing well. This may lead to either shutting down the Chinook salmon fishery at certain times of the year or ramping up hatchery production. The probability of winter steelhead going extinct went from 6% to well over 95% due to the resurgence of California sea lions. The Commission has been involved with the camera review process for about four years and finds that it works and can effectively replace observers onboard. The U.S. Army Corps of Engineers recently gave the Commission \$4 million to establish stations for reviewing boats that may be coming in with quagga and zebra mussels.

Public Comment

There was no public comment.

Climate Science Update

Roger Griffis, Climate Change Coordinator, provided a progress report on the implementation of NMFS Climate Science Regional Action Plans (RAPs) and discussed the draft U.S. National Climate Assessment now open for public comment.

Climate Science Regional Action Plans

NOAA moved forward with year one implementation of their climate science strategy RAPs. The goal of the strategy is to increase the production, delivery, and use of climate-related information to fulfill NOAA Fisheries mandates. The RAPs allow for increased science capability, enable climate-ready management, and advance the resilience and adaptation of the resources and communities that depend on them. Priority actions in all RAPs include: complete climate vulnerability assessments; improve tracking and reporting on ecosystem conditions; target research to understand the mechanisms of impacts; improve forecasts of future conditions; and to evaluate alternative management strategies. RAPs have been implemented in five regions and are still being developed in three others. Good progress was made in FY2017 and more is expected in FY2018, contingent on funding. Mr. Griffis reviewed some of the highlights from the Northeast RAP, particularly advances in tracking and projecting change. Funding and staffing limitations continue to impede expansion of all seven NCSS objectives and challenges remain regarding the inclusion of environmental/ecosystem variables into stock assessments and management decisions. More process-based laboratory studies are needed. Resources managers of all kinds are wrestling with how to use information about changing environmental conditions in their decision making; the complexity of the sea makes this particularly challenging. NMFS has found that they need to work with partners to strengthen the RAP teams, as well as continuing cross-NMFS coordination, securing resources and partners, and updating Fishery Management Councils to ensure they are getting the products and services they need.

Oceans and Marine Resources in the Fourth U.S. National Climate Assessment

The National Climate Assessments are done every four years and presented to the President, Congress, and the public. The assessment integrates, evaluates, and interprets current findings and scientific uncertainties, analyzes the effects on various sectors, and analyzes current and future trends in global changes for the next 25-100 years. The 2018 iteration is composed of two volumes, Vol. I: A Climate Science Special Report covering the past and future changes in the physical environment and Vol. II: Climate Change Impacts, Risks, and Adaptation in the U.S. which is still out for public comment. The major findings on oceans cover four major areas: warming oceans, ocean acidification, rising seas, and declining oxygen levels, along with the advancements in these areas. The three key messages summarizing advances in knowledge on the impacts and risks to U.S. oceans are as follows:

Key message 1: Ecosystem disruption. The nation's valuable ocean ecosystems are being disrupted by increasing global temperatures through the loss of iconic and highly-valued habitats and changes in species composition and food web structure. Ecosystem disruption will intensify as ocean warming, acidification, deoxygenation, and other aspects of climate change increase. In the absence of significant reductions in carbon emissions, transformative impacts on ocean ecosystems cannot be avoided.

Key message 2: Risks to fisheries. The nation's valuable marine fisheries and fishing

communities are at high risk from climate-driven changes in the distribution, timing, and productivity of fishery-related species. Ocean warming, acidification, and deoxygenation are projected to increase changes in fishery-related species, reduce catches in some areas, and challenge effective management of marine fisheries and protected species. Fisheries management that incorporates climate knowledge can help reduce impacts, promote resilience, and increase the value of marine resources in the face of changing ocean conditions.

Key message 3: Extreme ocean events. Marine ecosystems and the coastal communities that depend on them are at risk of significant impacts from extreme events with combinations of very high temperatures, very low oxygen levels, or very acidified conditions. These unusual events will become more common and more severe in the future. They expose vulnerabilities that can motivate change including technological innovations to detect, forecast, and mitigate adverse conditions.

MAFAC members were asked to review the relevant chapters of the assessment and submit comments through the USGCRP website (review.globalchange.gov) before January 31.

Day 3 (11/30/2017)

NOAA Fisheries Grant-Making Processes

Dan Namur, Director, External Funding Division, Office of Management and Budget, presented on financial assistance programs overseen by NMFS. There are currently 699 grants totaling \$384 million. At least a third of NMFS' funding goes out through grants and cooperative agreements. There are six types of grants released each year: competitive (335), non-competitive (149), formula (135), institutional (50), and unsolicited or sponsorships (37). The Broad Agency Announcement portal allows unsolicited innovative ideas to come in for consideration. Every financial assistance award that goes out has to have some authority associated with it. Major legislative drivers include MSA, ESA, Marine Mammal Protection Act (MMPA), National Environmental Policy Act (NEPA), and others. The major program areas for grants are sustainable fisheries, protected resources, habitat conservation, science and technology, aquaculture, enforcement, and international affairs. The Saltonstall-Kennedy (S-K) Act uses non-appropriated funds collected through duties and tariffs by USDA for fisheries research and development projects. It allows the agency to obligate funds to address needs that are not adequately addressed through the competitive process. The Pacific Coast Salmon Recovery Fund is a \$65 million line item in the budget each year designed to reverse the declines of Pacific salmon and steelhead species on the west coast and, in many cases, has stabilized the populations and contributed to their recovery course. Fisheries Information Networks are funded annually through the Office of Science and Technology with additional support through the S-K program to collect, manage, and disseminate statistical data and information on the commercial fisheries of each region. Interjurisdictional Fisheries is a \$3.2 million formula allotment program promoting management of interjurisdictional fisheries resources. NOAA Fisheries' Bycatch Reduction and Engineering Program supports the development of technological solutions and changes in fishing practices designed to minimize bycatch, seabird interactions, and post-release mortality in federally managed fisheries. \$2.5 million are appropriated annually to support competitive grants. Aquaculture, law enforcement, and protected resources are also major

program areas that receive grants. Members provided feedback on their experiences with S-K grants and asked specific questions concerning the grant. Mr. Namur added that S-K grants are not allowed to have anything to do with infrastructure. S-K no longer has a match requirement which was eliminated with the intention of bringing smaller organizations to the table. Mr. Namur encouraged MAFAC members to reach out to him with any further concerns.

Citizen Science

Laura Oremland, Acting NOAA Citizen Science Coordinator, NMFS Office of Science and Technology, presented some successful examples of citizen science in fisheries and some of the opportunities for the future. With fewer than 3,000 FTEs managing hundreds of marine populations in world's second largest EEZ, citizen science has the potential to be very useful. NOAA launched its Citizen Science Community of Practice in November 2013 and receives over 500,000 volunteer-hours per year on 67 projects. The Crowdsourcing and Citizen Science Act broadly defines citizen science as any form of open collaboration in which individuals or organizations participate voluntarily in the scientific process. Citizen science and cooperative research are different and complementary, though some cooperative research can fall under the citizen science umbrella. NOAA Fisheries currently has over 40 citizen science activities occurring across all regions providing valuable information on several of the agency's key priorities, such as fishery resources, protected species conservation/recovery, habitat, and ocean temperature and currents. SAFMC is developing a citizen science program with five action teams focusing on communications, data management, finance, projects, and volunteers. They will be holding a meeting in January to share their recommendations and their first project in 2018 will likely be developing an app for fishermen to provide scamp discard information. The California Collaborative Fisheries Research Program is a fishery-independent survey program for west coast groundfish that monitors MPAs and provides data for fisheries management. They have provided 10 years of data, contributing over 28,000 volunteer hours. The Reef Environmental Education Foundation provides an opportunity for divers to report categorical fish estimates. The use of citizen science in fisheries management has challenges ahead, particularly at the peer review phase, but it can be done.

Rich Cody, ECS Federal LLC, MRIP Program Management Team Member, Office of Science and Technology, presented on citizen science from the recreational perspective. MRIP holds that it is not appropriate to estimate catch and effort based on voluntary data from self-selected groups of anglers. NMFS' Procedural Directive on Electronic Technologies in Fishery-Dependent Data Collection provides internal guidance on what types of efforts MRIP should be involved with. It supports identifying and addressing limitations of non-probability sampling designs. It also provides support for electronic reporting for census and probability sampling methods. MRIP hosted a workshop on opt-in anglers that acknowledged a potential for bias and noted that angler trust may be harmed if volunteered data is not used. MRIP has supported 13 electronic reporting research studies since 2013. MRIP has found that opt-in and volunteer reporting is being used to provide useful data under certain conditions. Fishery-dependent data is being used for distributional information, tag return reporting, biological information, and effort. Fishery-independent data is being used for biological information and CPUE abundance. An MRIP pilot study found that under specific

conditions, unweighted CPUE is comparable to those produced in MRIP but contain an angler avidity bias. Managing expectations will be a critical component going forward. Expectations should be set based on identifying and addressing data use limitations, finding appropriate uses, defining data standards, and accounting for bias.

Subcommittee and Working Group Reports

Recreational Fisheries Subcommittee

Dick Brame, Working Group Chair, reported that the subcommittee received an update from Russ Dunn on the positive things happening within the administration in regards to recreational fisheries. Tim Sartwell updated the subcommittee on regional roundtables and the 8th World Recreational Fishing Conference where NOAA was well-represented. The subcommittee was pleased to see the Regional Recreational Fishing Snapshots. The next Recreational Fishing Summit will be held in Arlington, VA, on March 28-29 and the theme will be opportunity and stability in recreational fisheries. NMFS has addressed the National Academies of Science recommendations and surveys are more accurate. New estimates will be available in 2018 and will likely produce higher estimates of catch and effort. The subcommittee discussed how to better communicate MRIP changes to the public.

Resilience Working Group

Terri Beideman, Working Group Chair, and Harlon Pearce, Task Group Chair, led MAFAC through reviewing and approving the Task 6 document. All of the task documents will be attached to an executive summary as an appendix. MAFAC reviewed the document and Ms. Beideman called for any final amendments based on the presentations. Ms. Bonney made a motion to approve the document as presented; the motion was seconded by Mr. Brown. The motion was approved unanimously.

The executive summary for the Resilience Working Group Final Report was reviewed along with an addition made the previous day concerning climate change. After some clarification to the addition's wording, Ms. Bonney made a motion to approve the document as amended; Mr. Gill seconded the motion. The motion was approved unanimously.

Ms. Beideman thanked everyone for their work on the document. Ms. Bonney specifically thanked Ms. Lovett for her effort. With work on the tasks having been completed, Mr. Brown made a motion to disband the ad hoc working group; Mr. Rheault seconded the motion. The motion was approved unanimously.

Ecosystems Approaches Subcommittee

Pam Yochem, Subcommittee Chair, presented the subcommittee's comments on the draft National Climate Assessment. The comments will be sent as a memo from the MAFAC Chair to the Assistant Administrator. The subcommittee slightly modified the task group's suggestions and passed those along to MAFAC then incorporated their changes into the document. MAFAC reviewed the document and members made additional amendments. After extensive tweaking, Mr. Rheault made a motion to approve the comments as amended; Ms. Bonney seconded the motion. The motion was approved unanimously.

Commerce Subcommittee

Julie Bonney, Subcommittee Chair, presented the subcommittee's letter commending NOAA's aquaculture work and encouraging the Secretary to move forward with NOAA's aquaculture initiative. The letter notes that NOAA should collaborate with industry on its path forward. MAFAC wants to make clear that they are not endorsing the specifics of the proposal until it has gone through further industry review. Mr. Rheault made a motion to accept the letter as amended and send it to the Secretary; Mr. Brown seconded the motion. The motion was approved unanimously.

Action Items

Ms. Lovett will circulate the papers mentioned in Mr. Griffis' presentation to MAFAC members.

Ms. Lukens will get further information from Mr. Namur on the composition of regional grant dollars.

MAFAC staff will send an email to members with their 2016 recommendations and request that they reflect on what they heard at this meeting and consider future topics where they feel they may be able to add value to the administration. Once the eight new members are on board, a teleconference will be convened to further discuss these items and tee them up for the next MAFAC meeting.

Next Meeting

The week of June 25, 2018 is tentatively planned for the next in-person MAFAC meeting. A location has not been decided. Puerto Rico, Alaska, and Portland, ME, were proposed. Members suggested large-scale industrial fishing and finfish aquaculture as criteria they would like considered in deciding a location.

Other Items

Ms. Lukens announced that Mr. Brown has volunteered to chair the Protected Resources Subcommittee. Mr. Espinoza will also join that subcommittee. Mr. Cunningham will chair the Recreational Fisheries Subcommittee. Mr. Okoniewski will serve as MAFAC's liaison for the Columbia Basin Partnership Task Force. The chair position of the Ecosystem Subcommittee will remain vacant. Mr. Belle and Mr. Berkowitz will co-chair the Commerce Subcommittee. Eight new members will be joining MAFAC in the coming weeks.

The meeting was adjourned at 2:50 p.m.