



MARINE RESOURCES ADVISORY COUNCIL

Meeting Summary

February 9, 2016 10:00 a.m. to 3:30 p.m.

Mountaineers Club, Seattle WA

Meeting Attendance and Objectives

The Washington Marine Resources Advisory Council (MRAC) held its tenth meeting on February 9, 2016. The meeting was facilitated by Martha Kongsgaard, MRAC Chair and Angie Thomson of EnviroIssues.

Members in attendance: Martha Kongsgaard (Chair), Garrett Dalan, Nan McKay, Linda Anderson-Carnahan (Environmental Protection Agency alternate for Dennis McLerran), Gus Gates, Rich Childers (Washington Department of Fish and Wildlife alternate for Michele Culver), Dick Sheldon, Bill Dewey, Kristen Feifel (Washington Department of Natural Resources alternate for Peter Goldmark), Shalin Busch (NOAA alternate for Libby Jewett), Richard Feely, Lisa Graumlich, Representative Norm Dicks

MRAC members not in attendance: Brian Allison, Mike Cassinelli, Representative Dave Hayes, Senator Steve Litzow, James Peters, Senator Kevin Ranker, Phil Rockefeller, Tom Davis, Tony Floor, Terry Williams, Kelly Wood, Kelly Susewind (Department of Ecology alternate for Maia Bellon), Paul Dye, Erika McPhee-Shaw (Western Washington University alternate for Steve Hollenhorst)

Other participants: Meg Chadsey (Washington Sea Grant), Jan Newton (WOAC), Terrie Klinger (WOAC), Mindy Roberts (Ecology), Paul Williams (Suquamish Tribe), Nina Bednarsek (NOAA), Julie Horowitz (Governor's Office), Micah Horwith (DNR), Ginny Broadhurst (Northwest Straits Commission), Mike Chang (Makah Tribe), Betsy Peabody (Puget Sound Restoration Fund), Sheida Sahandy (Puget Sound Partnership), Mariko Kobayashi (University of Washington), Danielle Flanagan (University of Washington), Jessie Turner (Cascadia Law Group), Jay Manning (Cascadia Law Group)

Meeting objectives:

- Share updates on ocean acidification activities and events
- Confirm legislative strategy for 2016 and 2017 sessions and process for developing 2017-18 biennium ocean acidification funding requests
- Review progress towards Blue Ribbon Panel's recommendations related to monitoring and investigation contributions, and discuss MRAC's targeted priorities for future activities

Materials distributed:

- Monitoring & Investigations Blue Ribbon Panel Recommendation Progress Tracker
- MRAC Monitoring & Investigations Priorities – July 2014
- MRAC 2016 Work Plan
- Ocean Acidification Landscape

- Ad Hoc Committee Membership List

Welcome and introductions

Chair Martha Kongsgaard opened the meeting and thanked council members for their participation.

Recent ocean acidification happenings

Martha invited council members to share updates on recent happenings related to ocean acidification.

- Martha shared that she and several other MRAC members recently participated in the Joint Ocean Commission Initiative (JOCI) roundtable focused on ocean acidification, coastal economies, the connection between coastal economies and changing ocean conditions.
- Martha explained that a recent agreement in Canada will protect 85% of the Great Bear Rainforest in British Columbia from logging, protecting a remarkable landscape for future generations.
- Julie Horowitz (Governor's Office) shared that Governor Inslee has launched the second phase of the Washington Shellfish Initiative. June 4-11, 2016 he will be hosting a state shellfish week that could provide an opportunity to get media coverage and interest. Capitol Hill Ocean Week will also be the same week.
 - Dick Sheldon (coastal shellfish grower) commented that the Shellfish Initiative has not helped the coastal shellfish industry enough. Without a solution, Willapa Bay could lose 75% of its shellfish beds in five years.
- Julie explained that the West Coast Ocean Acidification and Hypoxia Panel will release its report later this spring. The Governor's office is also engaging with the interagency workgroup on ocean acidification and collaborating with the IOOS system.
- Paul Williams (Suquamish Tribe) shared information about the upcoming K-12 environmental education action summit on February 25-26 on Bainbridge Island. The event is an opportunity for educators from around the state to discuss making environmental education a part of the core classroom content. He noted that few researchers are currently registered for the event, and encouraged researchers to participate and provide their input to best integrate current information into the education curriculum.
- Bill Dewey (Taylor Shellfish Farms) recently traveled to France to meet with the French oyster delegation. The French shellfish industry is ten times the size of the US industry, but has been dealing with diseases that have been wiping out oysters since 2007. They had not considered that changing ocean chemistry could be a part of the problem. The National Ocean Council is now interested in hosting French industry representatives in the United States to continue the broader engagement of the international shellfish industry around ocean acidification.

2016 MRAC Work Plan

Martha explained that the MRAC works to get changing ocean conditions and ocean acidification in state agency work plans and to ensure that the state stays on track with the promise of the Blue Ribbon Panel. Senators Ranker and Ericson have introduced a bill to the

legislature to extend the MRAC for five years, which will be voted on soon. Angie Thomson added that now is the time to begin identifying funding priorities and discussing these priorities with state agencies to seek funding. Additionally, the MRAC will be working on a status report in 2016, with a re-evaluation of the Blue Ribbon Panel on the horizon for 2017.

Angie reviewed the timeline set out in the MRAC Workplan handout. In February and March, the ad hoc committees will meet again and reexamine funding priorities that were presented in the last cycle, and put together a new list of priorities. The MRAC will review these priorities at a spring meeting, before the priorities are taken to state agencies to understand how they might fit into agency budgets. Richard Feely (NOAA) suggested that Washington Ocean Acidification Center (WOAC) champion a summary document of new information the scientists have gathered that would be useful to answer questions from the legislature. Jan Newtown (WOAC) agreed that WOAC could lead this summary effort. Lisa Graumlich (UW College of the Environment) added that the report should demonstrate the power and importance of monitoring.

Dick Sheldon commented that he would like to see these ideas be implemented in local situations, so that the public can understand the results of implementation. Martha responded that the goal of this work is to eventually have ocean acidification become a part of regulations so that it is not a separate idea that is discussed outside of codes and laws. The first step to getting there is to solidify the science. Nan McKay (Northwest Straits Commission) commented that it would be helpful to have a one-page document that displays the different organizations working on ocean acidification.

Representative Norm Dicks commented that the Obama administration has dramatically increased the request for ocean acidification in the budget to \$30 million, but was only successful in getting \$8 million appropriated. Working together to increase the federal budget would also make a big difference. Shallin Busch (NOAA) commented that the Interagency Working Group is working on monitoring across the federal families. The group has not been able to address adaptation work as fully, which could be an area of opportunity for MRAC and other similar groups. Richard noted that the Pacific Coast Collaborative (PCC) recommends that they develop an inventory of all monitoring resources and identify any monitoring gaps. By determining the gaps, they can establish a monitoring plan that takes into consideration where the science is and where it aims to be.

Martha noted that the Salish Sea Conference will be held in April 2016 in Vancouver, BC, Canada. Ginny Broadhurst (Northwest Straits Commission) added that she and other MRAC participants are hosting sessions focused on ocean acidification.

Angie wrapped up the discussion of the work plan and added that the timeline is focused on the funding timeline, but the MRAC also needs to be thinking about policy priorities to promote. She shared a list of current ad hoc committee membership and encouraged new participants in the committees.

Northwest Straits outreach project

Ginny presented Northwest Straits Commission's new outreach program. She explained that the organization has hosted 15 outreach events where experts have talked about ocean acidification

and the ecosystem and industry impacts. Now the organization is embarking on the second phase of outreach: targeting local elected official and business leaders. The group has encountered challenges in planning this work, such as defining a clear message that will resonate with people at the local level. The project is funded by NOAA and will last 18 months.

University of Washington student presentation

Meg Chadsey (Washington Sea Grant) introduced the UW capstone students and their work. She and other MRAC members sought students to work on advancing MRAC outreach goals, acknowledging that the MRAC does not have the capacity to do this type of outreach work. Mariko Kobayashi (UW student) explained that she and Danielle Flanagan (UW student) are collaborating with the Nature Conservancy, Washington Sea Grant, and US EPA. For their project, they are working to identify organizations whose goals align with the MRAC, and to understand how these organizations are able to communicate the cause and consequences of environmental problems. They have developed a list of six organizations that may be relevant for MRAC outreach. Danielle explained that they constructed a decision matrix to help determine what organization fit their requirements. They came up with a list of 30 organizations that had goals similar to those of the MRAC and put them through the decision matrix to get down to the six organizations they are now contacting. The six organizations are: Surfrider Foundation, Marine Conservation Institute, Puget SoundKeeper Alliance, Salmon Safe, Seattle Yacht club, Alaska Airlines. Additionally, they identified the Port of Seattle as a potential reach organization. The students have not contacted the Port yet, but are interested in understanding how what they are doing can relate to ocean acidification. Bill noted that Courtney Gregoire, the daughter of the Blue Ribbon Panel founder Gov. Gregoire, is a current Port commissioner. Martha added that Fred Felleman is also an ocean advocate that could be interested in supporting the project. She offered to help the students get in touch with these commissioners. She also added that REI, Whale Trail, and the Salmon Orca Alliance organizations might also be interested in participating. Mariko explained that the goal is to create relationships with organizations that could foster partnerships on ocean acidification issues.

Puget Sound Partnership update

Sheida Sahandy (Puget Sound Partnership) presented an overview of the Partnership and how it relates to the MRAC. PSP is a non-regulatory state agency created to work with partners to lead the Puget Sound recovery effort. The Partnership created a roadmap to recovery, known as the Action Agenda. The Partnership's statute establishes six goals, giving the organization direction. The Leadership Council expanded upon the goals to develop indicators, or ways to indicate success. The Action Agenda is informed by proposed actions, prioritized by how closely they relate to the organization's goals. The Partnership is now working to build implementation strategies for each goal, one at a time. PSP measures long term progress, effectiveness, and accountability. It supports various partner organizations so they can succeed in achieving goals that align with the Partnership's goals. The Partnership is now thinking about resiliency and how to protect against environmental impacts that are likely to occur in the future. She noted that one question the Partnership faces is whether ocean acidification should be its own goal, or if it should be incorporated across every goal. Nan asked if there are any other issues that are being considered in this way. Sheida responded that climate change is thought of similarly, since the impacts are so pervasive, they are seen in every aspect of the Partnership's goals.

University of Washington IGERT student presentation

Several students from the University of Washington presented on their research in three vignettes of work: discourse, policy bridge, and lived experience.

Kristen Feifel (DNR) shared her work examining what people address when they talk about ocean change. She conducted a literature review of 461 papers focused on marine change, biological studies, etc. She tracked how often papers were cited and if authors attributed their results to ocean change. Most of the papers that were highly cited did attribute their results to ocean change. Most studies relied on a couple of decades of data, not significant time scales. She also examined the types of stressors the biological studies were focusing on, such as temperature and pH, and found that multiple stressor experiments were uncommon.

Andrea Fassbender (UW) shared her work answering how we can better match science outputs with policy needs. Her team worked as scientific staffers for Senator Ranker during their work. They found differences in the scale of what scientists and decision-makers use. Climate scientists consider the earth as a whole; decision-makers tend to think smaller scale. Scientists typically consider a long-term scale; decision-makers focus on the near-term. In terms of information needs, scientists are looking at the system dynamics and feedbacks; decision-makers look at the impacts, economics, tradeoffs, etc. Her team discovered that there is room in climate science education to learn about how information is used. They proposed interdisciplinary work as a mechanism to bridge the gap, and found that many funding agencies would like scientists to provide information that summarizes the outcomes of their work.

Kate Crossman (UW) shared results of her work examining how resource-dependent communities experience ocean change. She studied the Quinault tribe, a tribe that relies on razor clams to provide an economic safety net for low-income community members. The Quinault tribal members involved in her study also identified risks: harmful algal bloom-related closure, pollution (oil spills), and the ripple effects of lost income. Her study focused on the resource system, governance system, biogeophysical system, and users. Working across disciplines gave her a more nuanced understanding of what ocean change looks like on the ground in local communities. She found that economic metrics are a common language, but they can't capture everything, such as passing along traditional gathering practices. It can be difficult to bring the traditional importance into the policy conversation. Betsy Peabody (Puget Sound Restoration Fund) commented that the question of how resource-dependent communities experience climate change should be applied to all outreach, because we are all dependent on the resources of this planet.

Monitoring & Investigation priorities discussion

Jan presented the current status of ocean acidification science in Washington. She noted that the Monitoring & Investigations priorities were identified as part of the Blue Ribbon Panel process. Some of the actions identified in the Blue Ribbon Panel report were funded by the state legislature. The scientific community is making great progress on several of the actions, and has been leveraging partnerships and resources.

Washington Ocean Acidification Center (WOAC)

Jan and Terrie Klinger (WOAC) shared updates on WOAC's latest work. WOAC is working to monitor chemistry and biology measurements together, using surveys, buoys, and plankton to gather physical, chemical, and biological data. It is also considering spatial coverage and temporal trends. Two additional pH sensors will be deployed this month to understand what is driving the variability in ocean conditions. The data gathered is available through NANOOS. Additionally, WOAC is working on forecasting, using the NANOOS portal to share live data on salinity and temperature. Modelers are working on comparing modeling data and validating data. WOAC will continue testing and making biogeochemical model runs available online. WOAC has also conducted a biological response study, the results of which showed that ocean acidification caused delayed development in crabs and reduced survival in krill. WOAC is supporting work to look at the effects of ocean acidification on salmon and sablefish neurobehavioral function. There has been a lot of research done on coral reef fish in Australia to elucidate the effects of ocean changes on these organisms. The study through UW will perform tests on fish species native to Washington. Additionally, they will be replicating a study that forecasted global ocean change using local inputs for Washington.

National Oceanic and Atmospheric Administration (NOAA)

Richard and Shallin shared NOAA's latest work. NOAA is evaluating whether upwelling water is the primary cause of changes to ocean chemistry, and how much of the dissolved inorganic carbon in the water is attributable to anthropogenic sources. They found the highest concentrations of inorganic carbon near shore. Bottom water dissolved carbon can be attributed to respiration, but near the surface, the largest contribution is from anthropogenic carbon. A study of pteropods found that 53% of pteropods show evidence of dissolution, and in the future will be up to 70%. NOAA will be beginning a new cruise from Baja California to British Columbia. The cruise will study zooplankton, pteropods, bacteria, and harmful algal blooms. With the occurrence of El Niño, they expect to see more southern species in the Washington waters. The cruise will allow them to gather chemical and biological data. Much of NOAA's work focuses on informing ecological modeling. The lab work focuses on species that are economically and ecologically important, and shows the direct effects to lower trophic levels like pteropods, krill, etc., which could alter the entire food web.

Washington Department of Ecology

Mindy Roberts (Ecology) presented the agency's latest work. She explained the marine monitoring network was developed with an old sensor and has accumulated a significant amount of historical data. Ecology is conducting a feasibility study collecting data on aragonite saturation state. One pattern that has emerged is dissolving conditions in the winter months and a more variable saturation state in the summer. She has developed a proposal to add aragonite to all ecology monitoring. Ecology has been developing the acidification model, and working to understand if local sources are worsening the water conditions.

Washington Department of Fish and Wildlife

Rich Childers (WDFW) shared that WDFW collects information for management purposes on wild shellfish and fish stock, but has not incorporated that information into the modeling work that other agencies are conducting. Some of its crab sampling index stations were established as far back as 1981, collecting size, sex, and weight information from each crab collected. Intertidal bivalve index stations have been collecting length, weight, biomass estimates, and spatial

distribution. WDFW is initiating a project with the US Navy at Indian Island and Bangor submarine bases as potential refuge experiment locations. Jan commented that WOAC would be interested in using some of the historical WDFW has gathered. Bill asked if anyone is pursuing sediment chemistry research in the Pacific Northwest. Rich responded that WDFW conducts surveys of intertidal beaches and public tidelands to get harvest rate for the following year season.

Washington Department of Natural Resources

Kristen presented DNR's latest work. DNR manages 2.7 million acres of land. It has been working on a near shore monitoring network measuring temperature, pH, dissolved oxygen, and chlorophyll. They are also taking alkalinity samples in the near shore environment. DNR is also continuing eelgrass work to meet its goal of increasing eelgrass by 20% by 2020.

COP 21 Paris

Jay Manning (Cascadia Law Group) presented on his experience attending COP21 in Paris. There were over 50,000 people participating in the COP21 events in Paris, representing countries, local governments, companies, NGOs, and other organizations. The international negotiators came to an agreement to make significant changes in fighting against climate change.

Next steps and action items

The council agreed that the next MRAC meeting will likely be in spring 2016, date and location to be determined. Ad hoc committees will meet to discuss funding priorities before the next MRAC meeting.

A few final action items were noted:

- Angie and the EnviroIssues team will facilitate meetings of the ad hoc committees and begin the process of developing funding priorities.

Martha thanked everyone for their participation and adjourned the meeting.