MARINE RESOURCES ADVISORY COUNCIL

Meeting Summary
April 28, 2014, 9 am to 4 pm
Norman Worthington Conference Center
St. Martin's University
Lacey, WA

Meeting documents are available on the Washington Department of Ecology Ocean Acidification webpage:
http://www.ecy.wa.gov/water/marine/oceanacidification.html

Meeting Attendance and Objectives
The Washington Marine Resources Advisory Council (MRAC) held its third meeting on April 28, 2014. The meeting was open to the public and facilitated by Angie Thomson of EnviroIssues and Martha Kongsgaard, MRAC Chair.

Members in attendance: Martha Kongsgaard (Chair), Libby Jewett, Peter Goldmark, Kelly Wood, Dick Sheldon, Mike Cassinelli, Christine Woodward, Bill Dewey, Lisa Graumlich, Maia Bellon, Greig Arnold (Makah alternate for TJ Greene), Michele Culver (Washington Department of Fish and Wildlife alternate for Philip Anderson), Steve Hollenhorst, Senator Kevin Ranker, Paul Dye, Tom Davis, James Peters, David Allnutt (EPA Region 10 alternate for Dennis McLerran), Garrett Dalan, Phil Rockefeller (via conference call).

MRAC members not in attendance:
Representative Dave Hayes, Representative Larry Seaquist, Senator Steve Litzow, Norm Dicks, Joel Carben, Terry Williams, Tony Floor, Brian Allison, T.J. Greene.

Meeting objectives:
- Discuss progress of ad hoc committees on actions to address ocean acidification
- Hear updates on recent work related to ocean acidification
- Learn about the Puget Sound Partnership's process to update their Action Agenda

Materials distributed:
- March 7 MRAC Meeting Summary
- Ad Hoc Committee Action Trackers

Welcome, recent and upcoming happenings
Chair Martha Kongsgaard opened the meeting thanking Libby Jewett (NOAA – Ocean Acidification Program) for travelling from Washington, D.C. to attend the meeting. She then invited council members to share updates on recent happenings related to ocean acidification. Topics discussed included:

- The United States Department of State is hosting an International Oceans Conference June 16-17, 2014 to convene high-level decision-makers from around the world on key ocean issues. Ocean acidification is one of three issues that the conference is focusing on. MRAC council member Bill Dewey will speak on the ocean acidification panel. The Obama Administration is expected to announce a new grant fund intended to assist developing countries with investing in monitoring equipment and strengthen the global ocean acidification monitoring network.
- Governor Jay Inslee's office released a climate agenda, and ocean acidification is listed as a priority issue. **Julie Horowitz** has been hired as the new shellfish policy liaison in the Governor's Office.
- Governor Kitzhaber announced opposition to proposed coal projects in Oregon.
- The 2014 Salish Sea Ecosystem Conference will be held April 30-May 2 at the Washington State Convention Center in Seattle.
- Maryland recently passed legislation establishing a Blue Ribbon Panel on ocean acidification. Maine legislators are also considering a similar approach. These states may look for guidance from the Washington model in the coming months.
- New research by Dr. Nina Bednarsek (National Oceanic and Atmospheric Administration) suggests that ocean acidification has increased the dissolution of Pacific Coast marine pteropods by 50% since pre-industrial times.
- The Global Ocean Health Program held a workshop in Aberdeen on April 8 focusing on the intersection of sea level rise and ocean acidification. Follow up projects will be pursued to create field studies investigating options for adaptation.
- A Community Forum on Ocean Health will be held on May 14, 6:30-8:00 p.m. in Everett, WA. This event is free and open to the public. Topics include the science of ocean acidification and creating ecosystem resilience.
- The Pacific County Marine Resource Committee is hosting a Science Conference on May 17 (8 a.m. to 5 p.m.) at the Cranberry Research Station in Long Beach, WA.

In addition, Bill Dewey shared an anecdote from Governor Inslee regarding President Obama's recent visit to Washington in response to the Oso landslide. On a helicopter flight passing over the coast, the President said he remembered fondly digging and eating clams as a little boy while visiting family in Washington, and that he was not previously aware of the threats to shellfish and the shellfish industry caused by ocean acidification.

Local Land-Based Contributions Ad Hoc Committee updates

Paul Dye (The Nature Conservancy), Chair of the Local Land-Based Contributions Ad Hoc Committee, led an update on the committee's progress since the last council meeting. He noted that the committee focused on identifying implementation gaps in two strategies identified by the Blue Ribbon Panel: 1) Strengthen existing pollution reduction actions to reduce nutrients and organic carbon 2) Impose controls to reduce nutrients and organic carbon from sources that are contributing significantly to acidification. For the first strategy, the committee has identified several programs and organizations already contributing efforts and strategies for strengthening programs (e.g. through providing

state funding to programs currently administered by select counties). Committee members agree that there is leveraging potential within existing programs. For the second strategy, action is contingent upon future modeling efforts, which will determine whether local land-based contributions are a significant factor in ocean acidification trends.

Paul noted that the committee's next steps are to continue to track the current status of actions, discuss gaps in moving those actions forward, and identify strategies or additional programs needed to further advance actions.

Discussion of Local Land-Based Contributions

The council discussed several items:

- Washington State Department of Ecology is leading current modeling work on the contributions of nutrient loads on dissolved oxygen conditions. Landscape-scale watershed models are run with both current and natural conditions. These models characterize nutrient loading from different land cover types as well as identify hotspots with greater likelihood of impact from land-based nutrient sources. Ecology is pursuing funding from EPA to add acidification to these models. Funding will be available within the next few months, and the acidification modeling is expected to take approximately two years to complete.
- The Washington Ocean Acidification Center will have its Puget Sound forecasting model completed by 2015, but the source attribution component is currently unfunded.
- Little research has been conducted on the impacts of ocean acidification to freshwater fish species and salmonids. This is a possible area for the Ocean Acidification Center to explore. Best management practices identified for the shellfish industry could also be applicable to salmon populations.
- The Northwest Power and Conservation Council's Ocean and Plume Science Management Forum is working to identify research gaps and areas of collaboration to maintain anadromous fish species in the Columbia River. Their work will be relevant to the Puget Sound.
- The Department of Ecology has convened the Water Quality and Agriculture working group to discuss non-point contributions. Maia Bellon will keep the Local Land-Based Contributions ad hoc committee informed of their findings.
- It is important to communicate and coordinate across ad hoc committees to determine overlap and areas of interplay.
- It is also important to communicate and coordinate with external advisory groups and agencies to be strategic, avoid duplicative work, and test education and outreach messaging. One way to track these various efforts is to create a visual map indicating areas of intersection and leverage potential.
- There are no incentives for inland landowners to address ocean acidification through land management practices (e.g. riparian buffers, septic system management, etc.). Puget Sound Partnership is exploring how to create incentives for shoreline vegetation and protection of open spaces. This conversation should be brought to the state level. For landowners, education and outreach can have limited success in the absence of incentives.

- The Shoreline Management Act is a powerful public policy tool for landowner outreach.
- Quantifying the benefits gained by varying widths of riparian buffers is a very important measurement to share with landowners.

Monitoring and Investigations Ad Hoc Committee updates

Libby Jewett, Chair of the Monitoring and Investigations Ad Hoc Committee, led a quick update on progress made since the March 7 meeting. The Action Tracker is getting populated but there are likely additions to be made. The committee will connect with the Local Land-based Contributions Ad Hoc Committee on modeling efforts. The committee will also invite the science advisory team at the Ocean Acidification Center to participate to ensure strong coordination across efforts.

Libby also shared insights on ocean acidification efforts at the national scale. Washington State is a leader in confronting the issue, and will act as a model for other states in the coming years, though ocean acidification may have very different impacts across the country. NOAA's Ocean Acidification Program is currently funded at $6 million to carry out all national efforts, but the Obama Administration submitted a request for $15 million in its 2015 budget. Additionally, the FOARAM Act of 2009 establishing the program is up for reauthorization with possible amendments for enhancing the program. Bill Dewey is involved in conversations with Congressman Farrar's office about the reauthorization and invited input from council members.

Alongside possible legislative changes and increases in funding, NOAA is also looking to strengthen partnerships with states to leverage efforts related to ocean acidification. As part of this goal, the Ocean Acidification Program administrators will meet for the first time with the Pacific Coast Collaborative in Fall 2014. Libby invited input about agenda items to cover at that meeting.

At the global scale, it was mentioned that there is very little representation of ocean issues at UNFCC summits, however Libby noted that ocean acidification has significant traction as a key issue in Vietnam and Indonesia.

Science Moment

Jan Newton and Terrie Klinger (Ocean Acidification Center) provided an update from the research community. They announced that Andrea Fassbender, a NOAA PACE program post-doc, will research pH levels at NOAA/PMEL moorings, natural pH variability, and whether EPA's pH water quality standards should be modified. Andrea will join the Center in October, and is expected to have preliminary data products by the end of 2014. Two other post-doc positions will also be awarded through the Center in the coming months: a science-policy specialist, and a data analyst to analyze the diverse datasets across the state.

Jan and Terrie also described some of the work the Center has done to coordinate regionally and leverage research efforts with its partners, including joining a National

Science Foundation-funded cruise and sharing monitoring data with many entities including Seattle Aquarium, King County, NOAA PMEL, IOOS and NANOOS.

Puget Sound Partnership update

Jim Bolger (Puget Sound Partnership) spoke about the ongoing 2014 update to the Partnership's Action Agenda, which focuses on ocean acidification and lists shellfish bed restoration as one of three strategic initiatives. The update also seeks to incorporate recommendations from the Blue Ribbon Panel via a new set of near term actions. Jim solicited input from the council on how to best incorporate the recommendations. The Partnership hopes to finalize the update by June or July. He noted that an increasing amount of implementation is occurring at the local level, and that there is clustering of activities around salmon habitat and stormwater management. The Partnership will report to the council regularly on outcomes.

The council discussed the Washington Coastal Marine Advisory Council (WCMAC) as a potential parallel vehicle for efforts on the coast, and how MRAC can better communicate and coordinate efforts with the advisory council. WCMAC is currently conducting an ecosystem assessment on the coast, which will be discussed at the group's next meeting in July. There is interest in partnering with Puget Sound Partnership on data sharing, and their model could inform the implementation strategy on the coast.

Adaptation and Remediation Ad Hoc Committee updates

Bill Dewey (Taylor Shellfish), Chair of the Adaptation and Remediation Ad Hoc Committee, shared the committee's progress. Blue Ribbon Panel strategies discussed by the committee are 1) Remediate seawater chemistry; 2) Increase the capacity to adapt to ocean acidification; and 3) Enhance resilience of native and cultivated shellfish populations. Among activities identified in the Action Tracker, some of note included expansion of a shellfish recycling program to restore shellfish habitat, improvements to monitoring equipment in hatcheries, and the development of a marine vegetation atlas. Gaps identified by the committee include understanding permit issues with harvesting kelp and other macroalgae, identifying tools that reduce carbon that can be a best management practice, and addressing disease and pest concern to make shell recycling program feasible. Potential new actions identified are testing multiple remediation strategies at trial locations and creating refuges.

The committee's next steps are to continue to track current status, discuss gaps in moving actions forward, and identify strategies to advance existing actions and potential new actions for consideration.

Discussion of Adaptation and Remediation

Highlights from the discussion that followed include:

- The committee could relate these actions to Washington Department of Fish and Wildlife's goal to establish a breeding population.
- The committee should be thinking about adaptation and remediation at the ecosystem scale, beyond shellfish. For example, this committee (like the others) could gain momentum from linking with salmon and pteropod interests.

- 'Remediation' is not a fitting term for these strategies. 'Restoration' or 'mitigation' may be more accurate descriptors.
- As a reminder, the Blue Ribbon Panel was concerned with negative effects on remaining native populations as a result of 'cultivated' restoration.
- The topic of restoring native populations is not relevant to Willapa Bay or Grays Harbor. It is highly unlikely that native populations can be reestablished. Willapa Bay is experiencing ecosystem collapse as a result of invasive eelgrass. One approach is to develop a different set of remediation strategies that are more appropriate for Willapa Bay and other coastal areas outside of Puget Sound.
- Sea level rise may provide new seagrass habitat that could assist in reestablishing native shellfish populations.
- Vegetation can be used positively (as a tool for mitigation), but can also have negative effects (species invasion). There are significant research gaps in this area, and the Ocean Acidification Center does not currently have the resources to tackle them. MRAC could make this a research priority for the next biennium.
- Washington Department of Natural Resources has a goal to explore the relationship between seagrass and ocean acidification.

Education and Outreach Ad Hoc Committee updates

Betsy Peabody (Puget Sound Restoration Fund), Chair of the Education and Outreach Ad Hoc Committee, reported on the committee's progress. The Blue Ribbon Panel strategies within their purview include: 1) Share information through outreach and 2) Increase literacy through education. Significant efforts are already underway by many. Potential priorities for outreach identified by the committee include targeting new audiences with customize messaging (e.g. the insurance and real estate industries) and conducting a Washington State-targeted poll to evaluate and benchmark ocean acidification literacy. For education, potential priorities include developing an overarching website that serves as a clearinghouse for ocean acidification information and relatable stories, and developing K-12 ocean acidification teacher trainings and curricula. The committee will put together a list of priority actions by June.

Discussion of Education and Outreach

Council members discussed several points:

- Legislators and political decision-makers should be MRAC's highest priority audience for education and outreach given the council's mandate and timeline.
- Another crucial audience to target is Grades 3-5. Educating and engaging the next generation is paramount.
- Washington Sea Grant is brainstorming a list of what should be included in a toolkit of actions individuals and communities can take to help alleviate ocean acidification. This is an important component of the committee's work.
- For effective outreach, ocean acidification education and outreach should relate to local priorities.
- "Ocean acidification" is not an accessible term; something like "catastrophic marine species extinction" is more relatable for the public.

- Since implementation of Common Core, teachers must integrate science into all subjects. The next two to three years present a critical window of opportunity to provide ocean acidification teaching materials to schools and colleges.
- Ocean acidification principles should be developed, and federal agencies should be at the table. The National Science Foundation and NOAA Office of Education have already created resources on ocean acidification that could be built upon.
- It is important to stay positive and solutions-oriented in messaging.
- The Grays Harbor Marine Resources Committee sponsors a teacher workshop on ocean acidification and annual school field trips to the beach. Their approach could serve as a model.
- There are many industries that will likely be impacted by ocean acidification. Identifying them and determining how to best connect with them is critical to gaining momentum.
- Sharing stories of successful community action taken (as opposed to individual action) is also effective.
- The website www.nanoos.org, linking to Department of Ecology and University of Washington ocean acidification resources, can be a starting point for a web-based clearinghouse. Input on how to improve the site is encouraged.

Forming a Legislative Ad Hoc Committee

Martha acknowledged a top priority of the MRAC is to identify strategies for interacting with the legislature. She suggested that an additional MRAC ad hoc committee focusing on how to strategically communicate with legislators at the local and federal level should be created, and offered to chair the committee. She invited recommendations for others interested in participating. Senator Kevin Ranker expressed interest. Items discussed on this committee included:

- The council needs to develop a prioritization process. There are many great ideas on the table, but not all can be funded.
- It is important to show the legislature how funding has been leveraged. This can be mapped. Two or three good examples can be effective; it doesn't need to be comprehensive list necessarily.
- The internal deadline for submitting items through agency budget requests is June.

Next steps

- Angie will send out a date for the next MRAC meeting, which will be held in June or July.
- Angie will coordinate with the ad hoc committees to schedule additional committee meetings between now and the next time the full MRAC convenes.