MARINE RESOURCES ADVISORY COUNCIL

Meeting summary
Jan. 19, 2017 10:00 a.m. to 3:30 p.m.
Pike Place Market, Seattle, WA

Meeting attendance and objectives
The Washington Marine Resources Advisory Council (MRAC) held its 14th meeting on Jan. 19, 2017. The meeting was facilitated by Martha Kongsgaard, MRAC Chair, and Angie Thomson of EnviroIssues.

Members in attendance: Martha Kongsgaard (Chair), Lisa Graumlich (University of Washington), Erica McPhee-Shaw (Western Washington University), Dick Sheldon (Coastal shellfish grower), Marilyn Sheldon (Coastal shellfish grower), Mike Casinelli (City of Ilwaco), Kirsten Feifel (Department of Natural Resources), Gus Gates (Surfrider), Shallin Busch (National Oceanic and Atmospheric Administration), Bill Dewey (Taylor Shellfish), Rich Childers (Department of Fish and Wildlife), Garrett Dalan (Washington Coast Marine Advisory Committee), Jay Manning (Puget Sound Partnership), Mike Cox (Environmental Protection Agency), Norm Dicks (Van Ness Feldman, LLP), Phillipa Kohn (Department of Fish and Wildlife)

MRAC members not in attendance: Brian Allison (Puget Sound Commercial Crab Association), Representative Dave Hayes (Washington State House of Representatives), Douglas Steding (Association of Washington Business), Hilary Franz (Department of Natural Resources), Senator Kevin Ranker (Washington State Senate), Libby Jewett (National Oceanic and Atmospheric Administration), Maia Bellon (Department of Ecology), Lynn Brown (Conservation Commission), Nan McKay (Northwest Straits Commission), Terry Williams (Tulalip Tribes of Washington), Tom Davis (Washington Farm Bureau), Tony Floor (Northwest Marine Trade Association)

Other participants: Betsy Peabody (Puget Sound Restoration Fund), Meg Chadsey (Washington SeaGrant), Terrie Klinger (Washington Ocean Acidification Center), Paul Williams (Suquamish Tribe), Cristina Figueroa-Kaminsky (Department of Ecology), Christie True (King County), Micah Horwith (Department of Natural Resources), Greig Arnold (Makah Tribe), Richard Feely (National Oceanic and Atmospheric Administration), Julia Sanders (Global Ocean Health), Anji Morales (Vulcan)

Meeting objectives:
- Share updates on recent ocean acidification activities and events
- Learn what other OA-focused groups are planning to work on in the next several years
- Refine ad hoc committee work in support of developing topic-based proposals to bring to the March Blue Ribbon Panel Refresh meeting

Materials distributed:
- Ad Hoc Committees Blue Ribbon Panel recommendation progress trackers (working documents)

Welcome and introductions
Martha Kongsgaard, MRAC Chair, opened the meeting and thanked council members for their participation.

Governor's budget and ocean acidification funding requests
Martha Kongsgaard described ocean acidification funding requests included in the Governor's 2017-19 budget and next steps for the budget process.

2017-19 New Budget Requests			
Priority	**Lead**	**MRAC Budget Request**	**Governor's Budget**
Continue biological response studies on the effects of ocean acidification on marine species	WOAC	$200,000	$0
Support operations of the Ocean Acidification Conservation Hatchery	WDWF	$400,000	$448,000
Add ocean acidification parameters to Ecology's monitoring network	Ecology	$369,595	$0
2017-19 Ongoing Budget Requests			
MRAC Facilitation	DNR	$150,000	$150,000

Martha highlighted the importance of a legislative strategy to support MRAC budget requests. She noted that several one-pagers were being developed to use in discussion with legislators and that she is coordinating with the Puget Sound Partnership and the Pacific Cost Shellfish Growers Association (PCSGA). The following points were discussed:

- Bill Dewey, Taylor Shellfish, noted PCSGA is focusing on several key priorities and are including the budget requests to support the conservation hatchery, biological experiments, and MRAC facilitation in their efforts. PCSGA does not plan to advance any policy or legislative bills this session.

- Terrie Klinger, Washington Ocean Acidification Center (WOAC), explained while the biological response studies were submitted in 2015-16 as an ongoing budget request, it was not included as part of WOAC's carry forward funding. Martha Kongsgaard pointed out the need to identify a champion for the biological experiments budget request and said she is working on how best to push for continued funding of this work.

- Cristina Figueroa-Kaminsky, Department of Ecology, pointed out the current research on dissolved inorganic carbon (DIC) and alkalinity focuses only on the middle channel of Puget Sound, leaving a lack of data along inshore areas. Martha Kongsgaard noted the importance of explaining how DIC and alkalinity research is not just continued monitoring.

- MRAC members asked to receive talking points to use in support of the MRAC budget requests.

EnviroIssues, working with Martha and others, will continue building the legislative strategy to secure funding for MRAC priorities in the next biennium. They will develop and share with MRAC members talking points and one-pagers to support the MRAC budget requests.

Recent ocean acidification happenings
Martha Kongsgaard invited participants to share updates on recent happenings related to ocean acidification.

- Richard Feely, National Oceanic and Atmospheric Administration (NOAA), discussed a recently published paper, which demonstrates anthropogenic carbon dioxide is the greatest source of surface water enrichment reaching shellfish hatcheries, as opposed to upwelling, and contributes to significant impacts on pteropods and other vulnerable species. A recent survey from Canada to Mexico also found a biological impact of variable pH on Dungeness crab larvae and other species. NOAA is developing a proposal to conduct a vulnerability assessment, looking at ocean acidification impacts on local communities.

- Erica McPhee-Shaw, Western Washington University, spoke about a proposed new Marine Coastal and Watershed Sciences degree program at Western Washington University. This degree would be interdisciplinary within STEM (science, technology, engineering and mathematics) and policy-oriented studies. The University is working to secure funding to support the new degree, which would connect science, policy, and communications to support long-term training.

- Rich Childers, Washington Department of Fish and Wildlife (WDFW), noted WDFW plans to submit a grant proposal to NOAA to hold stakeholder meetings and discuss impacts on communities from ocean acidification and compile ocean acidification literature. WDFW is partnering with the Department of Ecology and the Northwest Straits Commission on the proposal.

- Bill Dewey explained an oyster grower in Maine was inspired to form a group of oyster growers to tell the story of ocean acidification and the need to change elected official policy positions. Taylor Shellfish is working with the grower to activate customer bases on the issue of ocean acidification. He also mentioned PCSGA is writing a letter to Scott Pruitt, President Trump's nominee to head the Environmental Protection Agency (EPA), inviting him out to visit a shellfish hatchery and hear about ocean acidification. Bill suggested MRAC consider

also writing a letter to Scott Pruitt on the importance for continued work related to ocean acidification.

- Terrie Klinger, WOAC, shared the center recently purchased a new monitoring instrument, were awarded funding to conduct a synoptic review of literature on ocean acidification research, and are working with NOAA on a $500,000 privately funded study on crab and razor clam fisheries closures due to harmful algal blooms (HABs). This study will look at the socioeconomic impacts of industry closures as HABs are predicted to become worse with ocean acidification.

- Dick Sheldon and Marilyn Sheldon, coastal shellfish growers, also mentioned that a local weekly newspaper interviewed local business owners and workers in Longbeach who reported the tourism economy is twenty to fifty percent of what it used to be due to seasonal clamming closures. Data on socioeconomic impacts of industry closures may be beneficial for county economic development plans. Many counties on the Washington coast are undergoing economic development planning efforts.

- Gus Gates, Surfrider, discussed the planned establishment of a Sentinel Site at the Olympic Coast National Marine Sanctuary focused on ocean acidification research. He indicated there might be a possibility of MRAC writing a letter of support regarding the Sentinel Site.

Blue Ribbon Panel Refresh

Martha Kongsgaard kicked off several discussions to prepare for the upcoming March 17, 2017 Blue Ribbon Panel Refresh Meeting. She noted that it has been five years since the panel met to identify actions to address ocean acidification, and it is time to update and refocus the strategy. She explained ad hoc committees had been meeting and working to identify progress so far and potential new actions or work to continue doing.

Participants reviewed preliminary ad hoc committee work documenting progress to date in fulfilling the Blue Ribbon Panel's recommendations, as well as any potential new priorities for the next five years. This work will lay the foundation for discussions at the Blue Ribbon Panel Refresh Meeting.

Local land-based contributions

Angie Thomson reviewed the one-pager on local land-based contributions, which outlined key progress and proposed new actions. The following points were discussed:

- The Department of Ecology is making progress on the local sources contribution model. The model will help quantify the relative influence of local nutrient sources on ocean acidification. MRAC members discussed many of the Local Land-Based Contributions actions for limiting nutrient and organic carbon input from local sources are contingent on

the development of this model. The Department of Ecology anticipates releasing initial model results in June 2017.

- MRAC members discussed the wording and intention behind Action 5.2.1 (regarding on-site sewage systems or OSS). When the Blue Ribbon Panel Recommendations were written, hypoxia in Hood Canal was thought to be highly influenced by local sewage discharge. However, further research since then indicates other contributions, including various sources of nitrogen, are larger contributors to this issue than OSS. It was suggested that Action 5.2.1 could be rewritten to reference non-point source pollution more generally, as OSS is no longer seen as a significant driver in land-based contributions to ocean acidification.

- Lisa Graumlich, University of Washington, noted that many actions identified by the Blue Ribbon Panel to reduce nutrient discharge will require political support to achieve. Since these actions are dependent on progress of the local sources model (Action 7.2.1 – quantify key natural and human factors that contribute to ocean acidification, it may be beneficial to start conversations early to build political support for these types of actions if the model determines they are necessary.

- Cristina Figueroa-Kaminsky shared that the Department of Ecology is working on a nutrient reduction strategy focused on hypoxia/dissolved oxygen. The strategy should be released in in June 2017 and will use model results to inform policy direction.

- Gus Gates noted a lot of recent regional interest to ban sewage discharge from boats in the Puget Sound. Mike Cox, EPA, responded that a ban on boat discharge was recently extended.

- The nutrient conditions of hypoxic waters can enhance the ocean acidification effect by up to fifty percent. This has been observed in the Gulf of Mexico and is a concern for the Puget Sound.

- MRAC members noted the Puget Sound Action Agenda has a robust focus on nutrient reduction. Additionally, other actors are working to address nutrient sources and are driven by water quality reasons more so than how these nutrients impact ocean acidification. One example includes the Department of Ecology's new Concentrated Animal Feeding Operation (CAFO) permit that requires large-scale livestock operations in Washington to implement specific practices to better protect groundwater, rivers, lakes, and marine waters from manure pollution.

- Some programs focused on nutrient pollution are producing high-resolution sampling efforts. MRAC members asked for a list of these large programs and to start working with them to clarify how local nutrient loading also contributes to ocean acidification.

- MRAC members suggested having the Department of Health present at an upcoming MRAC meeting on their nutrient reduction related work.

- MRAC members discussed revising the language to Action 5.1.4 (adopt legislation that will limit nutrients entering marine waters via sewer connections) and 5.2.2 (reduce nutrient loading and organic carbon discharges) to be more inclusive of efforts to reduce water loads associated with OSS, through personal changes such as installing low-flow toilets, dishwashers and other appliances. The group also discussed gray water and the policy and environmental tradeoffs of promoting greater use of gray water.

- Mike Cox addressed the minimal progress to date on Action 5.1.3 (assess the need for water quality criteria relative to ocean acidification). In 2016, the Center for Biological Diversity requested that EPA develop water quality criteria related to ocean acidification. In December, 2016, EPA responded, denying the request under the Clean Water Act. Instead, EPA indicated they would work through existing programs to develop narrative criteria (rather than numerical criteria) to support reduction and control of nutrient sources. This same response was given to the State of Washington when the state asked for water quality criteria. EPA is working with the State of Oregon, along with NOAA and the University of Washington on using narrative criteria to list impaired water bodies due to ocean acidification. A comment period on these impaired water bodies is open currently and will close in Feb. 2017. Mike also noted the importance of biological data to support narrative water quality criteria.

Commented [DB1]: Angie – can you read this and verify it jives with your recall of Mike's discussion. This seems sensitive so don't want to portray it inaccurately.

Adaptation and remediation

Angie Thomson reviewed the one-pager on adaptation and remediation, which outlined key progress and proposed new actions. The following points were discussed:

- The Council on Environmental Quality (CEQ) met un November to discuss the Puget Sound Recovery Caucus. The resulting draft Federal Task Force Action Plan includes a chapter on shellfish and is currently out for public review, with intended completion in June 2017.

- Rich Childers gave an update on recent discussions related to developing a shell recycling program (Action 6.1.3 – use shells to remediate impacts of local acidification on shellfish.) The discussion identified several major concerns, largely due to risks of introducing pathogens into Washington's marine waters, with establishing a program. MRAC members indicated that this action may need to be rewritten or clarified given this information. Betsy Peabody, Puget Sound Restoration Fund, did note potential opportunities for limited shell recycling. These include Oyster Fest and Shellfish Week, where local oysters and shell are used, which minimizes concern for introducing pathogens from non-native areas. She

highlighted how valuable a resource shell is for native oyster restoration and stockpiling of shell has diminished over time. Progress to determine how to ensure adequate shell stockpiles for native oyster restoration need to be explored and considered a priority.

- Bill Dewey explained Taylor Shellfish is considering using coupelles, or small round disks, as a new substrate for shellfish seed. Coupelles have been used by the French oyster industry for a long time. If coupelles work as a substrate, it could increase the availability of local oyster shell for other uses such as native restoration.

- Kirsten Feifel, Department of Natural Resources, proposed the possibility of adding blue carbon, the carbon sequestered by living organisms, as a topic area that could be added under the Adaptation and Remediation actions. This is an emerging field, which was not as well developed at the release of the Blue Ribbon Panel recommended actions.

- Dick Sheldon pointed out that the Washington Coast and Puget Sound are very different water bodies and adaptation strategies for one area may not work elsewhere. Willapa Bay may be a good case study for research to develop a baseline for how Washington waters have changed, such as the introduction of eastern softshell crab and the loss of biodiversity that no longer supports abundant shellfish communities.

- The group discussed Action 6.1.1 (develop vegetation-based systems of remediation) and concerns about the overharvest of kelp. The Department of Fish and Wildlife is working with the Department of Natural Resources on how to address the increase in requests to harvest kelp and develop best management practices.

Monitoring and investigations

Angie Thomson reviewed the one-pager on monitoring and investigations, which outlined key progress and proposed new actions. The following points were discussed:

- Pteropods are considered useful bioindicators for ocean acidification in the Puget Sound and regional waters. Work to identify other bioindicator species may also be useful for studying ocean acidification.

Commented [CB2]: Angie, please review this and edit or delete as you think appropriate.

- MRAC members agreed that maintaining current levels of monitoring is not enough to address monitoring gaps and information needs.

- Rich Childers noted that ongoing zooplankton monitoring in the Puget Sound is an important piece for understanding local ocean acidification impacts.

- MRAC members suggested a summary of completed science to date should be included as part of the Blue Ribbon Panel Refresh document.

- Erica McPhee-Shaw added the recent pH modeling contributions from physical oceanographers at the University of Washington and others have made a profound impact on the field of marine study.

- There will be a workshop on marine water quality monitoring covering a range of topics, from ocean acidification to fish. The event will be hosted at University of Washington's Henderson Hall on April 12, 2017.

- A significant benefit of the Blue Ribbon Panel recommendations is how they have encouraged interdisciplinary research and improved scientific collaboration.

Education and outreach

Angie Thomson reviewed the one-pager on education and outreach, which outlined key progress and proposed new actions. The following points were discussed:

- Shallin Busch, NOAA, shared a national request for proposals (RFP) to help fill gaps in the ocean acidification education landscape. The RFP closes soon and Angie Thomson said she would forward more information to MRAC.

- The Education and Outreach ad hoc committee discussed the need to better integrate outreach into the work of the other ad hoc committees. Outreach specialists are lacking information and want to ensure they know what the latest scientific research says about ocean acidification to develop accurate messaging and talking points. The ad hoc committee is considering how best to incorporate this need as part of the Blue Ribbon Panel Refresh.

- Kirsten Feifel explained an increasing interest in citizen science and ocean acidification work. She wondered if there was a way to incorporate this as part of the Education and Outreach actions, focused on developing a citizen science protocol to share with teachers, students, and interested parties to use.

- MRAC members discussed the need to further integrate ocean acidification curriculum into science education.

- Garrett Dalan shared an infographic developed by The Nature Conservancy, which explains ocean acidification. MRAC members discussed the need to develop messaging to share with individuals, not just legislators, on what they can do individually to address ocean acidification. The Northwest Straits Commission is currently developing materials for policy

makers that could be adapted to share with the public. Meg Chadsey, Washington SeaGrant, noted these materials could be helpful if also translated into other languages.

Blue Ribbon Panel Refresh Meeting, March 17, 2017
Martha Konsgaard gave a brief overview of the Blue Ribbon Panel Refresh Meeting, to be held in Olympia on March 17, 2017. She noted the importance of rolling out the refresh document and how it could be used to highlight the great work that's been accomplished. It would be appropriate to connect MRAC's work with the Pacific Coast Collaborative and International Alliance to Combat Ocean Acidification. Martha and Jay Manning, Puget Sound Partnership, discussed the opportunity to work together on a launch event in fall 2017.

Pacific Coast Collaborate and the International Alliance to Combat Ocean Acidification
Jay Manning gave an overview of the Pacific Coast Collaborative (PCC) and their recent work. The PCC was established in 2007 with a focus on oceans and climate, including progressive carbon policy to create jobs and new economic opportunities. Jay noted the Pacific Coast has the fifth biggest economy in the world. In 2016, the PCC adopted a new agenda with ocean acidification as one of their top three policy initiatives.

The PCC recently launched the International Alliance to Combat Ocean Acidification (also referred to as the OA Alliance), an international network of governments, organizations, and other affiliates working with the common goal of addressing changing ocean conditions. The OA Alliance provides an immediate opportunity for interested parties to further five primary goals:

- Advance scientific understanding of ocean acidification.
- Take meaningful actions to reduce causes of ocean acidification.
- Protect the environment and coastal communities from impacts of a changing ocean.
- Expand public awareness and understanding of acidification.
- Build sustained support for addressing this global problem.

Members of the Alliance commit to taking meaningful actions, as crafted in their own jurisdictional Ocean Alliance Action Plan. Those who would like to get involved should get in touch with Jay or Jessie Turner at jessie@OAalliance.org.

Next steps
EnviroIssues will schedule follow-up conference calls with ad hoc committees to continue development of one-page proposals indicating progress, next steps, and any re-prioritization to bring to the Blue Ribbon Panel Refresh Meeting on March 17, 2017 in Olympia.

Final action items were noted:

- Develop legislative talking points

- Identify large programs and efforts focused on reducing nutrient loading into marine waters and work with leading organizations to raise awareness of how nutrients impact ocean acidification
- Schedule follow-up ad hoc committee calls

Martha Kongsaard thanked everyone for their participation and adjourned the meeting.