



Meeting summary

April 27, 2023

12:00 p.m. to 2:00 p.m.

Virtual meeting

Meeting attendance and objectives

The Washington Marine Resources Advisory Council (MRAC) held its 26th meeting on April 27, 2023, online and by conference call. The meeting was facilitated by Martha Kongsgaard, MRAC Chair, and Angie Thomson, Thomson Strategic Consulting.

Members in attendance: Martha Kongsgaard (Chair), Mike Cassinelli (Mayor of Ilwaco), Cynthia Catton (Department of Natural Resources), Bill Dewey (Taylor Shellfish Farms), Aaron Dufault (Washington Department of Fish and Wildlife, alternate), Annette Hoffmann (Washington Department of Ecology, alternate), Mike Rechner (Washington Department of Natural Resources), Marilyn Sheldon (Coastal Shellfish Grower)

MRAC members not in attendance: Alan Clark (Northwest Straights Commission), Brian Cochrane (WA State Conservation Commission, alternate), Tom Davis (Washington State Farm Bureau), Norm Dicks (Van Ness Feldman LLP), Representative Joe Fitzgibbon (Washington State House of Representatives), Garrett Dalan (Washington Coastal Marine Advisory Council), Tony Floor (Northwest Marine Trade Association), Lucas Hart (Northwest Straits Commission), Libby Jewett (National Oceanic and Atmospheric Association), Jay Manning (Puget Sound Partnership), Erika McPhee-Shaw (Western Washington University), Mindy Roberts (Washington Environmental Council), Senator Jesse Salomon (Washington State Senate), Ron Shultz (Washington State Conservation Commission), Douglas Steding (Association of Washington Business), Kelly Susewind (Department of Fish and Wildlife), Senator Keith Wagoner (Washington State Senate), Laura Watson (Department of Ecology)

Other participants: Simone Alin (National Oceanic and Atmospheric Association), Cory Archer (True Wind Collaborative, MRAC facilitation team), David Beugli (Willapa Grays Harbor Oyster Growers Association), Shallin Busch (National Oceanic and Atmospheric Association), Laura Butler (Department of Agriculture), Richard Feeley (National Oceanic and Atmospheric Association), Jennifer Hennessey (Washington Department of Ecology), Micah Horwith (Washington Department of Ecology), Terrie Klinger (Washington Ocean Acidification Center), Peter Murchie (Environmental Protection Agency), Talia Neiman (True Wind Collaborative, MRAC facilitation team), Jan Newton (Washington Ocean Acidification Center), Craig Norrie (Oregon State University), Betsy Peabody (Puget Sound Restoration Fund), Angie Thomson (Thomson Strategic Consulting, MRAC facilitation team), Jessie Turner (Ocean Acidification Alliance)

Meeting objectives:

- Share updates on recent ocean acidification efforts
- Hear an update on the 2023 MRAC Work Plan
- Hear presentations about the current industry status and emerging challenges for coastal shellfish and kelp
- Discuss multi-stressors impacting aquaculture and desired tools

Welcome and introductions

Martha Kongsgaard, MRAC Chair, welcomed participants and reviewed the meeting agenda.

Recent ocean acidification happenings

Participants shared recent progress and updates. Highlights include:

- Jennifer Hennessey, Washington Department of Ecology, provided a budget update for the 2023-2025 biennium. MRAC submitted two requests for the upcoming biennium, and both were included in the final budget that was adopted. There were no changes in the carry-forward budgets.
 - Angie Thomson, Thomson Strategic Consulting, added that funding to WOAC has been included to improve engagement with the Washington Coast. The request was included as part of a larger request for WOAC support.
 - Martha noted there is money allocated for studying Dungeness crab response to ocean acidification, which could be important as part of ongoing conversations with crabbers. She wanted to keep this in mind as MRAC thinks about refreshing these roles on the Council.
 - Marilyn Sheldon, Coastal Shellfish Grower, agreed that engaging with crabbers will be critical moving forward.
 - Aaron Dufault, Washington Department of Fish and Wildlife, shared that he spoke with some individuals in the crabbing industry to explore interest in engaging with MRAC.

- Angie provided updates on MRAC ad hoc committees:
 - The Milestone **One-Pagers Committee** is working on preparing a series of one-pagers to highlight MRAC's progress over the last five years and priorities looking forward. This small group identified a list of one-pager topics and are currently working through initial drafts. The drafts will be shared with the broader group before finalizing. These one-pagers are intended for a legislative audience and will be used during the next legislative work session.
 - Micah Horwith, Washington State Department of Ecology, added the one-pagers will be hosted on the MRAC website and then crosslinked to other sites, such as the Department of Ecology and Ocean Acidification Sentinel Site (OASeS), ensuring that these will be available to everyone, not just legislators.
 - The **Carbon Dioxide Removal (CDR) Committee** will soon convene to discuss what MRAC's role might be in engaging with the CDR landscape. Once the group has discussed chartering, roles, and responsibilities, the intention is to report to the broader MRAC group on progress and potential next steps. Anyone interested in participating in the CDR Committee is encouraged to send an email to mrac@oainwa.org.
 - Richard Feely, National Oceanic and Atmospheric Association (NOAA), suggested hosting a panel discussion for leaders in the CDR field to share about their work in the Puget Sound region.

- The Washington Ocean Acidification Center is hosting their biannual symposium focused on ocean acidification in the Pacific Northwest. The one-day symposium will be held on May 23, 2023 at Wisteria Hall in the University of Washington Arboretum.

- Richard Feely announced that a paper was recently submitted, focused on distribution of anthropogenic carbon dioxide along the U.S. west coast and connection to habitat reduction. Richard expects it will take about four or five months to get through the publication process.
- Richard Feely also shared Oregon Task Force on Ocean Acidification and Hypoxia updates, including the effort to develop new water quality standards for ocean acidification. California is working to revisit their water quality standards, and this may also be beneficial for Washington.
- Betsy Peabody, Puget Sound Restoration Fund, noted that this legislative session was the first time the state has made an investment in Olympia oyster restoration. Betsy hopes this will be carryforward funding that will provide base-level support for continuing to rebuild Olympia oyster beds in priority inlets throughout the Puget Sound.
- Aaron Dufault shared that WDFW received new funding to increase pinto abalone work to help recover and plant hatchery-raised juveniles throughout Puget Sound, primarily in the North Sound.
- Marilyn Sheldon flagged the emergence of European green crab, with concerning numbers seen on the coast. Marilyn was also excited to hear about the dedicated funding for Olympia oysters in the Puget Sound and would like to see that expanded to the coast.
- Shallin Busch, National Oceanic and Atmospheric Association, shared the White House released an Ocean Climate Action Plan in March. This action plan contains information about ocean acidification and marine carbon dioxide removal. The Interagency Working Group (IWG) on ocean acidification finished the congressionally required vulnerability report and will be reaching out to state and regional groups to help draft the monitoring and prioritization plan. The plan will provide five to ten recommendations, approximately three pages, for each region and MRAC lies within the west coast region. This drafting request will be sent out to NANOOS and other groups. Anyone interested is invited to reach out to Shallin directly to be included in the request.
- Shallin Busch also highlighted work in Willapa to explore the sensitivity of diploid and triploid oysters to ocean acidification and factors of climate change such as temperature, oxygen, and changes in primary production. This work will support understanding of which species might be best suited to different environmental conditions.
- Shallin shared on behalf of Libby Jewett, National Oceanic and Atmospheric Association, that Libby will step away from her Director position at the NOAA Ocean Acidification Program in June and will start a new position at the Northwest Fisheries Science Center.
- Peter Murchie, Environmental Protection Agency, shared the Habitat Strategic Initiative Lead funded new projects this spring with EPA funds, including kelp and eelgrass

projects. Peter is also working with the Department of Interior to advocate for funding for European green crab work in the Pacific Northwest.

- Micah Horwith announced the Department of Ecology is developing an ocean acidification indicator that will likely be ready to share this coming summer. The indicator is rooted in Ecology's new monitoring data streams but also incorporates samples from other peer programs. Ecology will acquire a new research vessel by the end of the state biennium, which will be used for sampling in the greater Puget Sound. Micah is working to equip the vessel with underway sensing, so that surface conditions including carbon dioxide, temperature, and salinity can be recorded as it transits between stations.
- Micah Horwith also noted the next Ocean Acidification Sentinel Site (OASeS) Steering Committee meeting will be concurrent with the Washington Ocean Acidification Center (WOAC) Symposium, which is scheduled for May 22, 2023 at the Fisheries Science Center.

Coastal shellfish status

David Beugli, Willapa Grays Harbor Oyster Growers Association, presented on the current industry status for coastal shellfish and new, emerging challenges. Highlights include:

- The Willapa Grays Harbor Oyster Growers Association has 18 members that farm in Grays Harbor and Willapa Bay, founded in 1959 with the initial mission to combat marine shrimp. In more recent years, the role of the association expanded into advocacy, supporting shellfish aquaculture and environmental issues like ocean acidification, invasive species, and pests. The association also supports permitting, outreach, and reporting.
- There are four key industry challenges: burrowing shrimp, labor and housing, lack of a haul-out facility, and shellfish mortality and survival.
- The Willapa Grays Harbor Estuary Collaborative working group focused on burrowing shrimp. Led by Washington Sea Grant, the Estuary Collaborative consists of shellfish farmers, Shoalwater Bay Tribe and Chehalis Tribe, state agency leadership from the Department of Commerce, Department of Natural Resources (DNR), Department of Agriculture, Fish and Wildlife, NOAA, and Pacific and Grays Harbor Conservation Districts. The group also includes science advisors from the Pacific Shellfish Institute, US Department of Agriculture, University of Washington, Washington State University, and Oregon State University. The formation of the Estuary Collaborative was in response to the burrowing shrimp issue and desire to manage the bay in a new way. In more recent meetings, work has been expanded into emerging coastal issues, such as European Green Crab. Overall, the group is still in its infancy and is currently looking for additional funding to sustain the work.
- The [Integrated Pest Management \(IPM\) Working Group](#) is also focused on developing a plan for burrowing shrimp management. In 2021-2023 the Washington State Legislature allocated \$650,000 which has been used to identify research needs and then release solicitations. In the next biennium, the IPM working group will receive an additional \$2

million through June 2025. To date, several projects have been funded such as remote sensing to monitor burrowing shrimp populations, lab and field trials, dye studies to map possible offsite movements of pesticides and repellents, and creating communication materials. Any ideas can be shared with David directly or Laura Butler with the Washington State Department of Agriculture.

- Labor and housing issues are impacting the shellfish industry. An average, medium-sized company has a housing shortage of about 10 to 15 employees across year-round and seasonal workers.
- The lack of a haul-out facility impacts the shellfish industry on the coast. Boats used for shellfish activities are unable to travel long distances or on the ocean to reach a haul-out facility, which means vessels are not receiving routine maintenance. This issue was identified as high-priority, and potential funding opportunities are in progress.
- Shellfish mortality and survival also continues to impact the industry. Farmers do not have a clear understanding of best practices. Improved water quality monitoring and education and outreach to shellfish farmers would be beneficial.
- To help address the issues facing the coastal shellfish industry, it will be important to maintain the current data systems, ensure there are no data gaps, and increase monitoring locations where possible. When mortality events occur, farmers first look to water chemistry data. David noted the NANOOS app has been useful.
- Bill Dewey echoed the recommendation for farmer education about best practices and the need to expand water quality monitoring.
- Richard Feely mentioned the Headlights program, a collaborative effort between scientists and hatcheries to install instrumentation and monitoring. It may be beneficial to make recommendations to federal agencies to ensure those relationships and program are maintained in the future.
- Micah Horwith proposed meeting regularly with growers to review water quality data over time and make connections to industry findings. This meeting would not support immediate decision making but could be a time to consider lessons learned for the year.
 - Marilyn Sheldon expressed support for this idea and suggested presenting data at the Annual Science Summit hosted at the Cranberry Station in Long Beach.
 - Simone Alin suggested hosting a brainstorming session to identify data points and data products that would help decision making. Data product development would require funding, but overall, these are two potential future projects the group could undertake.

Kelp efforts

Betsy Peabody presented on current conservation and restoration activities, challenges, and future needs for bull kelp. Highlights include:

- The 2012 Blue Ribbon Panel report identified the need to preserve and restore Washington’s existing native seagrass and kelp populations. Since then, there has been generous funding to support this work and progress has been made.
 - The Washington State Legislature awarded \$14.9 million in the 2021 biennium to tribes, nonprofits, and academic institutions doing bull kelp work in the Puget Sound. In 2022, another \$1.15 million was received to fund the Department of Natural Resources conservation plan for kelp and eelgrass. In the current 2023-2025 session, an additional \$2.21 million is dedicated to continue implementation on the kelp plan.
 - The Environmental Protection Agency (EPA) National Estuary Program funds the Habitat Strategic Initiative via the Puget Sound Partnership. This program provided another \$2 million to support three kelp projects in Puget Sound. Puget Sound Restoration Fund, Department of Natural Resources, and the Seattle Aquarium are leading these projects.
 - The Paul G. Allen and Family Foundation contributed \$1.68 million to support the 2021 Eyes on Kelp initiative.
 - There was a settlement between King County and the Suquamish Tribe regarding the West Point sewage treatment discharges of untreated sewage. Roughly half of the settlement funding is being used for kelp restoration in central Puget Sound in the home waters of the Suquamish Tribe.
 - NOAA provides foundational support for kelp restoration, with a total of \$660,000 attributed to kelp restoration since 2017. NOAA also funded the development of the Puget Sound Kelp Conservation and Recovery Plan.
 - The Port of Seattle also contributed \$300,000 to kelp restoration efforts. This investment is supporting the growth of kelp forests along the urbanized Seattle Waterfront.
 - Other funders include the Pew Charitable Trusts.

- The Kelp Conservation and Recovery Plan was developed in 2020 and envisions thriving kelp forests in Puget Sound. Puget Sound is a biodiversity hotspot with over 20 species of kelp, so the plan focused on more than just bull kelp. In 2021, forty partners convened for a kelp expedition over the course of eight days. The kelp expedition was an opportunity to share and exchange information and included community tribal gatherings and data collection.

- The Puget Sound Partnership developed a new Kelp Vital Sign, which will help track kelp as part of the health of Puget Sound.

- The Northwest Straits Commission leads a kayak-based kelp monitoring program in the northern counties. Citizen scientists are mapping the perimeter of kelp beds visible from the surface.

- The Suquamish Tribe, NOAA, and others are working in partnership to restore and monitor kelp forests at Jefferson Head by Indianola and at Squaxin Island. This work includes using aquaculture techniques to add seeded line in places where kelp beds existed historically.

- A kelp lab and seed bank are established at the NOAA Manchester Research Station. Here, kelp seed is grown along with an archive of genetic kelp material from kelp forests within the Puget Sound.
- The Eyes on Kelp Initiative, funded by the Paul G. Allen Family Foundation, received its second grant that is focused specifically on bull kelp forests. Index stations at fifteen sites are established throughout Puget Sound, where annual underwater ecological surveys are conducted with divers.
- The emerging Global Kelp Forest Collaborative launched in Hobart, Tasmania in February. This collaborative has an ambitious, worldwide goal to restore one million hectares of kelp and conserve three million hectares by 2040. This is ambitious because kelp restoration practices have not been tested and optimized in a range of locations, however, this initiative is exciting. The collaborative has pledges from 200 entities worldwide, including Puget Sound Restoration Fund which pledged with partners to enhance five bull kelp forests by 2028. The Washington Department of Natural Resources also pledged to protect and restore 5,000 acres of kelp forests in Puget Sound by 2040. The strategies identified by the Global Collaborative to restore and protect kelp forests include: natural regeneration through the removal of stressors, assisted regeneration, problematic species control, and competitor removal.

Ocean Acidification Tools Discussion

Richard Feely and Simone Alin shared a presentation about a new ocean acidification tool, developed by NOAA. Highlights include:

- The new tool allows the user to visualize a range of scenarios based on selected parameters. To date, this tool has collected over 33 million data values from 1957 to 2020. The datasets can be used by themselves or combined with models to have model-based outputs. The tool can make predictions reaching backward to 1850 and through each decade to 2100. As the tool is further refined, confidence in the models is improving for both past and present projections. The tool can be accessed here: <https://www.ncei.noaa.gov/access/ocean-carbon-acidification-data-system/synthesis/surface-oa-indicators.html>
- Shallin Busch suggested additional group discussion to identify what nature of tools would be most relevant to MRAC's focus on ocean acidification. Shallin offered to share additional information about projections on Washington's coast.

Next steps

- Explore avenues for engaging new representatives to fill commercial crabbing and Tribal interests within MRAC.