

OLYMPIC COAST
NATIONAL MARINE SANCTUARY
Meeting Notes

OCNMS Advisory Council Meeting
May 17, 2019

Olympic Natural Resource Center
1455 S Forks Avenue Forks, WA 98331

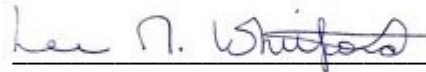
Olympic Coast National Marine Sanctuary
NOAA, Office of National Marine Sanctuaries
115 E. Railroad Avenue, Suite 301 Port
Angeles, WA 98362-2925

Reviewed by OCNMS Superintendent:



Carol Bernthal, Superintendent

Approved by AC Chair:



Lee Whitford, Chair

Advisory Council (AC) Members/Alternates in Attendance: Lee Whitford (Chair and Education), Katie Wrubel (Makah Tribe), Tami Pokorny (Marine Resource Committee), Jennifer Hagen (Quileute Tribe), David Hessler (Hoh Tribe), Bernard AfterBuffalo (Hoh Tribe), Casey Dennehy (Washington Department of Ecology), Hannah Blackstock (Washington Department of Natural Resources), Scott Hecht (National Marine Fisheries Service), Katie Krueger (Citizen at Large), Stephanie Sleeman (U.S. Navy), Dann May (Conservation), Josh Peters (Washington Department of Natural Resources), Wendy Largent (Hoh Tribe), Carolyn Winters (US Navy), Jan Newton (Research), and John Veentjer (Maritime Industry).

Presenters and Others in Attendance: Kevin Decker (Washington SeaGrant), Rich Osborne (ONRC), Jackie Queen, Dawn Grebner, and Julianne Stanford (US Navy), Dave Evans (Olympic Coast National Marine Sanctuary Foundation), Tommy Moore (Northwest Indian Fisheries Commission), and Tiffany Straza.

NOAA/OCNMS Staff in Attendance: Simone Alin (NOAA/Pacific Marine Environmental Laboratory), Carol Bernthal, George Galasso, Jenny Waddell, Julie Ann Koehlinger, Nicole Harris, Christine VanDeen, and Chris Butler-Minor (NOAA/Olympic Coast National Marine Sanctuary).

The meeting was opened by Lee Whitford. Attendees were welcomed by Rich Osborne, Aquatic Program Manager for the University of Washington's College of the Environment, Olympic Natural Resource Center. Rich provided an overview of the program and the campus facilities.

Internal Affairs

- The draft agenda was revised for changes in presenters then adopted by consensus after motion by Jennifer Hagen and second by Dann May <https://olympiccoast.noaa.gov/media/docs/20190517-sac-agenda.pdf>.
- Approval of the amended March meeting notes was motioned by Dann May and seconded by Katie Krueger
- Initial recruitment for six Advisory Council seats including Conservation (primary), Education (primary and alternate), Fishing (primary and alternate), and Tourism and Economic Development (alternate) closed on April 17, 2019.

Applications have been received for four of the positions which will be considered by OCNMS Advisory Council Executive Committee. Recruitment for the remaining seats will be extended until June 28, 2019. In the discussion Katie Krueger requested that recruitment for seats with terms expiring in 2020 begin in the fall of 2019.

- New members to the AC introduced included Hannah Blackstock, alternate for the Washington Department of Natural Resources in place of Katrina Lassiter; David Hessler, alternate for the Hoh Tribe; and Casey Dennehy, primary for the Washington Department of Ecology. Carol Maloy remains the alternate for the Washington Department of Ecology.
- George Galasso provided a summary of a recent meeting lead by the Pacific Northwest Maritime Heritage Council to introduce the new National Maritime Heritage Area designated along the saltwater coastline of Washington, established in February 2019 via the Natural Resources Management Act, a public lands bill (<https://www.congress.gov/bill/116th-congress/senate-bill/47/>).

This act provides guidance on management and conservation of natural resources on federal lands with focus on areas of high heritage value as well as economic development opportunities. The lead entity, Washington Trust for Historic Preservation (WTHP) has three years to develop a management plan.

OCNMS expressed interest in and where feasible supporting of their management plan on behalf and invited WTHP to give a presentation to the SAC. Jennifer Hagen suggested that engagement with the Coastal Treaty Tribes could be improved. George Galasso confirmed that he had made the same suggestion at the WTHP meeting.

- Advisory Council members were invited to attend and help events celebrating the 25th anniversary of OCNMS designation and the fourth annual “Get Into Your Sanctuary” weekend. See <https://olympiccoast.noaa.gov/news/> or <https://olympiccoast.noaa.gov/news/calendar.html>.

Information, Discussion, and Action Items

Olympic Coast Ocean Acidification Sentinel Site Update

<https://olympiccoast.noaa.gov/media/docs/20190517-olympic-coast-ocean-acidification-sentinel-site-update.pdf>

Julie Ann Koehlinger, Washington Sea Grant fellow, provided an update on activities of the Ocean Acidification Sentinel Site (OASeS) working group. The group has continued its efforts toward establishing objectives, articulating vision and goals, and have drafted guidance related to the steering committee selection.

The vision is that the OA science collected will inform resource managers and coastal communities to aid in preparing for resiliency in the face of future ocean conditions. Three goals emphasize sharing OA management priorities and filling in gaps via strategic science, promoting ocean literacy, and inspiring stewardship to diverse audiences. Each goal is supported by a number of objectives.

Next steps are to finalize these drafted documents. Carol Bernthal suggested a set of recommendations should be forwarded to the Council for acceptance or modification.

Synthesis of a decade of moored benthic time series observation of hypoxia and ocean acidification in the Olympic Coast 2006 through 2018

<https://olympiccoast.noaa.gov/media/docs/20190619-observations-of-hypoxia-ocean-acidification.ppt>

Dr. Simone Alin, NOAA’s Pacific Marine Environmental Laboratory (PMEL), gave a presentation, which addressed time-series analysis of OCNMS mooring data from sites that have oxygen sensors and generally placed at 42m deep in OCNMS. She expressed appreciation for the availability of the long-term dataset, which has allowed her to extract information on carbonate chemistry variability, based on the oxygen, temperature, and salinity data collected and proxy relationships based on NOAA West Coast Ocean Acidification cruises. She noted that mooring locations are near coastal tribes, and therefore the analysis could be of particular interest to the tribes and useful in regional vulnerability assessments currently being conducted.

Simone provided a brief ocean acidification (OA) introduction, then shared animated graphs created by Dr. Brendan Carter displaying the evolution of open ocean surface aragonite saturation states and pH over time. Measurements taken between 1995 and 2017 during coastal and open ocean research cruises show that saturation levels of aragonite are naturally low along the Olympic Peninsula Coast. Combined with global surface CO₂ Atlas data and geophysical models, this area of the ocean appears to be on the precipice of rapid change.

Evolution of chemical conditions for California Current ecosystems between 2007 through 2017 indicate increases in anthropogenic CO₂ at greater depths with related decreases in aragonite saturation states (Ω_A). Simone described that Dr. Adrienne Sutton, an oceanographer studying surface ocean chemistry, has used data from Chá bã to identify large variability in sub-seasonal Ω_A aka Ω_{arag} .

Ocean warming, hypoxia, acidification, and algal blooms represent multiple stressors on marine species in our region. Research led by regional collaborators on effects to Dungeness crab indicates vulnerability during larval stages. Scanned images show variation in density of shells during the last stages of the juvenile life phases is related to calcium carbonate (CaCO₃) saturation levels. Some form of calcite (a form of CaCO₃, rather than aragonite) appears to comprise Dungeness carapace and leg, which means that calcite saturation states may be important to consider.

Additional research using data from OCNMS 42m moorings indicates divergence in chemistry conditions/trends since industrial times with particularly concerning data signatures at southern mooring sites in comparison to northern mooring sites. She described the frequency of undersaturation states for aragonite and calcite. Other chemistry concerns are elevated CO₂ partial pressures (measured in micro-atmospheres [pCO₂ μ atm]); the tolerable pH ranges for fish thresholds crossed; and low oxygen concentrations i.e. hypoxic to anoxic conditions. Differences between north and south locations likely result from narrower continental shelf areas (to the north) having greater opportunities to refresh oxygen content in bottom waters through upwelling.

Reconstructing pre-industrial hypoxia, particularly due to warming of ocean temperatures in deeper waters, likely requires modeling to estimate pre-industrial conditions (hence Simone only showed present-day oxygen climatological values for all sites during the upwelling/mooring season, rather than pre-industrial conditions shown for carbonate chemistry). In response to the lack of preindustrial data on oxygen concentrations, Kate Krueger asked whether preindustrial exposure could be calculated using associated rock chemistry as she knows that paleoatmosphere has been calculated from the chemical makeup of Permian rocks/sediments. Simone's short answer was yes, paleo approaches can be useful, but Simone had been referring to proxy approaches that would allow reconstructions at similar temporal and spatial scales to those she is working with.

Simone showed estimated preindustrial climatologies for carbonate chemistry parameters that allowed her to give preliminary estimates of changes in Olympic Coast carbonate chemistry due to human-caused ocean accumulation of CO₂. These included longer periods of undersaturation for CaCO₃, longer periods when organisms would be exposed to hypercapnia (pCO₂ levels >1000 μ atm), and longer low-pH periods in the present-day, as well as earlier onset of harmful conditions during the summer upwelling season.

Simone displayed a video of seasonal forecasts from Dr. Samantha Siedlecki's J-SCOPE model in a rudimentary animation model of the 2016 upwelling season effects on various carbonate parameters throughout the water column. In response to queries about hypoxic conditions near Cape Elizabeth, she observed that the wide continental shelf receives little to no flushing. Proximity to the Columbia River plume which deposits organic debris loads over the winter may exacerbate summer CO₂ saturation.

Simone noted the strong variability illustrated through analysis. Informative metrics include undersaturation duration, severity, and time of onset. Models are used to fill temporal gaps (outside mooring season). The analysis may be useful for the upcoming OCNMS condition report. Simone indicated that variability seen in OCNMS might be somewhat higher than normal, but the number of observations, uniquely collected from the nearshore environment, also show remarkable heterogeneity

spatially and temporally. This interesting dataset has helped to define the strong north-south gradient of carbonate chemistry in Olympic Coast. Because overwintered mooring data only provides temperature, they are not useful for the same analysis. The data indicate a continuation of the north-south gradient of low oxygen and other carbonate chemistry issues further down the coast, but how far south isn't well defined or fully explored.

Simone also discussed that in the animation, CO₂ conditions seemed somewhat stable at the surface because primary production helps with utilization of CO₂. The models did not include current meter data. However, a wave glider deployed in OCNMS captured high CO₂ in a few localized instances that suggest the harmful conditions during 2017 might have broken through the surface (in contrast to the seasonal model for 2016).

The influence of the Juan de Fuca Eddy may bring corrosive waters into the Strait of Juan de Fuca, but the information on the complete effects on carbonate chemistry parameters have not been particularly well studied there. Asked if her findings are predictive of other locations, she considered it probable. Continued collaboration with other oceanographers and ongoing data analysis will be important in the ongoing ocean acidification regional vulnerability assessment.

Coastal Economies: Benefits from Tourism

<https://olympiccoast.noaa.gov/media/docs/20190517-coastal-tourism.pdf>

Dr. Kevin Decker, Washington SeaGrant, shared a presentation designed to illustrate the benefits of tourism directly and indirectly by teasing out which factors are related to tourism. A common view is that many businesses that cater to tourists are not providing living wage living jobs, only seasonal/flexible part-time work. However, research shows that this is not fully accurate and where employment opportunities extend beyond natural resource harvesting, cash flow increases by allowing expansion of complementary types of jobs, particularly those that are locally owned and focused.

Diversification of the economy into experiential vacationing emphasizes culture and heritage which can lead to conservation at the local and broader level. The other side of the coin is that despite a desire to experience a wild or more solitary location, places may become overwhelmed by visitors.

In 2017 there were 4.8 million visitor trips identified at the county levels. A 2018 analysis of visitor contributions in Washington state revealed that in 2017, tourism contributed \$16.7 billion in revenue in the state overall with \$981.2 million going to coastal communities.

Direct and indirect tourism in 2017 employed 16,859 people with total tourism labor income of \$402,741,371. Spending is mostly on food and accommodations. Lodging taxes support local programs/infrastructure and spending increases equals job and wage increases. Between 2005 through 2017, the area has become known for its locally sourced commodities.

Although his statistics on employment levels do not currently include environmental and human wellness factors, they do indicate that where there is economic resilience (diversity), economies are more resistant to negative impacts from changes to individual employers.

Ms. Krueger noted that Clallam and Jefferson Counties continue to mix data from their much larger eastside cities with that of the Pacific Coast, and this creates an inherent skewing of data regarding Pacific Coast communities. Dr. Decker agreed but does not have an immediate method to tease out coastally specific data.

U.S. Navy Northwest Training and Testing (NWTT) Supplemental Environmental Impact Statement and Marine Species Monitoring Program Updates

<https://olympiccoast.noaa.gov/media/docs/20190517-us-navy-northwest-training-and-testing-update.pdf>

Ms. Stephanie Sleeman, US Navy, began the presentation with an overview of the Pacific Fleet's Marine Species Monitoring Program, and the research conducted to support the Navy's training and testing permits and species management. She discussed the data gaps identified by the Navy, and the goals and objectives of the research projects funded in 2018.

Projects included: distribution and modeling of Southern Resident killer whale, ocean distribution of salmon, steelhead and bull trout, humpback whale tagging, Guadalupe fur seal tagging, blue and fin whale tagging, and marbled murrelet monitoring. Goals for filling in data gaps in the NWTT Study Area are relative to six oceanic species, some of which are listed under the Endangered Species Act (ESA) and their proximity to offshore US Navy ranges. Funding from these projects gathers as much information as possible with different detection methods in order to address a wide range of research questions.

Reports are available on <https://www.navymarinespeciesmonitoring.us/>.

In response to AC queries about the public concerns on impacts of marine mammal tagging, Stephanie commented that the Navy deploys a variety of tags depending upon the research question that is trying to be addressed. NMFS's regulates the types of tags researchers are allowed to deploy, and much of the research that Navy supports is gathered through the use of suction tags. Implant tags are used and provide longer-term data, as compared to surface tags which can fall off within 24 hours, and can provide valuable longer-term information regarding species movement patterns, migrations and distinct population segments (DPS) designations.

Interest was expressed by the AC, regarding the Navy's fish study which utilizes acoustic recorders for tracking salmon. Joseph Smith, NMFS, has been invited to present at a future AC meeting.

Ms. Jackie Queen, US Navy, presented on behalf of John Mosher, U.S. Pacific Fleet. She is the Environmental Planner supporting Mr. Mosher and the development of the Supplement to the 2015 NWTT Environmental Impact Statement (EIS).

The 2015 EIS has supporting Letters of Authorization that expire in November 2020. The draft Supplemental EIS is available at <https://www.nwtteis.com/>. As part of their requirements, the Navy will conduct associated consultation efforts such as the ESA and Marine Mammal Protection Act, tribal government-to-government consultations, and meet with OCNMS.

The NWTT Study Area has not changed; however, there may be adjustments to training and testing activities since 2015, related to testing new technology to combat new threats. In response to concerns related to testing within designated essential fishing habitat (EFH) areas, Ms. Sleeman advised the AC members that the 2015 NWTT Supplemental EIS includes a buffer of 350 yards with no explosives or anchoring around live hard bottom habitats and this is being carried forward in the draft NWTT Supplemental EIS (see Appendix K).

Most activities will take place outside of OCNMS boundaries. New activities included in the proposed action within OCNMS and Quinalt Range Site include, among others, mine detection and classification testing and acoustic oceanographic research. Ms. Queen highlighted key chapters (3.4 and 3.9) along with appendices (A & K).

OCNMS education overview and update “Sanctuary Splash” aka Big Mama Programming

<https://olympiccoast.noaa.gov/media/docs/201901716-big-mama-presentation.pdf>

Christine VanDeen, AmeriCorp Service member, provided an overview of a whale focused educational program for 5th grade students in the Port Angeles, Sequim, and many coastal school systems. The program introduces the basics of toothed versus baleen whales with topics ranging from behavior to physiology to whale watching etiquette with several hands-on components. The program introduces whale acoustics, reading spectrograms, identifying individual whales, plus provides an opportunity to explore a life-sized inflatable humpback whale modeled after Big Mama (BCY0324), a real humpback seen in OCNMS and the Strait of Juan de Fuca since the 1990s.

Students are given pre-instruction and post instruction test to aid in evaluating learning and adjusting the program as needed. The program has reached more students in its second year and scores improved on average by 3 points over the course. Sanctuary Splash is supported by two AmeriCorps staff. Expansion of the program along the coast will require additional resources in terms of time and travel.

Big Mama also makes appearances at community outreach events, when there is sufficient space in an indoor location for her 45 x 36-foot size. At outreach events the focus is on anatomical exploration and a summary version of whale watching etiquette for children and adults alike.

Nicole Harris, Education Specialist recapped the Marine Advanced Technology Education (MATE) Remotely Operated Vehicles (ROV) program and invited AC members to participate as judges or observers at the 3rd annual competition being held at the Forks Aquatic Center on May 18.

Superintendent’s Report

<https://olympiccoast.noaa.gov/media/docs/20190517-olympic-coast-national-marine-sanctuary-office-report.pdf>

Carol Bernthal shared highlights from the Office Report. OCNMS has received its site budget, which is lower than prior years therefore will require tough choices in allocations. The sanctuary will continue to support its core programs.

The 2019 *R/V Tatoosh* field season will kick off on May 20. In July, a new NOAA Corp Officer will begin training with the *Tatoosh* crew. There is hope that the Resource Protection Specialist position, which will be responsible for tasks such as permitting, climate change issues, and ocean acidification programs, will be posted in the late summer.

Carol attended a National Leadership Training in Hawaii during the second week of May to focus on key initiatives for the Office of National Marine Sanctuaries. Topics include adding new sites to the system, succession planning, and staff training. The location provided an opportunity for introduction to rich cultural protocols of the Pacific region.

Carol also welcomed Dan Evans, Jr., the new Director for the Olympic Coast chapter of the National Marine Sanctuary Foundation. Dan described his background in corporate communications and his enthusiasm for his first role in a non-profit organization whose focus is on an area he deeply cares about. While he has taken on the position of director, Deborah Moriarty will continue to be involved in the Marine Discovery Center project. An update on the project was suggested for a future SAC meeting.

Jenny Waddell reported on enhancements to the mooring program. She has been able to purchase three additional sensors so now all deeper moorings are fully instrumented along with the 15 m mooring off Cape Elizabeth.

Locations of Upcoming 2019 Meetings

- July 19, Taholah at the Community Center.
- September 27, Bremerton at the Fairfield Inn & Suites.
- November 8, La Push at the Quileute Tribal Council Chambers – West Wing.

Future Presentations

- Chris Moore, Washington Trust for Historic Preservation – National Maritime Heritage Area
- Dr. Joseph Smith, NOAA Northwest Fisheries Science Center - Salmon Ocean Behavior and Distribution (SOBaD)
- Dan Evans, Jr., Olympic Coast chapter of the National Marine Sanctuary Foundation - Marine Discovery Center project

SAC Member Reports

Casey Dennehy spoke of the development of ecosystem indicators for marine spatial planning (MSP) at the state level which will include estuaries as the one additional habitat to OCNMS. Considering funding opportunities for narrowing down which indicators will be most useful. Engaging in outreach to local planners for incorporating MSP. The MSP will be submitted to NOAA and incorporated in the state's coastal zone management creating enforceable policy in the near future.

John Veentjer discussed changes in ship traffic for the benefits of reducing impacts on whales. Results from Canada conducting deep draft lateral displacements last year are not available and the continuation of the trial was not well received by the U.S. Coast Guard. This year, the plan is to move inshore traffic further south. At Haro Strait, the initial area of voluntary speed reduction will be extended in Boundary Pass. There will also be "no go" areas aimed toward recreational boaters to protect Southern Resident killer whales.

Jennifer Hagen shared that Chá bǎ will be reconfigured and deployed for summer instrumentation in the next week. Water quality issues have been noted at Second Beach due to the volume of visitors without access to sanitation facilities. The North Pacific Coast Marine Resource Committee is funding the lab analysis of collected water samples in an effort to protect shellfish and swimmers. Biotxin levels still look good. She will be participating in a call regarding the tribe's halibut fishery in the afternoon.

Scott Hecht reported NOAA Fisheries is seeking three aquaculture specialists to work out of Lacey or Seattle offices. The position will include policy and research with connections to Alaska and California offices and management oversight out of Washington, D.C.

Katie Krueger announced that she will be a presentation judge at the MATE ROV competition to be held May 18 at the Forks Athletic and Aquatic Club.