

## OLYMPIC COAST NATIONAL MARINE SANCTUARY

**A Report for Sanctuary Advisory Council Members**

**Reporting Period: Oct. 29, 2016-Jan. 13, 2017**

### ABOUT THE SANCTUARY

Olympic Coast National Marine Sanctuary spans 3,189 square miles of marine waters off the rugged Olympic Peninsula coastline. The sanctuary extends 25 to 50 miles seaward, covering much of the continental shelf and several major submarine canyons.

The sanctuary protects a productive upwelling zone home to numerous marine mammal and seabird species, diverse populations of kelp and intertidal algae, and thriving invertebrate communities. The sanctuary is also rich in cultural resources, with over 150 documented historical shipwrecks and the vibrant contemporary cultures of the Makah, Quileute, and Hoh Indian Tribes and the Quinault Nation.

### OFFICE REPORT

#### OLYMPIC COAST NATIONAL MARINE SANCTUARY NEWS AND PROGRAM UPDATES

Organized by Olympic Coast National Marine Sanctuary (OCNMS) management plan priority areas.

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### ACHIEVE EFFECTIVE AND COORDINATED MANAGEMENT

#### Sanctuary Supports Oil Spill Planning

On December 1, Olympic Coast National Marine Sanctuary (OCNMS) staff attended the annual Northwest Area Committee (NWAC) Summit. The NWAC is responsible for maintaining the Northwest Area Contingency Plan (NWACP), which is the oil spill response plan for Washington, Oregon and Idaho. Each year the NWAC updates the NWACP, usually through the efforts of task forces formed to review important issues in detail. An example of a NWACP update of interest to Olympic Coast National Marine Sanctuary is the improvement to the dispersant tool section. The sanctuary is specifically identified as a case-by-case zone, where the use of dispersants requires the concurrence of the Regional Response Team and calls for consultation with tribal governments. For 2017 task forces, the sanctuary supported the formation of task forces to look at tribal involvement in spill response, Automated Aerial System policy, and improve in-situ burn tools. The final selection of task forces will be made by the NWAC with work taking place over the next year.



#### How Prepared are We?

OCNMS Staff were invited to participate in a Washington Coastal Resilience Assessment Forum, being conducted by the William D. Ruckelshaus Center, a joint program of Washington State University and the University of Washington. The Center is conducting an assessment, initiated by the Washington State Department of Ecology, the office of U.S. Representative Derek Kilmer, and coastal entities in Grays Harbor County, to explore opportunities that support long-term resilience for the Washington coast and coastal communities in response to growing concerns related to existing and future natural hazards (erosion, floods, landslide, earthquakes and tsunamis). This information will be used to identify approaches, processes, structures, and resources needed to enhance and support coast-wide resilience efforts.

## Improving Ocean Governance for Washington's Coast

Carol Bernthal, Sanctuary Superintendent, along with other NOAA representatives, attended a meeting of tribal, state and federal government members of the West Coast Regional Planning Body (RPB) regarding ocean planning and intergovernmental coordination goals relevant to the Pacific coast of Washington state. Discussions included updates on existing and future planning and data-related efforts, next steps regarding sub-regional coordination within the framework of the West Coast Regional Planning Body, and priority activities to be undertaken by the proposed sub-regional planning body.

## IMPROVE OCEAN LITERACY

### Underwater Robotics Education Reaches Olympic Peninsula Communities



OCNMS education staff partnered with Marine Advanced Technology and Education (MATE) and the University of Washington to conduct a Remotely Operated Vehicle (ROV) mentor training workshop with coastal community teachers. Seventeen middle and high school teachers from six coastal schools attended the one-day workshop to learn the basics of ROV physics, as well as how to wire up the motors and control box of a MATE AngelFish motor kit. Participants will take their newly-acquired ROV knowledge back to their students, encouraging Science Technology Engineering and Math (STEM) education while building ROV clubs within their schools and communities. MATE and OCNMS will host the first annual Olympic Coast MATE competition in May 2017, where Olympic Coast community youth will showcase their vehicles and skills through underwater robotic challenges and poster sessions.

OCNMS education staff also visited the Port Townsend 4H STEM club and shared deep sea videos and marine technology with their members. Port Townsend's 'Dueling Dragons' club is in their eighth year as a 4H STEM club, competing in several regional competitions, including ROVs at the regional MATE competition. Sanctuary staff provided an overview of our local marine protected area and the deep sea research conducted within sanctuary waters. Students were also able to view OCNMS diving videos and sanctuary 360 images from Florida Keys National Marine Sanctuary and National Marine Sanctuary of American Samoa with Google goggles. The club will be participating in the first annual Olympic Coast MATE competition this May.

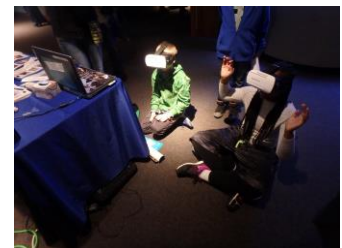


### Quileute Tribal School Students Explore Their Watershed Health and Resources

OCNMS education staff joined Quileute Natural Resources Water Quality specialists to assist seventh through twelfth grade students from Quileute Tribal School as they conducted water chemistry sampling and nature journaling along the Quillayute River watershed and nearshore environment. Students journeyed from their school, adjacent to the mouth of Quillayute River, First Beach, and the sanctuary, to upper tributaries of the Quillayute River to observe salmon spawning habitat and restoration efforts. Water chemistry data and ecosystem observations were collected at three sites along the Quillayute River and tributaries before reaching the mouth, where students continued water chemistry data collection and plankton samples.

### Sanctuary Staff Share Deep Coral Exploration at Seattle Aquarium's Discover Science Weekend

November 10-11, OCNMS staff hosted an educational booth at the Seattle Aquarium as part of the annual Family Discover Science Weekend. NOAA educators and scientists, local meteorologists, and aquarium researchers offered families an opportunity to discover science together through exciting interactive experiments and presentations. More than 5,000 participated in the Family Science Weekend, learning about ocean exploration, ocean chemistry, citizen science, and marine mammals from more than 20 exhibits and booths specific to the weekend event. OCNMS conducted outreach on the deep coral communities of our west coast sanctuaries as well as virtual experiences diving in Olympic Coast.



### Sanctuary Exploration Featured at Science Café in Sequim

OCNMS staff presented to approximately 50 people attending the Sequim Science Café, a monthly program sponsored by the Sequim Education Foundation to support program enhancement for high school age students in Sequim public schools, including the high school's robotics program. The presentation included an introduction to the National Marine Sanctuary System and features of OCNMS, an overview of advances in seafloor mapping technologies, and a summary of mapping and preliminary exploration surveys completed in 2016. The evening ended with highlights of photos and videos showcasing the deep sea habitats and creatures found off the Washington coast.

### **Olympic Coast Discovery Center Docents Embark on Educational Field Trips**

On November 8, Olympic Coast Discovery Center (OCDC) volunteers and staff visited the Forks Visitor Center (FVC), where a NOAA education kiosk had recently been installed. Volunteers explored the different aspects of the kiosk and spoke with the FVC staff and volunteers about public use and reception. Afterwards, volunteers were invited to the Forks Timber Museum, a partnering organization through Olympic Peninsula Tourism Commission. The excursion concluded at First Beach on Quileute Reservation to enjoy the splendor of Olympic Coast National Marine Sanctuary and witness strong currents and bird life using the beach.



On January 8, OCDC Manager led five volunteers on a field trip to the Seattle Aquarium. The group explored the aquarium before receiving a guided, behind-the-scenes tour with aquarium education staff. They also experienced a presentation on ocean acidification using strategic framing and metaphors from National Network of Ocean and Climate Change Interpretation (NNOCCI), which was extremely well received. Some of the participating volunteers have been exposed to NNOCCI concepts and messaging through OCNMS introductory presentations on interpreting climate change and ocean acidification in Olympic Coast. The field trips were organized to provide enrichment and continuous learning opportunities to volunteers during the off-season.

### **Olympic Coast National Marine Sanctuary Featured at Clallam Bay Chamber of Commerce**

OCNMS education staff provided an overview of the sanctuary to Clallam Bay Chamber of Commerce members and Clallam Bay Visitor Center docents. The presentation provided a history of OCNMS, a look at the marine protected areas under the Office of National Marine Sanctuaries, the communities, organisms and habitats of Olympic Coast, and an overview of education, research and management conducted by OCNMS and its partners in order to protect this underwater treasure. Clallam Bay is located on the west end of the Strait of Juan de Fuca, and is the gateway to the outer coast, with thousands of visitors passing through on their way to the Makah Reservation and the northern point of the marine protected waters of Olympic Coast National Marine Sanctuary.

### **Multi-Aged Community Cluster Students Learn About Marine Debris**

Franklin Elementary School Multi-Aged Community (MAC) Cluster students participated in marine debris and albatross bolus dissection programming with OCNMS education staff. Two of the MAC clusters, representing nine students from first through fifth grades, explored the Olympic Coast Discovery Center while receiving an overview of the National Marine Sanctuary System and marine debris as a global issue. They learned how marine birds, like the albatross, are affected by marine debris through the dissection of albatross boluses. Students engaged in several focused activities on marine debris to learn about the various ways human debris affects marine creatures, not just through ingestion. Students concluded by taking the Ocean Heroes Pledge and promised to not only share the information they learned, but also to take action against marine debris.

### **Educator Workshop on Columbia River Focuses on Science Technology Engineering and Math**

OCNMS staff participated in a one-day Remotely Operated Vehicle (ROV) Underwater Robot Training workshop hosted by Oregon Science Technology Engineering and Math hub in Astoria, Oregon. The workshop was held at the Columbia River Maritime Museum, where museum outreach staff introduced their ROV in a bag program before workshop participants learned ROV basics, engineer design elements, team roles and project management for participation in 2017 Marine Advanced Technology and Education (MATE) underwater robot competitions. MATE Pufferfish ROV motor kits were provided to each participant with remaining workshop time devoted to kit assembly and contact building.



### **Olympic Coast National Marine Sanctuary Receives Hands on the Land Mini Grant**

OCNMS Education team was awarded a Hands on the Land mini grant to deliver high-quality, place-based environmental education to coastal community teachers along Washington's coast. The funds will be used to conduct a teacher professional development in partnership with Pacific Education Institute, focusing on hands-on experiential lesson plans and activities that encourage the use of OCNMS as a natural outdoor classroom while supporting Next Generation Science Standards. Funding support for these grants comes from the Environmental Protection Agency (EPA) and the National Environmental Education Foundation.

## CONDUCT COLLABORATIVE RESEARCH, ASSESSMENTS AND MONITORING TO INFORM ECOSYSTEM-BASED MANAGEMENT

### **Olympic Coast National Marine Sanctuary Staff Participate in Principal Investigators' Meeting for NOAA Ocean Acidification Program**

On January 4-6, OCNMS staff Kevin Grant and Jenny Waddell participated in a three-day Ocean Acidification (OA) Principal Investigator's meeting at NOAA's Pacific Marine Environmental Laboratory in Seattle. Sanctuary Superintendent, Carol Bernthal, joined for the day on January 5. The meeting, which involved different audiences each day, brought together Federal and non-Federal partners who have led projects investigating various aspects of Ocean Acidification as part of an effort to share the results of Ocean Acidification Program (OAP)-sponsored work and build on the program's collaborative efforts to better understand and characterize the frequency, intensity and extent of OA, as well as the potential impacts of OA on living marine resources. The workshop provided a fantastic overview of the program's reach to date and engaged Federal participants, including several representatives of ONMS, in direction-setting discussions on the final day of the meeting. OCNMS played an active role in the week's proceedings, presenting a poster on the development of the Olympic Coast Sentinel Site for Ocean Acidification, and taking every opportunity to underscore how the Olympic Coast OA sentinel site could further the goals of the OAP while helping to meet the needs of OAP collaborators.

## CONSERVE NATURAL RESOURCES IN THE SANCTUARY

### **Bi-National Workshops Support Rapid Assessments of Regional Climate Vulnerability and Management Adaptation Strategies**

On December 1-2, the Commission for Environmental Cooperation (CEC) hosted a workshop focused on conducting rapid vulnerability assessments of marine protected areas across international borders to foster collaboration on shared marine resources and similar management challenges. The workshop brought together marine managers from British Columbia and Washington state to learn how to complete a rapid assessment for vulnerabilities from climate change. It included OCNMS, Olympic National Park, and Canada's Pacific Rim National Park Reserve. On December 8-9, the U.S./Mexico workshop was conducted, and included Channel Islands and Monterey Bay national marine sanctuaries, Channel Islands National Park, and Isla Guadalupe and Viscaïno Biosphere Reserve in Mexico, as well as several NGO and university partners.

After assessing the potential impacts of cumulative stressors (such as storm severity/frequency and ocean acidification, harvest activities and microplastics), participants collaboratively identified possible management strategies to help mitigate or ameliorate impacts to sensitive habitats and/or species, and to protect resilient habitats and connectivity. Throughout the process, the comprehensive climate change vulnerability assessment previously prepared for the north-central California coast and ocean was frequently referenced (<http://sanctuaries.noaa.gov/science/conservation/vulnerability-assessment-gfnms.html>). Following the RVA workshop, managers will capture outcomes including next steps and cross-protected area collaboration opportunities.

### **Fishing Vessel Grounded in Sanctuary Successfully Towed Off Beach**

On December 7, the 58 foot F/V *Qualaysquallum* ran aground on the coast of the Quinalt Reservation in Olympic Coast National Marine Sanctuary. The U.S. Coast Guard (USCG) pulled the five-person crew off the vessel by helicopter. Prior to abandoning the vessel, the crew deployed an anchor. The vessel contained 2,500 gallons of diesel and 10,000 pounds of crab on-board, but remained intact. The *Qualaysquallum* was hard aground at low tide and in the surf at high tide. Salvors used a helicopter to pass a towline from the *Qualaysquallum* to an offshore tug and were able to tow them off the beach at high tide, prior to the arrival of a significant storm event. This successful operation involved cooperation and coordination between the USCG, Washington Department of Ecology, Quinalt Indian Nation, NOAA, the responsible party and contracted salvors.

### **Sanctuary Staff Recognized for Contributions to Regional Beach Cleanup Efforts**



Liam Antrim, Resource Protection Specialist at OCNMS, was recognized as "CoastSaver of the Year" in 2016 by the Washington Clean Coast Alliance for his many years and various contributions to marine debris cleanups in Washington state. The Alliance oversees the CoastSavers program that organizes annual Earth Day and International Coastal Cleanup events that bring hundreds of volunteers to the shores to remove marine debris. The formation of Washington Clean Coast Alliance was coordinated by the sanctuary with funding from NOAA's Marine Debris Program in 2007 to align beach cleanup activities of coastal landowners (Olympic National Park, Washington State Parks, and Native American Tribes) and civic and conservation groups (Lions Club International, Surfrider Foundation, Grassroots Garbage Gang,

Discover Your Northwest). Liam has been involved with beach cleanups since 2000, assisted with formation of the Alliance and has served on its Steering and Executive Committees, and has promoted recycling efforts as well as cleanups of difficult to access sections of the remote coastline.

## UNDERSTANDING THE SANCTUARY'S CULTURAL, HISTORICAL AND SOCIOECONOMIC SIGNIFICANCE

### Director of NOAA's Maritime Heritage Program to Present at SCUBA and Water Adventure Show

On April 1, Dr. James Delgado, Director of NOAA's Maritime Heritage Program for the Office of National Marine Sanctuaries, will present *Solving the Mysteries of the Deep: Recent Shipwreck Discoveries* at the Scuba & Water Adventure Show in Tacoma, Washington, which takes place from March 31 – April 2, 2017 ([www.scubah2oshow.com](http://www.scubah2oshow.com)). Maritime archaeologist, explorer and author will take viewers on a journey of undersea exploration, sharing the stories of lost ships and their crews, and the technology that has allowed the discovery and documentation of these wrecks from waters hundreds to thousands of feet deep. Delgado is one of the nation's leading ocean explorers, and has led or participated in shipwreck expeditions around the world. His undersea explorations include RMS *Titanic*, the discoveries of *Carpathia*, the ship that rescued *Titanic's* survivors, and the notorious "ghost ship" *Mary Celeste*, among numerous others.

## SANCTUARY PERMITTING

### Issued Permits and Authorizations

**MULTI-2016-011** – Bill Hansen, National Data Buoy Center

**Project Title:** NOAA Weather Buoys 46012, 46042, 46FLO, 46013, 46026 and 46041

**Permitted Activity:** Installation of buoys, and altering or disturbing the seafloor in connection with anchor placement

**Project Location:** National marine sanctuaries in California and the Cape Elizabeth buoy in OCNMS

**Permit Duration:** Five years, through 2020

**Comment:** This permit is required because a new NDBC permittee was identified. All NDBC permits from the sanctuaries West Coast region were consolidated into this permit. For OCNMS, because installation of the Cape Elizabeth is anticipated for many years ahead with periodic servicing events (e.g., every 3-5 years), permit conditions were modified to require a fully retrievable mooring design and prohibit buoy anchor abandonment with future deployment events.

### Pending Permit Requests

**OCNMS-2016-004** – Shawn Larson, Seattle Aquarium

**Project Title:** Use of Drones for Sea Otter Foraging Data Collection

**Permitted Activity:** Overflight with drone within sanctuary's overflight restriction zone

**Project Location:** Nearshore coastal areas where sea otters are distributed; proposed for launch from Makah lands and Giant's Graveyard/Toleak area if Park permission granted

**Permit Duration:** One year, through June 2017

**Comment:** All drone use permits will include recording and reporting of observations of wildlife during drone flights to provide information to support further evaluation of disturbance impacts and definition of appropriate operational procedures. Restrictions on drone launch from National Park lands will limit areas of operation allowed in a sanctuary permit unless Park approval is granted. Need to verify new FAA rules for approval and certification for drone use and Makah approval for launch from Makah lands. No action since July 2016 except applicant contacted in January about plans for 2017.

**OCNMS-2016-007** – Tim Wooton, University of Chicago

**Project Title:** Large-scale shoreline monitoring using aerial photographic platforms

**Permitted Activity:** Overflight with drone within sanctuary's overflight restriction zone

**Project Location:** Vicinity of Tatoosh Island

**Permit Duration:** Five years, through 2021

**Comment:** All drone use permits will include recording and reporting of observations of wildlife during drone flights to provide information to support further evaluation of disturbance impacts and definition of appropriate operational procedures. Need to verify new FAA rules for approval and certification for drone use. Makah approval (research permit) has been provided for launch from Makah lands. No action since July 2016 except applicant contacted in January about plans for 2017.

**OCNMS-2016-009** – Adrienne Sutton, NOAA Pacific Marine Environmental Lab

**Project Title:** Ocean acidification test bed to evaluate new low-cost, low-power mooring profiling technology

**Permitted Activity:** Installation of an oceanographic buoy, and altering or disturbing the seafloor in connection with anchor placement

**Project Location:** Adjacent to Cha'ba and NEMO buoys off La Push, WA

**Permit Duration:** Six months, April through October 2017

**Comment:** This permit is supports test deployment of pCO<sub>2</sub> sensors in association with other oceanographic installations to test sensor qualities and refine ocean acidification modeling.

**OCNMS-2016-010** – Chris Morgan, NatureBridge

**Project Title:** NatureBridge Drift-Card Citizen Science Project

**Permitted Activity:** Discharge to sanctuary waters, specifically discharge of biodegradable (thin plywood) drift cards from shoreline locations

**Project Location:** Proposed discharge sites are Cape Flattery, Cape Alava, and Second or Third Beach

**Permit Duration:** One year requested; multi-year permit may be considered

**Comment:** This permit is supports continuation of a NatureBridge field science program to engage students in education of marine currents and ocean stewardship. Approval from Olympic National Park and tribal landowners will be required to support sanctuary permit issuance.

**OCNMS-2012-005** – U.S. Fish and Wildlife Service

**Project Title:** Aerial Seabird and Sea Otter Surveys

**Permitted Activity:** Low-altitude overflights to survey wildlife

**Comment:** A new permit will be issued to update to current USFWS staff. Permitted activities and permit conditions will be negotiated. Permit application not yet received.

**OCNMS-2011-001** – Olympic National Park

**Project Title:** Helicopter and fixed wing aircraft support for National Park Service lands that adjoin or are within Olympic Coast National Marine Sanctuary areas

**Permitted Activity:** Low-altitude overflights for Park operations, other than emergency response

**Comment:** A new permit will be issued to update to current ONP staff. Permitted activities and permit conditions will be negotiated. Permit application not yet received.

**OCNMS-2015-001** – Consortium for Ocean Leadership - OOI

**Project Title:** Ocean Observatories Initiative - Endurance Array 25m Inshore Mooring and Glider Operations

**Permitted Activity:** Installation of buoys, and altering or disturbing the seafloor in connection with anchor placement

**Project Location:** Near southern boundary of OCNMS, off Copalis Head

**Permit Duration:** Three years; currently through June 2018

**Comment:** A new permit will be issued to update to current OOI staff. No revisions to permit conditions are anticipated.

## LEARN ABOUT YOUR SANCTUARY / NATURAL HISTORY

### Washington State Sea Otter Population Continues to Grow

OCNMS participated in the annual sea otter census in 2016, organized by U.S. Fish and Wildlife and Washington Department of Fish and Wildlife, with additional assistance from volunteers and staff from Seattle Aquarium, and the Point Defiance Zoo and Aquarium. In 1969 and 1970, 59 sea otters were relocated from Amchitka Island, Alaska to the outer Washington coast and have prospered. The population now numbers more than 1,800 individuals. Most of Washington's sea otters live in the waters of Olympic Coast National Marine Sanctuary. Aerial surveys are paired with ground-based counts to optimize population estimation techniques. The annual population growth rate is positive, currently estimated at 9.4%. Three quarters of Washington's sea otters were found south of La Push, where the population is growing faster than in northern sanctuary waters. One large raft of over 600 sea otters was observed off the mouth of the Hoh River. This assemblage, about one third of the area's sea otters, is a reminder this population's vulnerability to a large oil spill. Results of the 2016 Survey of the Reintroduced Sea Otter Population in Washington state will be posted to <http://olympiccoast.noaa.gov/science/surveyscruises/surveyscruises.html#wildres>



## Colonial Tunicates Wash Ashore in Late Fall



Dedicated marine debris volunteer for OCNMS, Russ Lewis, of Ocean Park, Washington rarely misses a day clearing debris from shores of the Long Beach Peninsula. He finds many interesting things on the beach. In late November, Russ found something he had not seen before - hundreds of specimens of unusual marine life stranded on a wrack line over a 1/4 mile stretch of beach. The organisms were translucent, tubular, about 5-10 cm long, and with an opening on one end. With the help of taxonomists, these animals were identified as pelagic, colonial tunicates, more specifically



Pyrosomes. Pyrosomes are in the Phylum Chordata, just like humans and other vertebrates. Whereas most pyrosomes inhabit tropical waters, *Pyrosoma atlanticum* is a species found in temperate Pacific waters that forms a rigid tubular colony, with rough texture due to the fleshy projections (papilla) from multiple individuals making up the colony. A colony can be up to 60 cm in length, moves by the beating action of hair-like cilia, and feeds by trapping small plankton in mucus. An encounter in the dark would reveal that *P. atlanticum* is brightly bioluminescent.

## REGIONAL / NATIONAL MARINE SANCTUARY SYSTEM NEWS

### Public Comment Open for Two Proposed National Marine Sanctuaries

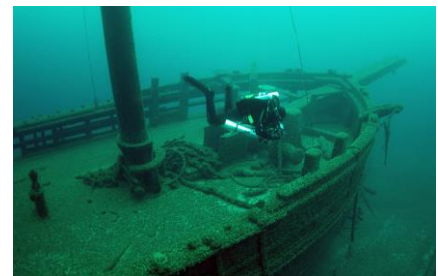
On January 9, NOAA published notice in the Federal Register of proposed rulemaking and availability of Draft Environmental Impact Statement and Management Plan for two proposed national marine sanctuaries: Mallovs Bay-Potomac River National Marine Sanctuary (MPNMS) and Wisconsin-Lake Michigan National Marine Sanctuary (WLMNMS). The public is invited to weigh in during a comment period through March 31, 2017. Both potential sanctuaries were proposed to help conserve at-risk, nationally-significant shipwrecks and maritime heritage resources. Both of the proposed new sanctuaries were submitted to NOAA through the Sanctuary Nomination Process, which included broad community and bipartisan support. <http://sanctuaries.noaa.gov/news/jan17/noaa-proposes-two-new-national-marine-sanctuaries.html>



NOAA proposes to designate approximately 46 square miles of waters encompassing and surrounding Maryland's Mallovs Bay as MPNMS. NOAA also proposes regulations to implement the sanctuary designation and establish the sanctuary's terms of designation to protect historical, archeological, and cultural resources of national significance. MPNMS contains an extraordinary collection of more than 100 known and potential shipwrecks dating from the Revolutionary War through the present. Their construction at more than 40 shipyards in 17 states reflected the massive wartime effort that drove the expansion and economic development of communities and related maritime service industries in the early 20th century. Additionally, Mallovs Bay is a largely undeveloped landscape and waterscape

identified as one of the most ecologically valuable in Maryland. Structures provided by shipwrecks and related infrastructure serve as habitat for populations of recreational fisheries, bald eagles, and other marine species. Learn more at <http://sanctuaries.noaa.gov/mallovs-bay>.

In Wisconsin state waters, WLMNMS would encompass an area of 1,075 square miles to protect a nationally-significant collection of shipwrecks in the Great Lakes, including 18 that are listed on the National Register of Historic Places. Archival and archaeological research indicates that the proposed sanctuary includes 37 known historic shipwrecks and about 80 potential shipwrecks yet to be discovered. Fifteen of the shipwrecks are preserved virtually intact with a high degree of hull integrity. Learn more at <http://sanctuaries.noaa.gov/wisconsin>.



### Volunteers Contribute the Value and Time of 68 FTEs to National Marine Sanctuaries

During FY16, NOAA's Office of National Marine Sanctuaries had 11,358 volunteers across the United States helping to protect and conserve America's underwater treasures to safeguard them now and for future generations. These individuals worked 137,088 hours over the fiscal year in a wide variety of activities including whale identification, beach cleanups, diving, water quality monitoring, collecting field observations and surveys, visitor center docents, visitor safety and etiquette

as well as wildlife monitoring. Their work is the equivalent of \$3.23 million dollars of in-kind support or the value and time of 68 full time employees. Of these, 8,636 volunteers specifically supported national marine sanctuary management efforts, such as Beach Watch, Spotter Pro, Team Ocean and Sanctuary Ocean Count, with 80,153 hours, which is equivalent to \$1.9 million dollars of the time of approximately 40 FTEs. For more information about the National Marine Sanctuary System volunteer program, visit [http://sanctuaries.noaa.gov/involved/volunteer\\_future.htm](http://sanctuaries.noaa.gov/involved/volunteer_future.htm)

### **Delay of Discharge Requirements for USCG Activities in Greater Farallones and Cordell Bank Sanctuaries**

On March 12, 2015, NOAA expanded Greater Farallones and Cordell Bank national marine sanctuaries (GFNMS and CBNMS). At that time, NOAA postponed the effective date specifically for the discharge requirements in both sanctuaries' regulations with regard to U.S. Coast Guard (USCG) activities for six months. Two additional six-month postponements of the effectiveness of the discharge requirements were published in the Federal Register on December 1, 2015 (80 FR 74985) and May 31, 2016 (81 FR 34268), to provide adequate time to determine NOAA's next steps. NOAA conducted public scoping in May 2016 on the discharge regulations for these national marine sanctuaries as they pertain to United States Coast Guard operational vessel discharges of sewage and graywater and training discharges, conducted in non-emergency situations. This notice extends the postponement of the discharge requirements for these activities in the areas added to GFNMS and CBNMS boundaries in 2015 for another 6 months to provide adequate time for completion of an environmental assessment, and subsequent rulemaking, as appropriate.

### **Trans-Atlantic Partnerships Strengthens Our Nation's Marine Economy Body**

The Marine Protected Area (MPA) Center participated in a workshop organized by the European Union (EU), "Towards a Trans-Atlantic Partnership of Marine Protected Areas." The workshop brought together about 50 MPA managers, government agencies, NGOs, and intergovernmental organizations from North America, South America, Europe and Africa. The workshop was held to help scope an EU-funded effort to build on existing efforts to enhance cooperation across Atlantic MPAs over the coming year. Potential focus areas raised by workshop participants included collaboration on: 1) marine mammals and sister sites; 2) MPAs as natural infrastructure for urban areas; 3) connecting regional MPA networks; and 4) building capacity for MPA managers. The EU decided what the three focus areas are for the project, and the project will be completed by December 2017. Participants expressed the hope that the project would be a first step in future collaboration among MPAs across the Atlantic (<http://marineprotectedareas.noaa.gov>).

### **Office of National Marine Sanctuaries and National Park Service Undertake Archaeological Expedition**

Channel Islands National Marine Sanctuary, in collaboration with the National Park Service and the Coastal Maritime Archaeology Resources, completed a maritime archaeological expedition off the west coast that included a variety of wrecks such as the WWII era minesweeper *Spirit of America*, the 3-masted full rigged sailing ship *Aggi*, and military aircraft wrecks such as the WWII era Grumman Avenger TBF-1C torpedo bomber and a Grumman AF 2W Guardian anti-submarine plane. This joint agency multi-year, annual underwater expedition is critical in documenting lost pieces of American history, and sharing their stories with the American public (<http://sanctuaries.noaa.gov/shipwrecks>).

### **Nomination for Southern California Offshore Banks National Marine Sanctuary**

On January 9, Office of National Marine Sanctuaries received its thirteenth nomination for a new national marine sanctuary. The proposed Southern California Offshore Banks National Marine Sanctuary would protect offshore banks and seamounts, a critical set of relatively shallow, offshore habitats that are under threat, and would greatly benefit, from increased coordination of management efforts as well as protection from potential oil and gas extraction. During the last glacial maximum, the largest of these habitats, Tanner and Cortes Banks, were islands and were likely visited by Native Americans, as such there may be unknown archaeological sites on these banks. The region including these banks is uniquely located at the confluence of the California Current and Southern California Counter Current in an extremely productive environment whose habitats are likely linked to the overall biological production of the Southern California Bight (SCB). Thus, these offshore banks are preferred feeding areas for protected marine mammals, birds and support unique populations of corals. They also maintain the largest known remaining populations of the federally endangered white abalone (*Haliotis sorenseni*). Two former fisheries species that are now listed as protected species of concern, Cowcod (*Sebastes levis*) and Bocaccio (*Sebastes paucispinis*), also utilize these areas. In addition, the high productivity at Tanner and Cortes Banks generates significant economic value, as these banks support a large percentage of the commercial and recreational fisheries in the SCB. This region also is used by the military, especially the U.S. Navy, for offshore security activities. Importantly, this proposal does not recommend the curtailment of these either military or fisheries activities but emphasizes the need to coordinate these offshore activities with national security concerns while prohibiting oil and gas extraction, mining, and other industrial uses. See <http://www.nominate.noaa.gov/nominations/southern-california-offshore-banks-nomination.pdf>



## MARINE-RELATED NEWS COVERAGE

### **Crack Found in Elwha River Bridge Pier; Span Remains Open While Crews Monitor**

“State Department of Transportation officials now have more concerns about the Elwha River bridge on U.S. Highway 101 west of Port Angeles after discovering a crack in a bridge pier last week.”

[www.peninsuladailynews.com/news/crack-found-in-elwha-river-bridge-pier-span-remains-open-while-crews-monitor/](http://www.peninsuladailynews.com/news/crack-found-in-elwha-river-bridge-pier-span-remains-open-while-crews-monitor/)

### **Scientists Call for Breaching Dams to Save Puget Sound Orcas**

“Researchers who track the endangered population of orcas that frequent Washington waters said Friday that three whales are missing or believed dead since summer. The most recent death of a 23-year-old female known as J28 and likely her 10-month-old calf drops the population to 80, among the lowest in decades, according to the Center for Whale Research on Friday Harbor, which keeps the whale census for the federal government.”

[www.tri-cityherald.com/living/article111354117.html](http://www.tri-cityherald.com/living/article111354117.html)

### **Starving Orca Whales Dying in Puget Sound**

“It’s been a bad year for the southern orca community. Seattle’s Center for Whale Research says a second adult female has died. That brings the recent death toll to three.”

<http://kuow.org/post/starving-orca-whales-dying-puget-sound>

### **Whales Talk to Each Other by Slapping Out Messages on Water**

“It’s something all whale-watchers yearn to see. The sight of whales breaking the surface and slapping their fins on the water is a true spectacle – but the animals don’t do it just for show. Instead, it appears that all that splashing is about messaging other whales, and the big splashes are for long-distance calls.”

[www.newscientist.com/article/2114953-whales-talk-to-each-other-by-slapping-out-messages-on-water/](http://www.newscientist.com/article/2114953-whales-talk-to-each-other-by-slapping-out-messages-on-water/)

### **Orca Found on Sunshine Coast Died of Blunt Force Trauma, DFO Says**

“Fisheries and Oceans Canada says early signs point to blunt force trauma killing a whale that washed up on the Sunshine Coast Wednesday. The DFO’s marine mammal coordinator, Paul Cottrell, said it appears the animal was struck while alive and died some time after, according to results from a necropsy.”

[www.cbc.ca/news/canada/british-columbia/orca-death-b-c-1.3909858](http://www.cbc.ca/news/canada/british-columbia/orca-death-b-c-1.3909858)

### **Pipeline Expansion Worries Some on Behalf of Southern Resident Orcas**

“Environmental activists from the United States and Canada are expressing concerns over a newly approved expansion of a Canadian oil pipeline, saying it could threaten the Puget Sound’s southern resident orcas.”

[www.peninsuladailynews.com/news/pipeline-expansion-worries-some-on-behalf-of-southern-resident-orcas/](http://www.peninsuladailynews.com/news/pipeline-expansion-worries-some-on-behalf-of-southern-resident-orcas/)

### **Study: Low Snowpack Linked to High Temps/Greenhouse Gases Have ‘Increasing Influence’**

“The western United States set records for low winter snowpack levels in 2015, and a new report blames high temperatures rather than low precipitation levels, according to a new study.”

[www.columbian.com/news/2016/nov/01/study-low-snowpack-linked-to-high-temps/](http://www.columbian.com/news/2016/nov/01/study-low-snowpack-linked-to-high-temps/)

### **Puget Playground: Navy Announces Explosives, Sonar Training in Salish Sea**

“The U.S. Navy has announced its decision for use of sonar and explosives for training and testing in the Puget Sound, Strait of Juan de Fuca and Behm Canal in southeast Alaska. The Navy announced this month that officials had signed a record of decision to go with its preferred alternative — Alternative 1 — which includes new training exercises every other year off the North Olympic Peninsula coast and mine warfare exercises every year in the Puget Sound in support of homeland defense.”

[www.seattleweekly.com/news/puget-playground-navy-announces-explosives-sonar-training-in-salish-sea/](http://www.seattleweekly.com/news/puget-playground-navy-announces-explosives-sonar-training-in-salish-sea/)

### **Forest Service May Permit Electronic Naval Training**

“The U.S. Forest Service issued a draft decision Tuesday that would allow the Navy to expand its electronic warfare training on the Olympic Peninsula.”

[www.columbian.com/news/2016/nov/29/forest-service-may-permit-electronic-naval-training/](http://www.columbian.com/news/2016/nov/29/forest-service-may-permit-electronic-naval-training/)

### **Predicting Toxic Algae Blooms Just Got Easier**

“Scientists at Oregon State University have figured out a way to predict outbreaks of a dangerous neurotoxin called domoic acid in the Pacific Ocean. The toxin is produced during algae blooms and can make crab and shellfish unsafe to eat.”

<http://klcc.org/post/predicting-toxic-algae-blooms-just-got-easier>

### **Scientists Link Humans to Ocean Acidification, Sea Snail Shells 'Dissolving'**

“Elevated carbon dioxide levels in the Pacific Ocean are connected to human activity, according to a study from the federal government, and that acidification is causing the shells of a key microscopic sea snail to dissolve, a phenomenon that could affect other species in the ecosystem.”

[www.oregonlive.com/environment/index.ssf/2016/11/scientists-link-humans-to-ocean-acidification.html#incart\\_river\\_index#incart\\_m-rpt-2](http://www.oregonlive.com/environment/index.ssf/2016/11/scientists-link-humans-to-ocean-acidification.html#incart_river_index#incart_m-rpt-2)

### **Warmer Oceans Could Boost the Toxins In Your Shellfish Dinner**

“West Coast crab fishermen just ended an 11-day strike over a price dispute. But a more ominous and long-term threat to their livelihood may be on the horizon. A new study in the Proceedings of the National Academy of Sciences has found a link between warming ocean conditions and a dangerous neurotoxin that builds up in sea life: domoic acid.”

<http://klcc.org/post/warmer-oceans-could-boost-toxins-your-shellfish-dinner>

### **Scientists Confirm: “the Blob” Really Messed Up the Northeast Pacific**

“Beginning in the fall of 2013, ‘the Blob’ has sat off the Pacific coast of North America. This massive swathe of abnormally warm water raised the average temperature of the sea by 2.5 °C, and is thought to have thrown the marine ecosystem for a massive loop. Throughout its run, scientists speculated that the Blob was responsible for a whole host of damages, from mass bleaching of Hawai‘ian coral and irregular fish migration, to sea lion beachings, and warmer seasons.”

[www.hakaimagazine.com/article-short/scientists-confirm-blob-really-messed-northeast-pacific](http://www.hakaimagazine.com/article-short/scientists-confirm-blob-really-messed-northeast-pacific)

### **A New, Safer Way to Monitor the Warming Oceans**

“As the Earth warms with climate change, more than 90 percent of that heat is stored in the ocean, so it’s important for scientists to have a way to take the ocean’s internal temperature. The methods used to do so today are incomplete and expensive, however. Now, after about a decade of research, Zhongxiang Zhao, an applied physicist at the University of Washington, thinks he’s figured out a better way.”

<http://crosscut.com/2017/01/ocean-temperatures-climate-change-whales/>

### **NOAA Scientist to Review Clallam County Herbicide Plan**

“An ecotoxicologist will review a Clallam County proposal to deploy herbicides in the battle against noxious weeds. Commissioner Mark Ozias announced Tuesday that a National Oceanic and Atmospheric Administration (NOAA) scientist will conduct an independent review of a proposal to allow spot spraying of herbicides such as Roundup along county roads.”

[www.peninsuladailynews.com/news/noaa-scientist-to-review-clallam-county-herbicide-plan/](http://www.peninsuladailynews.com/news/noaa-scientist-to-review-clallam-county-herbicide-plan/)

### **‘Seafood Sleuths’ Study Mystery of Pacific Northwest Salmon Declines**

“Wherever you live in the Pacific Northwest, you likely have salmon for neighbors. And while the human population boom shows no sign of slowing (about 3.5 million in the Seattle metro area covering the vast swath from Everett to Tacoma), it’s an entirely different story for the salmon.”

[www.seattletimes.com/sponsored/seafood-sleuths-study-mystery-of-pacific-northwest-salmon-declines/](http://www.seattletimes.com/sponsored/seafood-sleuths-study-mystery-of-pacific-northwest-salmon-declines/)

### **Steelhead, Sockeye Spotted Above Elwha Dam Sites**

“For the first time in more than a century, steelhead trout and sockeye salmon have been spotted in the upper reaches of the Elwha River. They’re the latest species to return to territory long blocked by the river’s dams.”

[www.kitsapsun.com/story/news/local/communities/2016/09/12/steelhead-sockeye-spotted-above-elwha-dam-sites/94345886/](http://www.kitsapsun.com/story/news/local/communities/2016/09/12/steelhead-sockeye-spotted-above-elwha-dam-sites/94345886/)

### **Report: Salmon are in Trouble, with Most Below Recovery Goals**

“Salmon throughout most of Washington state are in trouble, and will need continued investment by state, federal and local organizations if they are to be saved, according to a report released by the Governor’s Salmon Recovery Office.”

[www.peninsuladailynews.com/news/salmon-in-trouble-some-below-recovery-goals](http://www.peninsuladailynews.com/news/salmon-in-trouble-some-below-recovery-goals)

### **Indigenous Peoples of the World’s Coastlines are Losing Their Fisheries -- and Their Way of Life**

“The world loves seafood. According to some estimates, people consumed about 102 million tons of it last year. A new study released Friday by the Nippon Foundation-Nereus Program, based at the University of British Columbia, shows that indigenous people who live on the world’s coasts are definitely hooked. They consume 15 times more seafood per capita than people in other parts of the world, about 2.3 million tons, or about 2 percent of the global catch, the study said.”

[www.washingtonpost.com/news/energy-environment/wp/2016/12/02/coastal-native-people-who-need-fish-the-most-are-losing-them/?utm\\_term=.a837b90a01a8](http://www.washingtonpost.com/news/energy-environment/wp/2016/12/02/coastal-native-people-who-need-fish-the-most-are-losing-them/?utm_term=.a837b90a01a8)

### **How Native Kids See Science Differently**

“What happens when what you’re taught in school contradicts what you were taught by your family and community? The result can be a struggle to find the balance between preserving cultural identity and being successful in the world. It’s a predicament that most Americans never have to face, but for indigenous youth, this struggle comes all too often.”

<http://crosscut.com/2016/10/how-native-kids-see-science-differently/>

### **Canada Finally Acts on Raw Sewage Pumping Into Our Waters**

“Overcoming political differences, our friends north of the U.S. border are finally addressing the problem of the raw sewage they discharge into the Strait of Juan de Fuca.”

[www.seattletimes.com/opinion/editorials/canada-finally-acts-on-raw-sewage-pumping-into-our-waters/](http://www.seattletimes.com/opinion/editorials/canada-finally-acts-on-raw-sewage-pumping-into-our-waters/)

### **CoastSaver of the Year Named**

“Volunteer Liam Antrim has been named CoastSaver of the Year by Washington CoastSavers. Antrim, who lives in Sequim, is the resource protection specialist at the Olympic Coast National Marine Sanctuary. He has been involved with beach cleanups since the first Washington Coast Cleanup in 2000, said Jon Schmidt, CoastSavers coordinator.”

<http://www.peninsuladailynews.com/>

### **Author Bob Steelquist to Read From Book at Studium Generale on Thursday**

“The first presenter of 2017 at Peninsula College’s Studium Generale will be author Bob Steelquist. Steelquist will read from his book, ‘The Northwest Coastal Explorer’ at 12:35 p.m. Thursday in the Little Theater at the college at 1502 E. Lauridsen Blvd., in Port Angeles.”

[www.peninsuladailynews.com/entertainment/author-bob-steelquist-to-read-from-book-at-studium-generale-on-thursday/](http://www.peninsuladailynews.com/entertainment/author-bob-steelquist-to-read-from-book-at-studium-generale-on-thursday/)

## OCNMS ONLINE

Visit our website at: <http://olympiccoast.noaa.gov/>.

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<https://twitter.com/olympiccoast>

*Please take a few moments to peruse the site. Your feedback is greatly appreciated.*

*Comments and suggestions can be sent to:  
[Jacqueline.Laverdure@noaa.gov](mailto:Jacqueline.Laverdure@noaa.gov).*

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## OCEAN-RELATED WEBSITES

**National Oceanic and Atmospheric Administration**

<http://www.noaa.gov/>

**National Ocean Service**

<http://oceanservice.noaa.gov/>

**Office of National Marine Sanctuaries**

<http://sanctuaries.noaa.gov/>

**NOAA Marine Debris Program**

<http://marinedebris.noaa.gov/>

**NOAA Online Media Library**

<http://sanctuaries.noaa.gov/photos>

**Encyclopedia of National Marine Sanctuaries**

<http://www8.nos.noaa.gov/onms/park/>

**NOAA Ocean Explorer**

<http://oceanexplorer.noaa.gov/>

**National Data Buoy Center**

<http://www.ndbc.noaa.gov/rmd.shtml>

**Washington's Ocean Resources**

<http://www.ecy.wa.gov/programs/sea/ocean/index.html>

**CoastWatch – West Coast Regional Node**

<http://coastwatch.pfel.noaa.gov/>

**Northwest Association of Networked Ocean Observing Systems**

<http://www.nanoos.org/>

**NOAA's Pacific Marine Environmental Laboratory**

<http://www.pmel.noaa.gov/>

## OLYMPIC COAST NATIONAL MARINE SANCTUARY

### Learn More About Your Sanctuary

The Sanctuary Office Report is produced bi-monthly by Olympic Coast National Marine Sanctuary in conjunction with sanctuary advisory council meetings. To learn more about the sanctuary, please visit our website at:

<http://olympiccoast.noaa.gov/> .

To learn more about the sanctuary advisory council, please visit:

[http://olympiccoast.noaa.gov/involved/sac/sac\\_welcome.html](http://olympiccoast.noaa.gov/involved/sac/sac_welcome.html).

#### Office of National Marine Sanctuaries (ONMS)

Olympic Coast National Marine Sanctuary is one of the marine protected areas in the National Marine Sanctuary System encompassing more than 620,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys and from Lake Huron to American Samoa. The system includes 13 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments. Visit the ONMS website at: <http://sanctuaries.noaa.gov/>.

### Get Involved!

To learn how to get involved in the sanctuary visit: <http://olympiccoast.noaa.gov/involved/welcome.html>.

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