

## OLYMPIC COAST NATIONAL MARINE SANCTUARY

**A Report for Sanctuary Advisory Council Members**

**Reporting Period: July 11, 2015-Sept. 18, 2015**

### 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 rich marine mammal and seabird faunas, 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 Makah, Quileute and Hoh Indian Tribes, and Quinault Nation.

Jay Powell, fluent in Quileute, and his wife, Vickie Jensen, participated in the four-day journey, teaching participants their Quileute language, as well as identifying important and traditional resource harvesting sites within the tribe's usual and accustomed areas. Activities included traditional songs, prayers and story-telling, harvesting of native berries and plants with traditional uses, rafting 30 miles down the Hoh River, comparing western science and watershed management to traditional relationships with the Hoh River watershed, exploring the intertidal areas at Kalaloch Beach 4 and OCNMS, and preparing a community feast.

### OFFICE REPORT

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

Organized based on Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) management plan priority areas.

#### FULFILL TREATY TRUST RESPONSIBILITY

##### Sanctuary Participation in Hoh Tribal Watershed and Cultural Adventure Camp

Olympic Coast National Marine Sanctuary (OCNMS) education staff joined Hoh Tribe Natural Resources staff and Hoh Tribe Youth Support Services to conduct a four-day rafting and overnight Watershed Adventure Camp for 20 Hoh Tribal members ages 5-19. The youth participants began camp at the Hoh Rainforest in Olympic National Park and finished at the mouth of the Hoh River and OCNMS. The camp focused on connecting tribal culture, treaty rights, traditional resources and harvesting, and climate change issues on resource sustainability and resilience. Cultural expert and anthropologist



### ACHIEVE EFFECTIVE AND COORDINATED MANAGEMENT

#### Sanctuary Hosts Interagency Consultation on Navy Activities in Northwest Region

Olympic Coast National Marine Sanctuary (OCNMS) was joined by the Office of National Marine Sanctuaries' Conservation Science and Policy and Planning divisions and NOAA General Counsel to host regional and national Navy and NOAA Fisheries representatives to initiate consultation on Navy activities in sanctuary waters off Washington State. The Navy is finalizing an environmental impact statement covering a wide variety of training and testing activities, which occur over broad areas of the Pacific Coast between northern California and Washington, as well as Puget Sound and Alaska. NOAA Fisheries is working on obtaining an authorization on the taking of marine mammals associated with Navy activities. Interagency consultation is required under section 304(d) of the National Marine Sanctuaries Act if a federal agency is undertaking actions likely to destroy, cause the loss of or injure sanctuary resources. This meeting initiated consultations that will lead to more area-specific evaluations, called sanctuary resource statements, between the Navy and NOAA Fisheries on the potential impacts of activities in OCNMS.

## IMPROVE OCEAN LITERACY

### NOAA B-WET program awards \$450,000 to Washington and Oregon organizations for environmental education

NOAA's Pacific Northwest Bay Watershed Education and Training (B-WET) program announced \$450,238 in awards to Washington and Oregon organizations to assist with community-based environmental education programs. The grants support standards-based, hands-on education activities that promote greater understanding about watersheds, the ocean and protected areas like NOAA's Olympic Coast National Marine Sanctuary. The 2015 Pacific Northwest B-WET recipients include The Nooksack Salmon Enhancement Association, Mid-Columbia Fisheries Enhancement Group, Seattle Aquarium, Port Townsend Marine Science Center, Pacific Education Institute, Feiro Marine Life Center, Suquamish Tribe, Oregon Department of State Lands and Oregon State University. A celebration of awards was hosted by Pacific Northwest B-WET and Suquamish Tribe. The NOAA B-WET Program was established in 2002 to improve the understanding of environmental stewardship of students, teachers and communities across the United States through education. The Pacific Northwest B-WET regional program is managed by NOAA's Office of Education and NOAA's Olympic Coast National Marine Sanctuary.



### Olympic Coast Sanctuary's First AmeriCorps Member Completes Assignment

Olympic Coast National Marine Sanctuary (OCNMS) hosted its first Washington Service Corps (WSC) AmeriCorps member, Danny Palmer, to serve as Education and Stewardship Specialist for nearly 11 months. On July 15, 2015, Danny completed her service after reaching 1,340 students through the North Olympic Watershed (NOW) Science and Ocean Science education programs. Her position also supported Washington CoastSavers in the recruitment of over 2,000 volunteers and their removal of over 22 tons of marine debris from Washington coastlines during the International Coastal Cleanup 2014 and Washington Coast Cleanup 2015. Danny provided outreach support at the sanctuary's education booth at nearly 20 events and festivals attended by a more than 20,000 attendees. From 2015-2016, WSC's AmeriCorps program awarded OCNMS with another year of service; the sanctuary welcomed Becca Lewis in September.

### New York YMCA Students Learn About Sanctuaries and Olympic Coast

Olympic Coast National Marine Sanctuary (OCNMS) education staff provided an educational presentation on national marine sanctuaries and Olympic Coast to 15 students and three adults from a Brooklyn, NY YMCA as part of their environmental education program at NatureBridge Olympic. Students gained an overview of national marine sanctuaries, as well as OCNMS's history and purpose. After they heard about sanctuary highlights, students learned about the sanctuary's diverse career options, and played the Sanctuary Career Game.

### Olympic Coast Hollings Scholar Co-Leads Marine Technology Summer Camps

Olympic Coast National Marine Sanctuary (OCNMS) Hollings Scholar Courtney Knox co-led two four-day camps for 18 youth, ages 12-15, in partnership with Feiro Marine Life Center. Camp participants spent the first two days of the week exploring and learning about different marine technologies such as bathymetric maps, GPS, sonar, time-lapse videos and SCUBA equipment. During the last two days of camp, participants worked in teams to build remotely operated vehicles (ROVs), which they used to complete ROV pilot school and an archeological mission to explore a "shipwreck". The marine technology camp culminated with a competition at the William Shore Memorial Pool, where each team maneuvered its ROV through an obstacle course and retrieved various items on the pool's floor.



### Marine Debris Education at Makah Tribal Hidasubac Summer Youth Program



Olympic Coast National Marine Sanctuary (OCNMS) staff engaged tribal and non-tribal youth to learn about marine debris during a two-day Makah summer youth program. Approximately 60 children from grades 4-6 participated in Makah Tribal Hidasubac (meaning balance) Summer Youth Program. OCNMS offered marine debris activities like a marine debris relay and activities to show the impacts of debris on the environment. Sally Parker, OCNMS Volunteer of the Year for 2014 and Makah tribal member, assisted during the event.

### Hollings Scholars Complete Junior Oceanographer Summer Camps for Olympic Coast Youth



Olympic Coast National Marine Sanctuary (OCNMS) Hollings Scholars Billie Case and Courtney Knox, in partnership with Feiro Marine Life Center, developed and led a total of four Junior Oceanographer four-day summer camp programs for 53 campers ages 5-12. Programs were built on Ocean Literacy principles and rooted in hands-on activities and inquiry-based learning, with different themes based on the age-group. Each day, the preschoolers' camp centered on a new local organism, from whales and otters to octopuses and sea stars. Campers ages 7-9 focused on Olympic Coast habitats, covering the intertidal zone, the kelp forests, the open ocean and the deep sea. The scholars created a nautical theme for campers between the ages of 10-12 that promoted human interconnectedness with the marine environment in regards to ocean navigation, nautical history and culture, and extraction of marine resources. Nonetheless, all students learned about local marine life while participating in activities such as beach seines, plankton tows and ocean mural creation. Additionally, campers partook in a mock orca watching tour, designed their own deep sea creatures and played games to showcase sea otters as a keystone species. Each day, campers interacted with Prezi presentations to explore the relevant organism or habitat. At the culmination of each week, campers presented parents with individual crafts and a collectively created mural of Olympic Coast habitats.

### Tokeland Summer Institute Focuses on Impacts on Marine Environments

Olympic Coast National Marine Sanctuary (OCNMS) education staff supported Pacific Education Institute's (PEI) Summer Institute for 16 teachers in Washington's southern coastal region. Representing grades K-12, teachers were led through PEI's project-based learning model through field investigations that looked at knotweed and its impacts on the watershed. OCNMS provided an overview of the National Marine Sanctuary System and OCNMS, modeled upland impacts on the marine environment and highlighted the importance of storytelling in science and communication. Teachers were provided with tools to align their field investigations with Next Generation Science Standards (NGSS) and Common Core Standards in English language arts, and built their confidence in scientific topics relating to watersheds and invasive species. The three-day workshop culminated with group presentations and stories they shared of their own experiences of invasive species removal, project proposals or watershed impacts on the marine environment.

### Presentation on Success Story of Washington Sea Otters

On August 18, Nancy Foster Scholar for Olympic Coast National Marine Sanctuary (OCNMS), Jessica Hale, presented information on sea otter biology, the history of sea otters in Washington State and their current status, as well as her graduate work in OCNMS on sea otter population dynamics and foraging ecology. The presentation, in Port Angeles, was part of a Feiro Marine Life Center lecture series co-hosted by OCNMS. Jessie is a graduate student and NOAA Dr. Nancy Foster Scholar at the University of Washington's School of Aquatic and Fishery Sciences. The northern sea otter (*Enhydra lutris kenyoni*) was hunted to local extinction in the early 1900s as a result of the fur trade. To reintroduce the species to the outer coast of Washington, 59 sea otters from Alaska were released near La Push and Point Greenville between 1969 and 1970. This sea otter population has grown to approximately 1,600 individuals (based on the 2014 census), and northern sea otters now occupy a primary range north of Cape Elizabeth to Tatoosh Island, with some venturing into the Strait of Juan de Fuca and Salish Sea. Sea otters are a well-documented keystone species, with feeding habits that have a significant influence on nearshore marine communities.

### OCNMS Welcomes Washington AmeriCorps Service Member

On September 1, Olympic Coast National Marine Sanctuary (OCNMS) welcomed Washington Service Corps AmeriCorps member, Rebecca (Becca) Lewis. Becca will serve as the sanctuary's Education and Stewardship Specialist through July 15, 2016. She recently obtained her Bachelor of Science degree in Zoology, with a specialization in Animal Science, from Southern Illinois University, and a minor in Environmental Studies. She will work on the North Olympic Watershed (N.O.W.) Science Program, in partnership with Feiro Marine Life Center, and outer coast beach clean ups, in partnership with Washington CoastSavers.



### Visiting Students Learn About Marine Mammals



Eight elementary school students and two teachers from Cedarbrook Adventist School in Port Hadlock, WA, participated in marine mammal education with Olympic Coast National Marine Sanctuary education staff. The students engaged in learning about marine mammal characteristics, the 29 marine mammal species that visit or live in Olympic Coast National Marine Sanctuary, as well as some feeding and survival traits of the mammals. Interactive games were used to complement the program. Afterwards they toured Olympic Coast Discovery Center to reinforce their classroom learning.

### Olympic Coast National Marine Sanctuary Staff Celebrate Makah Days



Olympic Coast National Marine Sanctuary Education Team participated in the 91<sup>st</sup> Annual Makah Days, “Honoring our Fishermen,” held in Neah Bay, WA, August 28-30. The event brought thousands of people out to celebrate the cultural and maritime history of the Makah Tribe. Friday of Makah Days was themed “Locals’ Day” and was kicked off with the street fair, carnival and fireworks display. Heavy winds of hurricane force caused local damage on Saturday, but activities proceeded following a community cleanup. Festivities included traditional dancing, singing and canoeing, as well as ongoing street fair and parade. In addition, Makah Tribe offered emergency shelter and food for their guests throughout the weekend.

### Presentation to Sequim Chamber Luncheon

Olympic Coast National Marine Sanctuary staff presented “Olympic Coast’s Underwater Treasures” to 40 members of the Sequim Chamber of Commerce. Providing the history, purpose and things to do in the sanctuary, luncheon attendees learned about the natural treasures in their own backyard, as well as volunteer opportunities for local community members.

### Discovery Center Docents Experience Educational Whale Watching Tour

On August 30, docents of Olympic Coast Discovery Center and staff went on a whale watching field trip with Island Adventures aboard *Island Explorer 4*, based out of Port Angeles. The group learned more about southern resident killer whales and observed the animals from J-pod and L-pods in the Strait of Juan de Fuca, appreciating their intelligent and playful behavior. Volunteers also spotted a humpback whale, harbor porpoise and pinnipeds on their tour. The field trip was an educational opportunity for the most active docents to improve their knowledge of marine mammals through the hands-on experience tourists inquire about at Olympic Coast Discovery Center.



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

### Sanctuary Assists National Marine Fisheries Service Acoustic Investigations

Olympic Coast National Marine Sanctuary’s research vessel, R/V *Tatoosh*, and crew assisted NOAA’s Northwest Fisheries Science Center with the retrieval of bottom-anchored, passive acoustic moorings deployed to record vocalizations of marine mammals, particularly killer whales. Thirteen acoustic moorings have been deployed off the outer Washington coast with a primary goal of documenting the winter distribution of southern resident killer whales, an endangered population numbering less than 100 individuals. Dr. Brad Hanson leads this ongoing study to fill a critical data gap toward a better understanding of potential risk factors to this population, including the question of where these orcas travel during winter months on the coast between central California and Washington. In summer months, the distribution of southern resident killer whales in the Salish Sea is well-documented by researchers and whale watching operators. In combination with location data from satellite tagged individual whales and sighting data, these acoustic data will be used to support the critical habitat designation process for this endangered population.

### NOAA Collaboration on Sea Otter Assessment Surveys on Effects of Nearshore Habitats



Two teams of NOAA scientists joined forces to complete subtidal dive surveys in nearshore waters of Washington’s outer coast. Survey transects replicated work completed in past decades to evaluate changes associated with re-introduction and expansion of the sea otter population along the outer coast of Washington. The northern sea otter (*Enhydra lutris kenyoni*) was hunted to local extinction in the early 1900s as a result of the fur trade. The current sea otter population has grown from 59 individuals introduced in 1969 and 1970, to approximately 1,600 individuals. Washington’s sea otters now occupy a primary range north of Cape Elizabeth to Tatoosh Island, with some venturing into the Strait of Juan de Fuca and Salish Sea.

Sea otters are a well-documented keystone species, with feeding habits that have a significant influence on nearshore marine communities. This research is a collaboration between NOAA’s Olympic Coast National Marine Sanctuary and NOAA Fisheries’ Northwest Fisheries Science Center, which provided staff time and expertise from its scientific dive team.

### **NOAA Offices Conduct Biotxin Sampling During Regional Harmful Algal Bloom Event**

Olympic Coast National Marine Sanctuary (OCNMS) provided RV *Tatoosh* to support a coalition of federal, state, tribal, academic and other partners responding to a widespread and intense harmful algal bloom (HAB) event off Washington. Vera Trainer, Supervisory Oceanographer of the Marine Biotxin program at NOAA's Northwest Fisheries Science Center, organized a series of sampling cruises in response to this unprecedented massive toxic bloom of the marine diatom *Pseudo-nitzschia*. The first two nearshore cruises took place, with stations sampled between La Push and the Juan de Fuca Eddy, off the western Strait of Juan de Fuca. Sampling was conducted by Dr. Trainer and Anthony Odell of the University of Washington, with assistance from sanctuary staff Justin Ellis and Kathy Hough. Northwest Fisheries Science Center scientists conducted taxonomic analysis of the plankton samples. OCNMS was mentioned in the press release to NOAA: [www.noaa.gov/newsroom/stories/2015/07/23/15-noaa-awards-88000-in-grant-funding-to-respond-to-west-coast-harmful-algal-bloom-outbreak.html](http://www.noaa.gov/newsroom/stories/2015/07/23/15-noaa-awards-88000-in-grant-funding-to-respond-to-west-coast-harmful-algal-bloom-outbreak.html).

### **Nancy Foster Scholar Completes Project on Ecosystem Indicators for OCNMS**

Jessica Hale, OCNMS's NOAA Dr. Nancy Foster Scholar, recently completed her work on the relationship between ecosystem indicators and the OCNMS condition report. Jessie compared indicators identified in the recently released, "Ecological Indicators for Washington State's Outer Coastal Waters" (2015), to suggested indicators from Olympic Coast National Marine Sanctuary Advisory Council's Science Working Group. All indicators were then aligned with questions found in sanctuary condition reports. Her work will serve as a foundation for further evaluation by the sanctuary's science working group to develop recommendations for an updated suite of ecosystem indicators that can help shape the focus of future sanctuary or partner monitoring to better prepare for the next OCNMS condition report.

## **CONSERVE NATURAL RESOURCES IN THE SANCTUARY**

### **U.S. Coast Guard Rescues Crew of F/V *Tamara* Grounded Off Ocean Shores**

On August 11, early in the morning, the U.S. Coast Guard received a mayday call from the F/V *Tamara* after it ran aground off Ocean Shores, seven miles south of Olympic Coast National Marine Sanctuary (OCNMS). The U.S. Coast Guard helicopter successfully rescued the crew. Response by both the U.S. Coast Guard and Washington State Department of Ecology resulted in a contract to remove fuel from the vessel at low tide, although some amount of fuel was released into the ocean. Contracted salvors were not able to refloat the vessel, which was subsequently demolished and removed at low tide. OCNMS is working to compile and analyze similar events to consider policy recommendations for mitigating impacts to sanctuary resources.

### **West Coast Resource Protection Discussed**

Resource protection staff from the Office of National Marine Sanctuaries' West Coast Region (WCR) met at Moss Landing Marine Laboratory to discuss resource protection. The West Coast Region includes OCNMS and four California sanctuaries; each of the five sanctuaries was represented. Although each sanctuary is unique, there are also many common issues, resources and tools. WCR staff coordinate the administration across many these shared areas, such as permitting, enforcement, prevention, user outreach and restoration.

### **EPA Proposes General Permit for Offshore Seafood Processors**

On August 24, the Environmental Protection Agency (EPA) notified the public of a proposal to issue a general National Pollutant Discharge Elimination System (NPDES) permit for Offshore Seafood Processors discharging in federal waters off the coasts of Washington and Oregon. This proposal would include the waters of Olympic Coast National Marine Sanctuary (OCNMS). While discharges are prohibited within the sanctuary, there is an exemption for certain discharges related to fishing activities. The EPA conducts this type of permitting under the authority of the Clean Water Act. Sanctuary staff is currently reviewing the proposal for potential impacts to sanctuary resources. The deadline for public comment is October 8, 2015. EPA has posted information related to this proposal at:

<http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/DraftPermitsORWA>

### **Sanctuary Contracts Survey to Investigate Ocean Dumping**

The Office of National Marine Sanctuaries and Makah Tribe are currently investigating a report of ocean dumping in the vicinity of Cape Flattery, within Makah Tribe usual and accustomed fishing area and Olympic Coast National Marine Sanctuary. In 2013, a Makah fisherman pulled up several crushed cars in his trawl net. A survey is underway to relocate this debris, to determine if additional material has been dumped in the vicinity and to document any damages to natural or cultural resources.

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

### **Socioeconomic Profiles of Recreation Users of the Outer Coast of Washington**

In 2014-2015, the State of Washington sponsored a survey to document recreational use of the Outer Coast to inform its Marine Spatial Planning Initiative. The survey collected information on residents' use of the region using a mapping tool and questionnaire. The final report for this study, published by Point97/Surfrider, summarized demographics, recreational activity profiles and maps, and expenditures. In FY2014, NOAA's National Centers for Coastal Ocean Sciences (NCCOS) partnered with the Office of National Marine Sanctuaries (ONMS) to address the socioeconomic research needs of Olympic Coast National Marine Sanctuary (OCNMS). NCCOS/ONMS sponsored an expansion of the State of Washington's study to estimate the non-market economic value of natural resources on the Outer Coast, as well as gather other important information for OCNMS, including:

- Complete demographic profiles;
- Recreational activity profiles for multiple geographies;
- Expenditure profiles for recreational users;
- Economic impact and contribution expenditures on local area economies;
- Importance-satisfaction ratings for natural resources, facilities and services;
- User preferences for common wildlife species; and
- Index of the "environmental worldview" of recreational users from Washington.

Findings from this study are presently being summarized and published for use by OCNMS and other interested resource management agencies. There are a number of products that will be available in FY2016.

1. Socioeconomic Profiles of Recreational Users
2. Summary of Importance-Satisfaction Ratings
3. Economic Impact/Contribution to Local Area Economies
4. Technical Appendix: Socioeconomic Profiles and Economic Impact/Contribution
5. Non-market Economic Value of Natural Resource Attributes
6. Technical Appendix: Non-market Economic Value of Natural Resource Attributes

## SANCTUARY PERMITTING

### **Issued Permits and Authorizations**

**OCNMS-2015-003** – Doug Dumas, Freeride Entertainment

**Project Title:** Fly Over Washington

**Permitted Activity:** Low altitude overflight within the overflight restriction zone of Olympic Coast National Marine Sanctuary

**Project Location:** Over nearshore waters of Olympic Coast National Marine Sanctuary between Koitlah Point and Point of the Arches

**Permit Duration:** September 11-18, 2015

**Comment:** This permit is for a single helicopter flight to film the outer Washington coastline with a 3-D camera. Clips will be used for a Fly Over Washington film planned for long-term use in a new Seattle waterfront facility.

**OCNMS-2014-001** – Carol Bernthal, Sanctuary Superintendent's Permit

**Project Title:** Seafloor Debris Survey

**Permitted Activity:** Seafloor disturbance from remotely operated vehicle (ROV) operations and materials retrieval

**Project Location:** Approximately 6 nautical miles west of Cape Flattery at approximately 300 meters depth

**Permit Duration:** 5 years, through December 2019

**Comment:** A Letter of Authorization was provided to the contractor NOAA hired to conduct ROV and magnetometer surveys, Williamson & Associates, Inc. OCNMS and the Makah Tribe will have representatives on board the survey vessel for a few days, approximately between September 17 and 30, 2015. This survey is conducted to assess the scope of crushed metal debris, some of which was snagged by a Makah trawler in 2013, and impacts to seafloor habitat and resources.

### **Pending Permit Requests**

**OCNMS-2015-004** – Jennifer Flavin, NASA, Armstrong Flight Research Center

**Project Title:** Olympic Mountain Precipitation Experiment (OLYMPEX)

**Permitted Activity:** Discharge of up to 12 dropsondes (electronic atmospheric measuring equipment with 1 square foot nylon parachute) from approximately 35,000 feet

**Project Location:** Instruments will land 25 or more miles offshore

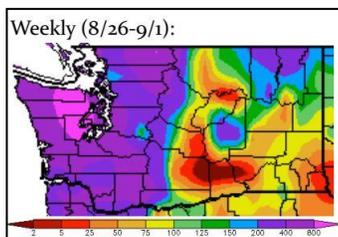
**Permit Duration:** Less than 2 months, through December 21, 2015

**Comment:** OLYMPEX is a NASA Global Precipitation Measurement (GPM) mission planned to improve GPM data products and implications for flood prediction, water resource management, etc. by developing a better understanding of the meteorology and hydrology of complex terrain.

## LEARN ABOUT YOUR SANCTUARY / NATURAL HISTORY

### Temporary Drought Relief for Coastal WRIAs

Drought has always been a part of Washington's climate. However, the 2015 drought and record hot weather have produced dire conditions for communities, farmers and especially migrating salmon along the outer coast. According to the Washington State Climatology Office, drought conditions in Water Resource Inventory Areas WRIAs 20 and 21 (Elwha/Dungeness, Lyre/Hoko, Sol Duc/Hoh, and Queets/Quinalt basins) have been measured at severe and extreme drought conditions throughout the summer. The weekly Climate Office Report includes standard precipitation and temperature anomalies for the week and month and indices of weekly and quarterly precipitation deficits. By mid-August, the coastal counties and the Cascade Mountains were all experiencing extremely dry conditions (Fig. 1).



**Figure 2:** A little rain goes a long way. Frontal systems early in September increased stream flow and reduced drought severity.

Early September storms brought a refreshing change as western Washington received between 200 and 800% of normal precipitation. A series of frontal systems through September 6 increased stream flows to near normal conditions (Fig. 2). Extreme drought intensity was dropped to severe drought for the Olympic Peninsula.

Unfortunately, another dry spell is predicted, with no precipitation anticipated for days or weeks, through the end of September and into October. As the summer season draws to a close, the lengthening darkness of the days will cool the land and water, providing respite for fish using the water that remains in the streams and rivers.

The autumn temperature outlook increased chances of above normal temperatures for the entire state – warmer than normal in the western two-thirds. For precipitation, there are elevated chances of below normal precipitation statewide. See [www.climate.washington.edu](http://www.climate.washington.edu) and the following websites for more information: [www.ecy.wa.gov/drought/](http://www.ecy.wa.gov/drought/), [www.drought.gov](http://www.drought.gov), [www.drought.gov/drought/](http://www.drought.gov/drought/)

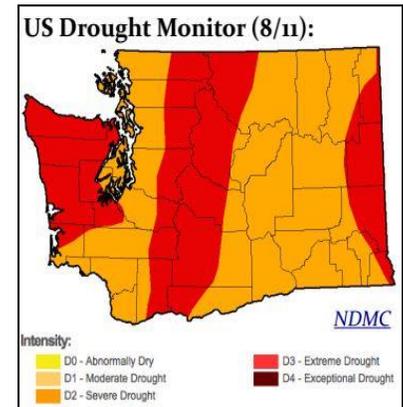
### Eyes from the Sky – Ocean Remote Sensing from Satellites

For more than 50 years, the Joint Polar Satellite System (JPSS) of NOAA and NASA has gathered global measurements of atmospheric, terrestrial and oceanic conditions, including sea and land surface temperatures, vegetation, clouds, rainfall, snow and ice cover, atmospheric temperature, water vapor and ozone. These observations support all four key NOAA OCNMS Mission Areas:

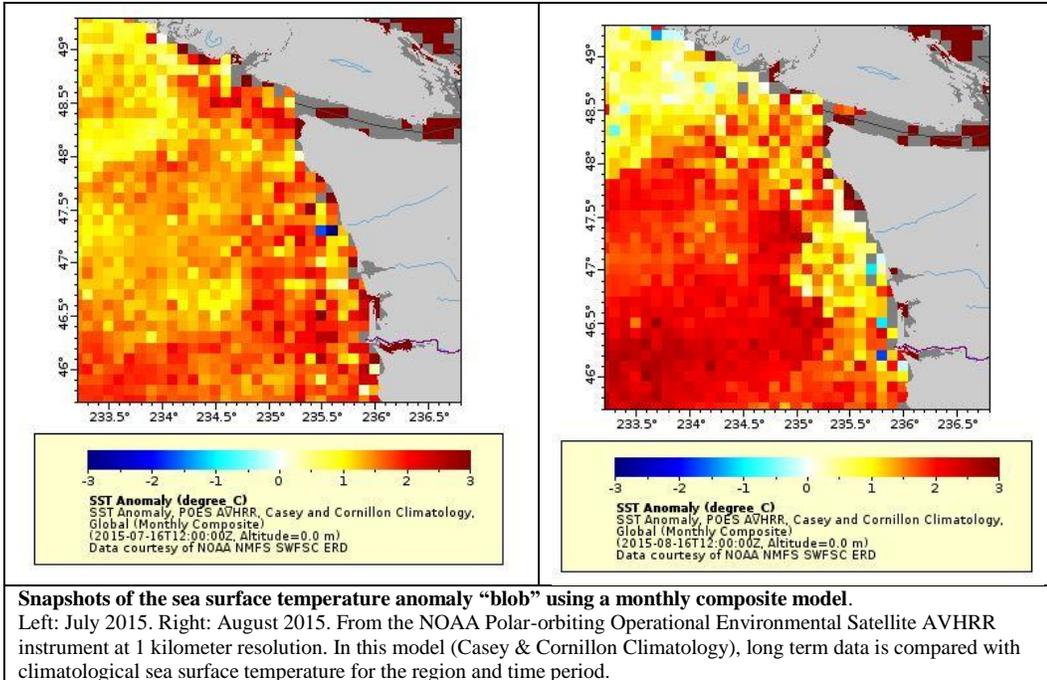
- Healthy Oceans – Improved understanding of ecosystems
- Resilient Coastal Communities and Economies – Helping communities manage resources
- Climate Adaptation and Mitigation – Informing science and stewardship
- Weather Ready Nation – Improving economies through environmental information

Now, NOAA makes the data accessible through CoastWatch, an environmental data server that provides a simple, consistent way to subset and download over 900 regional and global data series from JPSS (and other) satellites, environmental models and in situ sensors. OCNMS may begin to access and host some of the data for the sanctuary and Washington's Outer Coast. Live, regional snapshots of important oceanographic information can be posted on the OCNMS webpage but linked to CoastWatch for automatic updates. Possible links include: (1.) sea surface temperature and temperature anomalies like the blob; (2.) chlorophyll-a and chlorophyll-a anomalies that may reflect Harmful Algal Blooms; and (3.) sea surface height anomalies that indicate currents, eddies and sea level rise. For more satellite information, see CoastWatch: [coastwatch.pfel.noaa.gov/data.html#](http://coastwatch.pfel.noaa.gov/data.html#).

For regional satellite data and a guide to using satellite information, visit: [nvs.nanoos.org/Climatology](http://nvs.nanoos.org/Climatology) and explore "How to Track the 'Blob'."



**Figure 1:** Coastal watersheds experienced Extreme Drought stage by mid-August after 5 months without rain.



### COASST Volunteers Report Common Murre Wreck

Coastal Observation and Seabird Survey Team (COASST) trained volunteers are reporting higher than normal rates of beached (dead) common murre in the southern part of Olympic Coast National Marine Sanctuary. Monthly surveys of beaches from La Push to Ocean Shores are reporting 30 beached birds per mile, whereas northern beaches are reporting beached bird rates typical of this time of year. Beaches showing more than 10 beached birds per mile are classified as a seabird “wreck” event. Volunteers in Alaska and Oregon are reporting similar findings for common murre, with additional higher than normal beaching rates for other species (shearwaters, fulmars) near St. George Island, Alaska. Information across the range of COASST surveyed sites will help determine the extent and magnitude of this wreck event.



## REGIONAL / NATIONAL MARINE SANCTUARY SYSTEM NEWS

### Big Blue LIVE Brings Monterey Bay National Marine Sanctuary to the World

NOAA’s Monterey Bay National Marine Sanctuary, one of the world’s most biologically diverse marine ecosystems, hosted a global television and online event called “Big Blue LIVE,” which aired nine live hour-long broadcasts on PBS and the BBC. The production brought together scientists, filmmakers, photographers and other experts to film and photograph the diverse marine life that feeds in the sanctuary at this time of year. Species captured on film and video included whales, sea lions, dolphins, elephant seals, sea otters, white sharks, shearwaters, brown pelicans and even the elusive blue whale. Monterey Bay Aquarium and the Office of National Marine Sanctuary’s R/V *Fulmar* were platforms as viewers received live reports from air, on the sea surface and below the waves. Highlights included the first live broadcast of a blue whale for both U.K. and U.S. audiences in moving segments that noted the success of national marine sanctuaries in ocean protection. Episodes can be viewed online at [www.pbs.org/big-blue-live/social-hub](http://www.pbs.org/big-blue-live/social-hub).



### West Coast Region Long Range Interpretive Plan Completed

For several years, the West Coast Education Team and West Coast Regional Office staff worked to complete a comprehensive document that reflects all of the visitor centers, exhibits and signage, including their themes and messages, within sanctuaries along the west coast. The goal of this document is to expand the scope of interpretation along the west coast in a cohesive manner. Copies of the document reside with each west coast education coordinator and two copies are at

headquarters. An electronic version of the document will be made available on the Sanctuary Intranet under “West Coast Region.”

### **National “Get Into Your Sanctuary Day” 2015 Outreach Effort Concludes**



The national “Get Into Your Sanctuary” outreach effort concluded over the weekend of June 27-28. Every site took part in the effort in some capacity, with the help of over 60 staff from around the system. The events were also featured as part of Great Outdoors Month and involved opportunities for the public and Members of Congress to get into their sanctuaries. Sites welcomed an estimated 3,700 participants to public events, and a total of six congressional offices were represented at different events at six sanctuaries. As a result of the outreach effort, several additional congressmen showed interest in future interactions. In addition to holding an Instagram photo contest, the ONMS and sanctuary site social media channels used the campaign to highlight the types of recreational activities that visitors could responsibly enjoy

(using hashtag, #VisitSanctuaries), and shared messages about how place-based conservation can contribute to sustainable tourism. The final summary report is available upon request; it was based on input from staff at each site and sanctuary system social media analytics. To view site summaries and highlights visit: [sanctuaries.noaa.gov/news/jul15/get-into-your-sanctuary-overview.html](http://sanctuaries.noaa.gov/news/jul15/get-into-your-sanctuary-overview.html).

## **MARINE-RELATED NEWS COVERAGE**

### **The Really Big One**

“When the 2011 earthquake and tsunami struck Tohoku, Japan, Chris Goldfinger was two hundred miles away, in the city of Kashiwa, at an international meeting on seismology. As the shaking started, everyone in the room began to laugh. Earthquakes are common in Japan — that one was the third of the week — and the participants were, after all, at a seismology conference. Then everyone in the room checked the time.”

[www.newyorker.com/magazine/2015/07/20/the-really-big-one](http://www.newyorker.com/magazine/2015/07/20/the-really-big-one)

### **Rescued Killer Whale Spotted Reunited With Family**

“Fisheries and Oceans Canada researchers studying killer whales off the coast of B.C. have finally got the good news they’ve been waiting for two years — Sam, a young transient killer whale rescued in August 2013, was spotted reunited with his family.”

[www.cbc.ca/news/canada/british-columbia/rescued-killer-whale-spotted-reunited-with-family-1.3150567](http://www.cbc.ca/news/canada/british-columbia/rescued-killer-whale-spotted-reunited-with-family-1.3150567)

### **A New Normal? Concern as Fire Burns Through Washington Rainforest**

“It’s 6 a.m. and a special team of fire response coordinators is gathered at Port Angeles High School. This incident command center is more than 100 miles from the wildfire they’re dealing with: the Paradise Fire, which is burning on the western edge of Olympic National Park.”

[kuow.org/post/new-normal-concern-fire-burns-through-washington-rainforest](http://kuow.org/post/new-normal-concern-fire-burns-through-washington-rainforest)

### **Listening to Orcas: What Killer Whales Can Teach Us**

“If you ever thought of Puget Sound Orcas as some kind of magical being, you’re not alone. A new book by local author and investigative journalist David Neiwert details some of their most impressive qualities.”

[www.kplu.org/post/listening-orcas-what-killer-whales-can-teach-us](http://www.kplu.org/post/listening-orcas-what-killer-whales-can-teach-us)

### **New NOAA images Show El Niño and “The Blob” in Stark Relief**

“This year’s burgeoning El Niño looks a lot like the last strong El Niño of 1997-98 in an image released by the National Oceanic and Atmospheric Administration.”

[www.oregonlive.com/weather/index.ssf/2015/07/el\\_nino\\_and\\_the\\_blob\\_shown\\_in.html](http://www.oregonlive.com/weather/index.ssf/2015/07/el_nino_and_the_blob_shown_in.html)

### **Official Orca Census: 81 Whales, Including 4 Babies**

“Researchers tracking the southern resident killer whales have photo confirmation of each whale, said Ken Balcomb, a senior scientist with the Center for Whale Research.”

[www.seattletimes.com/seattle-news/official-orca-census-81-whales-including-4-babies/](http://www.seattletimes.com/seattle-news/official-orca-census-81-whales-including-4-babies/)

### **NW Fish Survival Tested by Warm Waters And Low Stream Flows**

“River levels around the Northwest are dropping as the drought continues — and the water’s getting warmer. That’s a problem for salmon. Wildlife managers in Washington and Oregon have limited fishing to certain times of day and closed some rivers altogether.”

<http://nwpr.org/post/nw-fish-survival-tested-warm-waters-and-low-stream-flows>

### **West Coast Harmful Algal Bloom Research Effort Gets New Grant Award**

“The U.S. National Oceanic and Atmospheric Administration (NOAA) announced today that it is committing \$88,000 in grant and event response funding for Washington state to monitor and analyse an unusually large bloom of toxic algae off its coast.”

[www.thefishsite.com/fishnews/26096/west-coast-harmful-algal-bloom-research-effort-gets-new-grant-award/](http://www.thefishsite.com/fishnews/26096/west-coast-harmful-algal-bloom-research-effort-gets-new-grant-award/)

### **Worse than '97-98?! New El Niño Growing Into Monster**

“New computer models suggest that the current El Niño formation brewing in the Pacific could become the strongest in recorded history.”

[www.seattlepi.com/science/article/Worse-than-97-8-New-El-Ni-o-growing-into-6404076.php](http://www.seattlepi.com/science/article/Worse-than-97-8-New-El-Ni-o-growing-into-6404076.php)

### **Studying Killer Whales With an Unmanned Aerial Vehicle**

“Last year, for the first time, scientists used an unmanned aerial vehicle, or UAV, to study killer whales from above. In an article published this month in the *Journal of Unmanned Vehicle Systems*, scientists describe how they configured their UAV, turning it into a precision scientific instrument.”

<http://phys.org/news/2015-07-killer-whales-unmanned-aerial-vehicle.html#jCp>

### **Will the Sea Stars Ever be Able to Recover?**

“Touching sea stars sheltering during low tide will reveal not sturdy, sandpiper skin but a soft and pulpy texture with white and oozing lesions, its limp, weakened rays and strained tube feet unable to grasp at craggy surfaces. But what has caused such a gruesome change in our ochre sea stars?”

[www.islandsweekly.com/news/319471421.html](http://www.islandsweekly.com/news/319471421.html)

### **Chinook Fishery Shutting Down This Weekend in Both Sections of Neah Bay**

“Success can be fleeting, especially when everyone finds out how well you're doing. The chinook fishery on the northern coast saw a limit decrease from two to one fish last week”.

[www.peninsuladailynews.com/article/20150730/NEWS/307309986/outdoors-chinook-fishery-shutting-down-this-weekend-in-both-sections](http://www.peninsuladailynews.com/article/20150730/NEWS/307309986/outdoors-chinook-fishery-shutting-down-this-weekend-in-both-sections)

### **Salmon Losing, Jellyfish Winning**

“Puget Sound is going through a lot of changes. And a trend we reported on earlier this year has accelerated: Salmon are losing. Jellyfish are winning.”

[kuow.org/post/puget-sound-salmon-losing-jellyfish-winning](http://kuow.org/post/puget-sound-salmon-losing-jellyfish-winning)

### **The Drought and "The Blob" Delivering One-Two Punch to Puget Sound Ecosystems**

“A who’s who of scientists from about a dozen local agencies gathered on Thursday to share what they’re learning about the warm patch of water off the west coast that’s been keeping temperatures higher than normal.”

[www.kplu.org/post/drought-and-blob-delivering-one-two-punch-puget-sound-ecosystems](http://www.kplu.org/post/drought-and-blob-delivering-one-two-punch-puget-sound-ecosystems)

### **Sea Change: Here's What's Wrong in the Pacific Ocean**

“Weird things are happening off the Pacific Coast. And at the center of the action is a warm-water mass that scientists call ‘the blob.’”

[www.oregonlive.com/environment/index.ssf/2015/07/blob.html#incart\\_river](http://www.oregonlive.com/environment/index.ssf/2015/07/blob.html#incart_river)

### **Humpback Whale Washes Ashore Following Probable Ship Collision**

“A female humpback whale about the size of school bus washed up on Washington’s outer coast in Grays Harbor County over the weekend, likely the victim of a hit-and-run with a ship.”

[www.chinookobserver.com/co/local-news/20150803/humpback-whale-washes-ashore-following-probable-ship-collision](http://www.chinookobserver.com/co/local-news/20150803/humpback-whale-washes-ashore-following-probable-ship-collision)

### **Toxic Algae Blooming in Warm Water From California to Alaska**

“A vast bloom of toxic algae off the West Coast is denser, more widespread and deeper than scientists feared even weeks

ago, according to surveyors aboard a National Oceanic and Atmospheric Administration research vessel.”

[www.oregonlive.com/pacific-northwest-news/index.ssf/2015/08/toxic\\_algae\\_blooming\\_in\\_warm\\_w.html#incart\\_river](http://www.oregonlive.com/pacific-northwest-news/index.ssf/2015/08/toxic_algae_blooming_in_warm_w.html#incart_river)

### **Jellyfish Boom Prompts Research by Plane and Boat**

“Biologists with NOAA and the Department of Ecology are teaming up by plane and boat to track a jellyfish boom in Puget Sound.”

[www.king5.com/story/tech/science/environment/2015/08/05/jellyfish-ecology-noaa-puget-sound/31194035](http://www.king5.com/story/tech/science/environment/2015/08/05/jellyfish-ecology-noaa-puget-sound/31194035)

### **A Voice for Whales: Using Satellite Data to Protect Marine Mammals**

“The WhaleWatch project supported by NASA's Applied Sciences Program uses NASA satellite environmental data to predict the occurrence of whales off the west coast of the United States. WhaleWatch makes that information available on a NOAA-hosted website to help protect whales from human activity.”

[www.youtube.com/watch?v=v9lyJUE4MgQ](http://www.youtube.com/watch?v=v9lyJUE4MgQ)

### **Massive Toxic Algae Bloom Flourishes Along The West Coast**

“Scientists say the toxic algae bloom off the West Coast could be the largest ever recorded. It stretches 40 miles wide and 650 feet deep from central California to Alaska.”

[www.capradio.org/articles/2015/08/06/massive-toxic-algae-bloom-flourishes-along-the-west-coast/](http://www.capradio.org/articles/2015/08/06/massive-toxic-algae-bloom-flourishes-along-the-west-coast/)

### **Tragic Journey Ends Friday in Seattle for Tons of Tsunami Debris from Japan**

“For most of the debris filling more than 3,000 ‘super sacks’ stacked on a barge that will dock in Seattle on Friday, it’s been a long tragic journey.”

[blog.seattlepi.com/bigscience/2015/08/06/tragic-journey-ends-friday-in-seattle-for-tons-of-tsunami-debris-from-japan/#34825101=0&34821103=0&29016105=0&20997107=0](http://blog.seattlepi.com/bigscience/2015/08/06/tragic-journey-ends-friday-in-seattle-for-tons-of-tsunami-debris-from-japan/#34825101=0&34821103=0&29016105=0&20997107=0)

### **Public Comment Period Opens for NOAA’s Proposed Rule to Protect Marine Mammals in International Fisheries**

“NOAA today issued a proposed rule to protect marine mammals in international fisheries which would require U.S. trading partners to take measures to limit the incidental killing or serious injury of marine mammals due to fishing activities if they want to export seafood to the United States.”

[www.noaa.gov/stories/2015/08/10/15-public-comment-period-opens-for-noaas-proposed-rule-to-protect-marine-mammals-in-international-fisheries.html](http://www.noaa.gov/stories/2015/08/10/15-public-comment-period-opens-for-noaas-proposed-rule-to-protect-marine-mammals-in-international-fisheries.html)

### **El Niño vs. the Blob: Which Will Win out this Winter?**

“You may have heard a strong El Niño could bring lots of rain this winter, but there’s another weather pattern in the region that might keep things dry. It’s a ridge of high-pressure air that’s created a huge patch of warm water off the coast, nicknamed ‘the Blob’.”

[www.scp.org/news/2015/08/10/53627/el-nino-versus-the-blob-which-will-win-out-this-wi/](http://www.scp.org/news/2015/08/10/53627/el-nino-versus-the-blob-which-will-win-out-this-wi/)

### **Feiro Marine Life Center Director Retired, but Not Tired**

“Trolling for money. Angling for dollars. Trying to hook a donor. Although Deborah Moriarty didn't harvest sea life, she employed a fisherwoman's wiles to land funds for the Feiro Marine Life Center.”

[www.peninsuladailynews.com/article/20150807/news/308079967/feiro-marine-life-center-director-retired-but-not-tired-celebration](http://www.peninsuladailynews.com/article/20150807/news/308079967/feiro-marine-life-center-director-retired-but-not-tired-celebration)

### **Forget El Niño, the “PDO” Could be the Real Drought Buster**

“A new forecast out Thursday on the El Niño climate pattern shows it could be one of the strongest on record. And that could deliver much needed rain to Southern California and possibly northern parts of the state, too. But El Niños are usually fleeting, lasting only a year or two.”

<http://www.scp.org/news/2015/08/12/53755/forget-el-nino-could-the-pdo-be-the-real-drought-b/>

### **Listening to Whale Migration Reveals a Sea of Noise Pollution, Too**

“Christopher Clark, who directs the bioacoustics research program at Cornell University, is among the world's best scientific listeners. His work has revealed how human-made noise is filling the ocean, making it harder for marine animals to hear their own world. But Clark didn't start out with much interest in whales at all.”

[www.npr.org/2015/08/13/429496320/listening-to-whale-migration-reveals-a-sea-of-noise-pollution-too](http://www.npr.org/2015/08/13/429496320/listening-to-whale-migration-reveals-a-sea-of-noise-pollution-too)

### **Weather Scientists Want Your Help to Understand “The Blob”**

“Call it ‘The Blob.’ It’s an unusually warm patch of water off the West Coast that has flummoxed climatologists. ‘It’s still rearing its ugly head,’ said Nick Bond, Washington state climatologist and regular contributor to KUOW. He first detected The Blob in 2013.”

<http://kuow.org/post/weather-scientists-want-your-help-understand-blob>

### **Dam Removal Shows What Happens When Sediment Runs Free**

“Eventually, the Elwha will return to a natural state in which around 300,000 cubic yards of Olympic Mountains sediment will be carried into the strait each year. Removal of the Elwha and Glines Canyon dams on the Olympic Peninsula to improve salmon migration is revealing in dramatic terms just how substantially a river is altered by dams and what happens when they are removed.”

[www.chinookobserver.com/co/editorials/20150819/dam-removal-shows-what-happens-when-sediment-runs-free](http://www.chinookobserver.com/co/editorials/20150819/dam-removal-shows-what-happens-when-sediment-runs-free)

### **Why Sea Lions are Suffering as the Ocean Warms**

“A sea lion on a Washington beach curls into a fetal position, shuddering. Then it contorts its neck, craning its head into the air, clearly in distress. NOAA researchers in Washington were horrified by this recent footage from Long Beach.”

[www.alternet.org/environment/why-sea-lions-are-suffering-ocean-warms?akid=13402.230161.D9U71e&rd=1&src=newsletter1041262&t=20](http://www.alternet.org/environment/why-sea-lions-are-suffering-ocean-warms?akid=13402.230161.D9U71e&rd=1&src=newsletter1041262&t=20)

### **A Giant Glob of Deadly Algae is Floating off the West Coast**

“From the air, the Pacific algal bloom doesn't look like much of a threat: a wispy, brownish stream, snaking up along the West Coast. But it's causing amnesia in birds, deadly seizures in sea lions, and a crippling decline in the West Coast shellfish industry.”

[www.motherjones.com/environment/2015/08/heres-everything-you-need-know-about-deadly-algae-california-coast](http://www.motherjones.com/environment/2015/08/heres-everything-you-need-know-about-deadly-algae-california-coast)

### **Draft Environmental Review Released for Oil Terminals on Washington Coast**

“The Washington State Department of Ecology has just released its draft environmental review of two proposed oil terminals on the Washington coast. A third proposed terminal has not yet begun the environmental review process.”

[kuow.org/post/draft-environmental-review-released-oil-terminals-washington-coast](http://kuow.org/post/draft-environmental-review-released-oil-terminals-washington-coast)

### **Registration Now Open for Coast-Wide Beach Cleanup**

“Washington CoastSavers announced online registration is open for participation in the International Coastal Cleanup on Sept. 19. Volunteers can visit [www.coastsavers.org](http://www.coastsavers.org) and select from dozens of beaches to clean from the Long Beach Peninsula to the Olympic Peninsula.”

<http://www.chinookobserver.com/co/free/20150908/registration-now-open-for-coast-wide-beach-cleanup>

### **Baby Orcas And Gloomy Future: Can Whale Watching Help?**

“Is it ethical to go whale watching? Boats sometimes interfere with whales’ ability to hunt and eat. But whale watching can also connect people with conservation.”

[kuow.org/post/baby-orcas-and-gloomy-future-can-whale-watching-help](http://kuow.org/post/baby-orcas-and-gloomy-future-can-whale-watching-help)

## OCNMS ONLINE

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

Follow us on Facebook and Twitter!

<https://www.facebook.com/usolympiccoastgov>

<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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## FUN, OCEAN-RELATED WEBSITES

**National Oceanic and Atmospheric Administration**

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

**National Ocean Service**

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

**Office of National Marine Sanctuaries**

<http://www.sanctuaries.nos.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://www.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 14 marine protected areas in the National Marine Sanctuary System encompassing more than 170,000 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 thirteen national marine sanctuaries and the Papahānaumokuākea Marine National Monument. Visit the ONMS website at:

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

### Get Involved!

To learn how to get involved in the sanctuary visit:

<http://olympiccoast.noaa.gov/involved/welcome.html>.

### OCNMS Staff

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