

## Olympic Coast National Marine Sanctuary

# 2011-2017 Management Plan Implementation Report



January 2018



Cover photo: Gray whale off Cape Flattery. Credit: NOAA



## I. Introduction

This document is a compilation of seven annual reports on the implementation of Olympic Coast National Marine Sanctuary's 2011 management plan. These six annual reports can be found at <http://olympiccoast.noaa.gov/management/management101.html#effectiveness>. Annual management plan implementation reports are based on the federal government's fiscal year (FY). This report covers FY 2011 through FY 2017, the period from October 1, 2010, through September 30, 2017.

In 2008, Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) began work to update the original 1994 management plan. The [OCNMS Final Management Plan and Environmental Assessment](#) was released in September 2011 and related regulations were finalized on November 1, 2011 ([76 FR 67348](#)), becoming effective on December 1, 2011. Starting in FY 2011, OCNMS began basing its annual operating plan on the action plans in the revised management plan and began implementation of the non-regulatory parts of the management plan prior to its final approval. Therefore, FY 2011 was classified as "Year Zero" of the management plan implementation. FY 2017 was the sixth official year of implementation or "Year Six" under the revised management plan.

## MANAGEMENT PLAN BACKGROUND

Three years of planning, consultation, and writing went into the development of the sanctuary's 2011 management plan and revised regulations, a process also known as "management plan review" (MPR). This process included public scoping sessions initiated in 2008, issue prioritization and development of action plans with the close involvement of the OCNMS Advisory Council (AC) and the Olympic Coast Intergovernmental Policy Council (IPC), compliance with the National Environmental Policy Act that required the development of draft and final environmental assessment documents, consideration of public comments, numerous consultations with other agencies and the coastal treaty tribes, and a federal rulemaking process requiring the publication of proposed and final rules (regulations). The results are a comprehensive final management plan and a revised set of sanctuary regulations published in November 2011.

The 2011 OCNMS Final Management Plan and Environmental Assessment contains information about the sanctuary's environment and resources, priority management issues, and the programs and actions proposed to address them. The management plan includes six priority issues and twenty action plans to guide sanctuary management in the years ahead. The action plans are grouped under five of these priority issues, with the priority issue of treaty trust responsibility meant to be applied, as appropriate, in all OCNMS management actions and programs.

- Fulfill treaty trust responsibility.
- Achieve effective collaborative and coordinated management
- Conduct collaborative research, assessments, and monitoring to inform ecosystem-based management
- Improve ocean literacy
- Conserve natural resources in the sanctuary
- Understand the sanctuary's cultural, historical, and socioeconomic significance

Each action plan contains strategies that identify a specific subject area and related activities. A sixth priority issue, treaty trust responsibility, is a stand-alone chapter in the final management plan. The management plan also identifies eight outcomes with associated performance measures, which are the focus of this report.

## **II. Implementation highlights**

Significant accomplishments, organized by management priority issues, are summarized below, while the table entitled “Implementation by action plan” summarizes progress made on all action plans and strategies.

### **FULFILL TREATY TRUST RESPONSIBILITY**

#### **Coastal peoples address climate change at the First Stewards Symposium**

The Hoh, Makah, and Quileute tribes and the Quinault Indian Nation hosted a symposium in Washington, D.C., from July 17-20, 2012, with ONMS as partner providing staff support to the IPC in planning the event. The symposium brought together four regional panels addressing the West Coast states, Alaska, the U.S. Pacific states and territories, and the Great Lakes/Northeast/Mid-Atlantic/Southeast/Gulf of Mexico states. Each day included opening and closing cultural ceremonies and regional panel discussions.

#### **OCNMS supports characterization of tribal cultural landscapes project**

Characterizing Tribal Cultural Landscapes is a collaborative effort among the Bureau of Ocean Energy Management (BOEM), the ONMS Maritime Heritage Program, the National Marine Protected Areas Center, OCNMS, a tribal facilitator, and tribal historic preservation offices from three tribes (Yurok Tribe of California, Confederated Tribes of Grand Ronde, Oregon, and Makah Tribe of Washington) to support tribes in identifying areas of tribal significance. The 2013-2014 project involved inter-tribal workshops, an analysis guide, case studies, and outreach. The goal of the project, funded by BOEM, was to provide a methodology where indigenous communities can collect their own information, summarize results and concerns, and work with agencies to apply information on tribal resources in a culturally-sensitive and relevant manner for planning and regulatory compliance. While BOEM’s interest is in how this guide can assist in offshore renewable energy siting, the application of the guide is intended to be much broader.

#### **Sanctuary works to improve tribal government-to-government consultation**

As demonstrated in the 2008-2011 management plan review process, OCNMS seeks to work directly with the coastal treaty tribes (Hoh, Makah, and Quileute tribes and the Quinault Nation) on a government-to-government basis. This collaboration aims to promote a healthy ecosystem in the waters adjacent to the Olympic Peninsula for the support and enhancement of tribal treaty rights and resources, cultural resources and activities, and tribal self-determination and sovereignty. These efforts are recognized within NOAA, and OCNMS staff participated in the development of the NOAA government-to-government consultation handbook, called “NOAA

Procedures for Government-to-Government Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations,” which was finalized in November 2013.

The NOAA handbook describes the agency’s procedures for complying to Executive Order 13175, “Consultation and Coordination with Indian Tribal Governments.” With the publication of this guidance, NOAA required that all NOAA personnel directly involved with outreach, consultation, and operations with tribal governments receive training to implement the handbook. As a result, OCNMS staff developed and conducted their own training, which included a general overview of treaties, review of the NOAA handbook, background on the history, culture, and governance of the four coastal treaty tribes, and examples of how OCNMS has worked with the coastal treaty tribes since the 1994 designation of the sanctuary.

In November 2015, as part of NOAA’s efforts to share experiences on tribal consultation, staff from OCNMS presented how they implemented the NOAA handbook by using a practical example illustrating informal dialogue leading to formal consultation. OCNMS presenters discussed how ONMS initiated a dialogue in 2012 with the coastal treaty tribes for a potential rulemaking that would revise and consolidate program-wide and site-specific regulations. Starting with the proposed rulemaking, speakers outlined the steps that ultimately resulted in a government-to-government meeting with the Makah Tribe in January 2015 and the establishment of a permit consultation protocol specific to the Makah Tribe. The sanctuary regularly issues permits for regulated activities that occur within the usual and accustomed fishing grounds of Native American treaty tribes. The federal government’s fiduciary responsibility for treaty tribes requires consideration of potential impacts of permitted activities to tribal interests. The Makah Tribe is recognized as the most appropriate entity to make the determination of their interests. This permit consultation protocol established a standardized process that defines expectations for notification, document sharing, timeframes for response, and points of contact so that both parties have a common understanding, and effective consultation can proceed in an efficient manner. OCNMS has offered to establish protocols with the other coastal treaty tribes and in the interim consults with them in a similar fashion.

## **ACHIEVE EFFECTIVE AND COORDINATED MANAGEMENT**

### **Intergovernmental Policy Council serves as an important forum for management issues**

In January 2007, the Department of Commerce, Hoh Tribe, Makah Tribe, Quileute Tribe, Quinault Indian Nation, and the state of Washington signed a memorandum of agreement (MOA) for the purpose of supporting the Olympic Coast Intergovernmental Policy Council (IPC). The MOA needs to be updated every five years, which has occurred in 2012 and 2017. The MOA recognizes the role of the IPC in providing an effective and efficient forum for the exchange of information and policy recommendations regarding the management of the marine resources and activities within the boundaries of OCNMS. The MOA calls for an annual meeting between the NOAA Office of National Marine Sanctuaries (ONMS) director and the IPC membership. Prior to 2011, the IPC’s main focus was the process of updating the sanctuary’s management. Since then, the IPC’s main focus has been the development of the IPC Habitat Framework (described below).

**Sanctuary partners with CoastSavers**

OCNMS and Olympic National Park were among the founding members of the Washington Clean Coast Alliance, when it was formed in 2007. The Washington Clean Coast Alliance launched the CoastSavers program to coordinate the efforts of volunteer groups and individuals that have been cleaning up Washington's Pacific Coast since the 1970s. The signature annual event is the Washington Coast Cleanup held every April in celebration of Earth Day, which focuses on hard-to-reach wilderness beaches. The number of volunteers and the amount of debris collected continue to grow with each cleanup. As of 2013, CoastSavers also coordinates the expansion of the International Coastal Cleanup to Washington's outer coast, with volunteers and debris removed growing with each year of participation.

**NOAA completes and implements a facility strategy for OCNMS**

In 2012, ONMS completed an update to 2002 OCNMS facilities plan. This update was an item in the 2011 management plan. The updated facility strategy provides recommendations for both the administrative offices in Port Angeles and for facilities on the outer coast. Port Angeles recommendations include investigating the potential for participating in the creation of an ocean-centric campus on the Port Angeles waterfront. Outer coast recommendations include a range of options for interpretive efforts in the southern sanctuary and new or upgraded facilities and vessel support in Neah Bay and La Push. OCNMS has been pursuing the creation of a campus with partners, where overlapping needs would be met by shared use of space. Since 2012, OCNMS, the Feiro Marine Life Center (Feiro) and the City of Port Angeles have been actively pursuing the concept of an enhanced visitor experience through a shared facility including education space (classrooms) and exhibit space. A study was commissioned to assess the potential benefits that might be attained from development of a shared facility, resulting in a 2013 shared facilities feasibility study. This study concluded that "A shared facility will enable each organization's mission to be bigger than itself" and "the opportunity to better collaborate and deliver services make a shared facility the best option for each partner." OCNMS staff continue to collaborate with Feiro and the National Marine Sanctuary Foundation to detail roles and responsibilities for a Marine Discovery Center along the Port Angeles waterfront.

**Sanctuary supports Washington state marine spatial planning**

Sanctuary staff have actively supported Washington state's efforts to develop a marine spatial plan (MSP) for Washington's Pacific Coast since efforts began in 2013. Noting past coordination between the sanctuary and the state in the development of the state's 2006 Ocean Action Plan and the 2011 sanctuary management plan, OCNMS provided recommendations to continue that level of coordination and cooperation. Recommendations included the integration of the sanctuary management plan in to the MSP and that OCNMS be included within the geographic scope of the MSP. OCNMS participated on the Washington Coast Marine Advisory Council technical committee and supported work on sector analyses, worked to enhance the recreational use study, supported a joint habitat mapping project, and are supporting the planned spatial mapping prioritization initiative. The state released the draft MSP in October 2017 for public comment.

**Sanctuary conducts interagency consultation with Navy, EPA, and NOAA Fisheries**

Interagency consultation is required under section 304(d) of the National Marine Sanctuaries Act if a federal agency is undertaking actions likely to injure sanctuary resources. Since 2011,



OCNMS has initiated several interagency consultations under Section 304(d) of the National Marine Sanctuaries Act. OCNMS consulted with regional and national Navy and NOAA Fisheries representatives on Navy activities in sanctuary waters off Washington state. In 2015, the Navy finalized 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 plans to issue an authorization on the taking of marine mammals associated with Navy activities. The U.S. Navy and NOAA Fisheries completed a joint sanctuary resource statement, a document that narrows the analysis to activities and potential impacts specifically to sanctuary waters and associated resources. In response, the sanctuary superintendent provided recommendations to the Navy and NOAA Fisheries for measures to reduce injury to marine mammals and improve information available for future assessment through reporting and monitoring. The sanctuary's rationale included consideration for or avoidance of portions of sanctuary waters where impacts to marine mammals are potentially greater. In November 2015, the U.S. Navy provided a formal response to the sanctuary recommendations, completing the consultation.

A second 304(d) consultation involved an action by Environmental Protection Agency (EPA) on a proposal to issue a general wastewater discharge permit to offshore seafood processors in federal waters off the Washington and Oregon coasts, which includes sanctuary waters. During consultation, the sanctuary superintendent recommended EPA select one of several alternatives meant to address concerns about the potential impacts of this activity to water quality in the sanctuary, including the potential to exacerbate the generation of harmful algal blooms and hypoxic conditions. In June 2017, EPA provided a formal response to the sanctuary recommendations, completing the consultation.

### **Sanctuary plans for vessel replacement**

OCNMS has the only vessel dedicated to research along Washington's outer coast, the Research Vessel *Tatoosh*. The R/V *Tatoosh* is nearing the end of its useful life and has served the sanctuary for much longer than its forecasted service life. Rigorous preventive maintenance and substantial capital investments have kept the vessel operational, though some interruptions to fieldwork have been experienced for the past several years. The Office of National Marine Sanctuaries has designated the R/V *Tatoosh* as the number one priority for replacement. OCNMS has compiled a set of requirements for continuing its ongoing projects and to meet the needs of potential new research partners in the foreseeable future, based on the 2011 OCNMS management plan. A larger, more stable vessel will expand the potential for OCNMS operations and make the sanctuary a more attractive place to conduct research, thus enhancing and advancing the sanctuary's ability to provide science-based solutions through collaborative research partnerships that address evolving environmental pressures on our ocean and coasts.

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

### **Sanctuary makes advances in mapping**

OCNMS has been conducting seafloor habitat mapping since 2000 and has over 30 surveys in its library of benthic imagery and bathymetry. From 2010 through 2015, OCNMS was able to make

substantial progress in developing an in-house mapping capability using the R/V *Tatoosh*. In 2010, a multibeam echo-sounder was mounted on the vessel, and in 2011, the vessel's navigational components and equipment were upgraded, professionally calibrated, and tested. During subsequent field seasons, the R/V *Tatoosh* mapped nearshore habitat and three sunken ships, and created detailed maps of 10 OCNMS mooring locations. Unfortunately, with the rapid rate of technological advancement, the retirement of the sanctuary's marine geographer, and other resource challenges, OCNMS will be unable to maintain in-house mapping capabilities in the immediate future and will need to seek other sources of support. Examples of this type of support include NOAA-funded mapping cruises on the R/V *Pacific Storm* in 2011, and the NOAA Ship *Rainier* and the E/V *Nautilus* in 2016 and 2017. In order to integrate this "patchwork" of seafloor surveys, OCNMS worked with the Washington Department of Natural Resources to support integration of the data by Oregon State University's Seafloor Mapping Lab. Through this initiative, 35 surveys conducted between 2000 and 2013 were re-processed and edge-matched by OSU as part of the 2015 Washington Seafloor Atlas, a product covering ~900 square miles of northern OCNMS (<https://olympiccoast.noaa.gov/science/habitatmapping/habitatmapping.html>). OCNMS continues to seek support for integration of recent seafloor mapping data into the atlas.

Leveraging the success of the Washington Seafloor Atlas, in 2014-2015 OCNMS helped organize a seafloor mapping prioritization workshop in support of the Washington state marine spatial planning process. Regional resource managers and technical staff from 18 agencies participated in a NOAA-led process for prioritizing areas of the seafloor for high-resolution mapping based on management needs. The results of the workshop demonstrated the importance of the Washington coast to multiple management issues, while identifying discrete geographic priorities for mapping in nearshore and offshore zones. By the end of 2017, approximately 90 percent of the offshore zones had been mapped, prompting OCNMS and the state to reconvene agency partners in early 2018 to identify the next suite of mapping priorities for the state.

### **OCNMS investigates deep-sea coral and sponge communities**

OCNMS staff completed several reports on deep-sea coral and sponge communities and associated habitats that were submitted to the Deep Sea Coral Research and Technology Program, the Pacific Fishery Management Council's Groundfish Essential Fish Habitat Review Committee, and the Olympic Coast Intergovernmental Policy Council. These reports document remotely operated vehicle (ROV) surveys conducted in the sanctuary between 2010 and 2012 for the purpose of characterizing deep-sea coral and sponge communities on the continental shelf and within canyons. In 2017, observations of deep-sea coral and sponge communities from a ROV and autonomous underwater vehicle (AUV) during the E/V *Nautilus* expedition further characterized deep coral and sponge communities found in OCNMS' submarine canyons. Individual coral and sponge specimens collected during the expedition will support greater understanding of the abundance and distribution of deep-sea coral and sponge species, once expert taxonomic validation has been completed. The second round of funding for research on deep-sea corals and sponges of the U.S. West Coast is expected to become available from the NOAA Deep Sea Coral Research and Technology Program in fiscal years 2019 and 2020, following planning meetings and a workshop currently being planned for 2018. Like the other West Coast sanctuaries, OCNMS plans to participate in upcoming deep-sea coral and sponge research activities to enhance management of these important persistent habitats.

**OCNMS conducts long-term oceanographic monitoring**

The sanctuary's nearshore seasonal mooring program has generated a 17-year dataset (2000-2017; late spring through early fall) for monitoring ocean temperature, conductivity (salinity), current velocity and direction, dissolved oxygen, fluorescence (a proxy for plankton), and turbidity. Using the R/V *Tatoosh*, the sanctuary currently deploys, maintains, and recovers a network of 10 near-shore oceanographic moorings between Makah Bay and Cape Elizabeth. The data are used to characterize OCNMS's oceanographic setting and evaluate phenomena such as coastal upwelling, cycles of primary productivity, harmful algal blooms, hypoxic events, and ocean acidification, and other aspects of nearshore ecology in the sanctuary. Because few data are available to characterize nearshore conditions of Washington's outer coast, this long-term dataset is critical to regional ecosystem modeling efforts led by the University of Washington and other research, such as the NOAA Pacific Marine Environmental Laboratory's development of an algorithm to calculate critical thresholds related to impacts of ocean acidification. In 2015, the Sanctuary Advisory Council's oceanographic monitoring working group evaluated the mooring program and provided OCNMS with recommendations focused on maintaining or improving the existing mooring array while ensuring consistency with the long-term dataset.

**Ocean acidification causes concerns for the Washington coast**

Ocean acidification (OA) is an oceanographic phenomenon affecting the Olympic Coast that has serious implications for coastal communities, resource users, and resource management entities. OCNMS staff began to engage on this issue in 2015 through a science symposium hosted by the University of Washington's Ocean Acidification Center, which provided a great opportunity to identify potential collaborations for better monitoring ocean acidification within the sanctuary. In 2016, the Sanctuary Advisory Council's climate change working group identified a priority recommendation to "Work with partners to propose to NOAA leadership that OCNMS be designated as a NOAA Sentinel Site for ocean acidification and/or sea level rise." As a result, in September 2016, OCNMS partnered with the NOAA Ocean Acidification Program to host an OA sentinel site workshop in Forks, Washington. The workshop brought together 45 resource managers, educators, and leading experts from state, federal, and tribal agencies and regional organizations to discuss habitat and species' vulnerability to ocean acidification; key functions, components, and applications of a sentinel site; and an ocean acidification awareness campaign for specific audiences. As a direct result of this workshop, partners collaborated on two successful proposals funded by NOAA's Ocean Acidification Program to enhance ocean acidification work along the Olympic Coast and contribute to establishment of the OA sentinel site on the Olympic Coast. These and other activities promoting establishment of the OA sentinel site will continue in FY18 and beyond.

**NOAA collaboration project monitors nearshore habitats in OCNMS**

Since 2015, a team of NOAA scientists from OCNMS and the Northwest Fisheries Science Center (NWFSC) have 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 reintroduction and expansion of the sea otter population along the Washington coast. Despite being extirpated in the early 1900s as a result of the fur trade, the current Washington sea otter population has grown from 59 individuals introduced in 1969 and 1970, to a 2017 estimate of 2,058 individuals (WDFW, 2017). Washington's sea otters now

occupy a primary range from north of Cape Elizabeth to Tatoosh Island, with a few sea otters 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 project is a continuing collaboration between OCNMS and NOAA's NWFSC, which provides scientific divers as well as staff time and analytical expertise to complement OCNMS's contribution of staff time, vessel use, and project coordination efforts. In 2016 and 2017, Dr. Steve Lonhart from Monterey Bay National Marine Sanctuary joined the team to promote adaptation and implementation of PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans) methods, which are used for long-term monitoring of similar habitats within the marine protected areas network along the California coast and thus can expand the utility of the data collected. While in OCNMS, Dr. Lonhart also collected special 360-degree underwater photographs from dive sites in the northern part of OCNMS to enable production of "virtual reality" images of the sanctuary (<https://sanctuaries.noaa.gov/vr/olympic-coast/>). For the past few years, OCNMS has also hosted NOAA Nancy Foster Scholar Jessica Hale, a University of Washington Ph.D. student studying sea otter population dynamics and foraging patterns.

### **OCNMS partnership conducts exploration from large research vessels**

A team of experts from the College of Charleston, University of Washington, and Oregon State University contributed to a NOAA-led, multi-disciplinary survey of Quinault Canyon in OCNMS in May 2016 on board the NOAA Ship *Rainier*. The survey gathered swath bathymetry, acoustic backscatter, and water column data to help inform ocean management. Surveys revealed rocky outcrops along the canyon rim and a remarkable number of methane plumes throughout the water column. The Ocean Exploration Trust's Exploration Vessel (E/V) *Nautilus* conducted its Cascadia Margin cruise June 1-19, 2016, with a focus on exploration of maritime heritage resources, methane seeps, and seafloor habitats along the Pacific Coast between British Columbia and San Francisco. A sonar target about 30 miles west of Cape Flattery proved to be the wreck of SS *Coast Trader*, a freighter struck by a torpedo from the Japanese submarine I-26 in June 1942. ROVs from *Nautilus* provided the first images of the shipwreck, which is substantially intact with the torpedo impact area clearly discernable. Another dive with *Nautilus*'s ROV explored the sanctuary seafloor along the rim of Quinault Canyon. The mission was to groundtruth recently-collected sonar mapping data, to explore various substrates and habitats identified in sonar data, and provide the first video and images of the geology and marine life from this highly productive area.

Building on the success of the May 2016 cruise, in September 2017, the NOAA Ship *Rainier* traversed the Washington outer coast, collecting seafloor bathymetry and backscatter and water column data. The exploration focused on high-priority offshore mapping areas that were identified in a May 2015 multi-agency spatial prioritization workshop led by the National Centers for Coastal Ocean Science. While much of the data collection for this Integrated Ocean and Coastal Mapping (IOCM) project focused on areas within OCNMS, the project scope also included an important area south of the sanctuary in Glide Canyon off Willapa Bay, Washington. Also in September 2017, OCNMS staff joined the team of the E/V *Nautilus* again to complete a 16-day research expedition to explore three of the four prominent submarine canyons of the Olympic Coast. The E/V *Nautilus* is equipped with advanced telepresence technology allowing the ship to livestream a video feed from sophisticated robots at the bottom of the ocean. In this way, the expedition was shared with thousands of people around the world, as well as through

live events and interactions with people throughout the United States. Using ROVs and AUVs to explore Quinault, Quileute, and Juan de Fuca canyons, the team encountered a dazzling variety of interesting deep-sea species including corals, sponges, fish, octopuses and other invertebrates. Other highlights included the recovery of critical ocean observing assets belonging to Northwest Association of Networked Ocean Observing Systems (NANOOS) and University of Washington, and a visit to the USS *Bugara*, a WWII-era submarine that served the United States through three wars before sinking while under tow off Cape Flattery in 1971. Thanks to close partnership with coastal treaty tribes living on the Olympic Coast, tribal perspectives on Olympic Coast resources were shared throughout the dive narrations, significantly enhancing the viewer experience.

## **IMPROVE OCEAN LITERACY**

### **Olympic Coast National Marine Sanctuary hosts Nancy Foster and Hollings scholars**

Olympic Coast National Marine Sanctuary was fortunate to host NOAA's Dr. Nancy Foster Scholars Jessica Lopez (2010), Katie Wrubel (2011), and Jessica Hale (2014-15). Research projects included analysis of almost a decade of seabird data, reviewing extensive ROV video of fish habitat and deep-sea corals and sponges, monitoring sea otter populations and habitat, and developing best practices for future analysis and documentation. The Dr. Nancy Foster Scholarship Program recognizes outstanding scholarship and encourages independent graduate level research — particularly by female and minority students — in NOAA mission-related sciences, and is administered through the NOAA Office of National Marine Sanctuaries. OCNMS also hosted recipients of NOAA's Ernest F. Hollings Scholarship Program including Maria Tarduno (2011), Katie O'Reilly, Vanessa Constant, Kevin Pelstring (2013), Jessica Lindner, Emma Rice (2014), Billie Case, Courtney Knox, Kathryn Hobart (2015), Lauren Kowalski, Riley Evans, Jose-Gabriel Almario (2016), Hannah MacDonald, and Megan Boice (2017). The Hollings Scholars' projects included topics such as developing and leading youth summer camps, analyzing oceanographic and intertidal data, and calculating the emissions footprint of all OCNMS operations and maritime heritage. The Hollings Scholarship Program is supported by NOAA's Office of Education and is designed to support undergraduate studies in oceanic and atmospheric science, research, technology, and education, to increase public understanding and support for stewardship of the ocean and atmosphere, and improve environmental literacy. It aims to recruit and prepare students for public service careers with NOAA.

### **OCNMS helps manage NOAA Pacific Northwest B-WET program**

Some of the top priorities for OCNMS are to enhance ocean literacy, promote awareness of the sanctuary, and foster a sense of ocean stewardship. One of the ways in which the sanctuary addresses these priorities is through the Pacific Northwest (PNW) Bay-Watershed Education and Training (B-WET) regional program. PNW B-WET, managed by NOAA's Office of Education and OCNMS, is an environmental education program that supports locally relevant experiential learning in the K-12 environment. Funded projects provide meaningful watershed educational experiences for students and related professional development for teachers, and help to support regional education and environmental priorities in the Pacific Northwest. The primary delivery is through competitive grants. During the reporting period of 2011 – 2017, OCNMS has helped distribute \$2,132,874 in funding to regional partners in Washington and Oregon reaching

approximately 36,000 students and 1,500 teachers. Additionally, since 2016, OCNMS has collaborated with the National Marine Sanctuary Foundation to support the Ocean Guardian School Program in Washington and Oregon. This program, developed by the Office of National Marine Sanctuaries, awards funds to local schools to implement community- and school-based conservation action projects.

### **OCNMS supports Ocean Literacy programs in classrooms and beyond**

OCNMS worked to integrate Ocean Literacy principles and concepts into western Washington formal and informal educational programs, reaching over 13,000 K-12 students during the reporting period, including programs such as Ocean Science, North Olympic Watershed Science, and Ecosystem Pen Pals.

Ocean Science uses hands-on, inquiry, and place-based activities to support teachers, students (grades 3-6), and their families to better understand their local marine environment, as well as enable them to make cultural connections with local indigenous communities. Activities include teacher professional development training and support, classroom beach curriculum and resources, and beach field experiences. Since its introduction in 2007, Ocean Science has been supported by regional partners including Seattle Aquarium, Feiro Marine Life Center, Pacific Education Institute, Quinault Indian Nation, Makah Tribe, North Pacific Coast and Grays Harbor marine resources committees, NOAA Marine Debris Program, Pacific Northwest B-WET, and OCNMS.

North Olympic Watershed Science Program, a partnership with Feiro Marine Life Center, Olympic National Park, NatureBridge Olympic, and the city of Port Angeles, provides field science opportunities for 4<sup>th</sup>-5<sup>th</sup> grade students on North Olympic Peninsula. Through this unique program, students visit their regional watershed in diverse locations, from the pristine upper watershed found in Olympic National Park to the managed and altered watershed that feeds into the Strait of Juan de Fuca. Students use their local watershed to make a connection to the ocean and investigate the effects of human impacts on the ocean.

Ecosystem Pen Pals, a partnership with Suquamish Tribe, is a cultural and natural history exchange program that brings together indigenous students from different regions in the Pacific Rim living near national marine sanctuaries – the Hawaiian Islands, American Samoa, and the state of Washington. Students participate in a series of year-long meaningful watershed educational experiences and pen pal activities focusing on food sovereignty and global ocean issues such as marine debris, climate change, and ocean acidification. Activities include letter writing exchanges, development of local field guides, and sharing of an “ecosystem suitcase” with objects from the natural environment, as well as cultural pieces selected by the students. In 2016, the program provided a culminating virtual and in-person “Indigenous Youth Summit on Climate Change and Ocean Change” hosted by Suquamish Tribe, OCNMS, and EarthEcho International. Ecosystem Pen Pals helps promote awareness and understanding of how changes in the marine environment are affecting indigenous ecosystems, culture, economy, and traditional ways of life. Through the program, students explore ways communities can take action to protect these precious resources for future generations.

**OCNMS and partners provide professional development opportunities to teachers**

Since 2011, OCNMS staff and partners have developed and conducted professional development workshops for over 650 teachers from the Olympic Peninsula. Topics have included ocean science, classroom and field-based investigations, traditional ecological knowledge, marine technology, and the issues of climate change, ocean acidification, and marine debris.

**Olympic Coast Whale Trail sign brings people together to celebrate partnerships, ocean awareness and stewardship**

In April 2013, the first Whale Trail sign along Olympic Coast National Marine Sanctuary was dedicated at Kalaloch Lodge in Olympic National Park, representing a partnership with OCNMS, Olympic National Park, and The Whale Trail. A second sign was installed at the Beach 4 trailhead in the park. In addition to the two signs located in Olympic National Park, OCNMS sponsored signs at overlooks near Snow Creek in Clallam County and Olympic Coast Discovery Center in Port Angeles. The Whale Trail mission is to inspire appreciation and stewardship of whales and our marine environment by establishing a network of viewing sites along the whales' migration routes through the coastal waters of the Pacific Northwest. The Whale Trail has also identified whale-viewing sites at La Push (Quileute Tribe), Cape Flattery (Makah Tribe), Olympic Coast Discovery Center (Port Angeles), and dozens of other sites on the Olympic Peninsula and Puget Sound. Through its current signs, including two on every Washington state ferry, the Whale Trail reaches more than 22 million people each year.

**People “like” us!**

One of the priorities identified in the 2011 management plan was to integrate social media in OCNMS web presence. Web statistics for OCNMS website (<http://olympiccoast.noaa.gov>), which was overhauled in 2012 and 2013, showed an increase from 140,175 visits in FY12 to 358,824 in FY17, with a combined number of visits since 2012 of 1,757,218. The website's companion Facebook page has also gathered additional attention, growing its followers from 356 in FY11 to 12,333 in FY17. A good example of increased social media use is a Facebook photo that “went viral” in 2014. As reports poured in of *Velella velella* (by-the-wind sailor) sightings along the Washington Coast, an OCNMS volunteer's photo of *V. velella* in sanctuary waters was posted to the OCNMS Facebook page. The photo was an instant hit, and over a few days, the photo brought the page's weekly total reach to 996,133 people (up 5,000 percent from the previous week). The photo grabbed the attention of several national media outlets including ABC News, the Huffington Post, The Weather Channel, and Peninsula Daily News, as well as First News, an international kids' magazine produced in the UK.

**OCNMS involved in summer camps**

During the reporting period 2011-2017, OCNMS partnered with three coastal treaty tribes on summer youth programming, including Hoh Tribe Chálá· at Hoh River Adventure Camp, Quileute Tribe Summer School with NANOOS and Northwest Indian College, and Makah Tribe Hidasubac Youth Camp. These programs supported opportunities for youth to explore their culture, ocean and watershed health, climate change, and marine technology. Since 2015, OCNMS education staff joined Hoh Tribe Natural Resources staff and Hoh Tribe Youth Support Services to conduct annual weeklong rafting and overnight watershed adventure camps. Hoh Tribal youth ranging from ages five to 19 began this journey in the protected area of Olympic National Park exploring the usual and accustomed areas of the Hoh Tribe. They completed their voyage at the mouth of the Hoh River and OCNMS. The camp focus is on connecting tribal

culture, treaty rights, traditional resources and harvesting, and climate change issues impacting resource sustainability and resilience. In addition to tribal summer programs, OCNMS partnered with Feiro Marine Life Center and the NOAA Hollings Scholarship Program to conduct camps in Port Angeles that bring inquiry-based hands-on marine science education to local and regional youth.

### **Olympic Coast NOAA Kiosks now available in three locations**

OCNMS is now featured at three Pacific Northwest locations from Seattle to the Olympic Coast. A NOAA National Marine Sanctuary Interactive Touch Screen Kiosk was installed at Seattle's Pacific Science Center in 2015. The kiosk offers a high-impact visual and auditory showcase of all the treasures the sanctuary has to offer. With the click of a button, users learn about the various activities of the sanctuary, including educational and outreach programs, research projects, and resource protection programs, as well as extensive information about species, habitats, history, and culture. Visitors can also use the kiosk for up-to-the-minute reports on weather and ocean conditions. Pacific Science Center ranked as one of the Top Ten Science Centers worldwide with visitation at 1.6 million people. Two additional NOAA National Marine Sanctuary kiosks are featured at Forks Visitor Center and Kalaloch Lodge in Olympic National Park. Forks Visitor Center is a busy tourist attraction reaching approximately 40,000 visitors annually. Kalaloch Lodge, located in Olympic National Park, is a popular destination reaching over 200,000 visitors annually. Both sites were identified through the Sanctuary Advisory Council working group as the most favorable and appropriate sites to install the educational kiosks.

### **Olympic Coast National Marine Sanctuary engages the public through tourism**

OCNMS focuses on tourism-related activities throughout the region by participating in monthly meetings with Olympic Peninsula Tourism Commission (OPTC), attending the annual OPTC Tourism Summit, and supporting efforts to reach travel writers coming through the Olympic Peninsula. In 2015, working with West Coast Region national marine sanctuaries, OCNMS developed and distributed a travel writers' brochure that was made available at the International Press Conference, showcasing the many destination opportunities of West Coast sanctuaries. Other efforts to promote visitation along Olympic Coast included annual Get Into Your Sanctuary events, such as beach yoga, tidepool investigations, beach art, beach clean-ups, photography workshops, and public presentations. Olympic Culinary Loop regularly contributes to Get Into Your Sanctuary by offering sustainable seafood menu specials throughout Olympic Peninsula.

### **Students dive into science, technology, engineering, and math with remotely operated vehicles**

In a new 2016 initiative, OCNMS brought ROV education to over 100 Olympic Peninsula students through after-school clubs, field trips, and special events. Partnering with Feiro Marine Life Center, the after-school underwater robotics club provided ROV education throughout the academic school year, culminating in the Kitsap Underwater Robotics Competition. At the competition, club participants placed first and fifth out of the 26 competing teams. Additional ROV education took place with coastal communities including participation in President Obama's My Brother's Keeper initiative, as well as student involvement through class field trips, 4-H activities, and summer camps. ROV education was enhanced with the opportunity to



connect remotely to the E/V *Nautilus* through ship-to-shore communications as the *Nautilus* explored the rim of Quinault Canyon in sanctuary and cruised along the Cascadia margin off the West Coast.

In 2017, OCNMS collaborated with University of Washington and Marine Advanced Technology and Education (MATE) to host the first annual Olympic Coast MATE Remotely Operated Vehicle Competition. Thirteen student teams comprised of 60 students from schools throughout Olympic Peninsula participated in the underwater robot competition held at Forks Athletic and Aquatic Club. During the competition, students demonstrated their yearlong efforts in designing, developing, and piloting ROVs. Students were required to pass multiple technical and safety inspections, deliver an oral presentation on their engineering design, and provide a marketing display to entice potential partners or clients. The final challenge was for students to complete missions in the pool, which emulated real-world situations. Hands-on experiential ROV education encourages our next generation of ocean explorers to consider education opportunities in science, technology, engineering, and math (STEM).

### **Olympic Coast makes a splash with Big Mama!**

The Sanctuary Splash Program, featuring Big Mama, a life-sized, walk-inside inflatable humpback whale, made its debut at coastal schools and events. Through this interactive educational resource, learners participate in hands-on STEM-focused activities that support ocean science and promote stewardship. The new teaching tool reached over 3,000 youth and adults in its pilot year and received positive attention and feedback.

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

### **OCNMS supports research on significant sanctuary habitat**

In 2011, OCNMS staff participated on the Pacific Fishery Management Council's (PFMC) Essential Fish Habitat Review Committee to support to a five-year review process for Pacific groundfish. In 2012, OCNMS completed several reports on deep-sea coral and sponge communities and associated habitats and submitted them to the Deep Sea Coral Research and Technology Program, the Pacific Fishery Management Council's Groundfish Essential Fish Habitat Review Committee, and the Olympic Coast Intergovernmental Policy Council.

In 2013, OCNMS and the Washington Department of Fish and Wildlife (WDFW) jointly responded to a request for proposals from the PFMC as part of its review of Pacific Groundfish Essential Fish Habitat with a report containing options to increase protection of sensitive biogenic and rocky reef habitats both within and adjacent to the existing Olympic 2 Conservation Area. Based on subsequent discussions with tribal representatives and the IPC, an alternative process was agreed upon, and the proposal submitted to the PFMC was withdrawn. In the alternative process, OCNMS, NOAA Fisheries, and the IPC developed a collaborative habitat framework for the outer coast of Washington. The framework established criteria for identifying important habitat types, identified the location of such habitats and associated species, and identified priorities for management. The IPC selected NOAA's Coastal and Marine Habitat Classification Standard as the basis of the framework and has received support from a number of NOAA line offices. The habitat framework builds a comprehensive catalog of marine and coastal

data that will improve management initiatives such as ecosystem-based management, marine spatial planning, and habitat protection, and will contribute to integrated ecosystem assessments. Moreover, the habitat framework can help identify knowledge gaps and coalesce multi-agency partners with shared priorities and available resources to address timely research and management issues.

### **OCNMS begins to implement climate change action plan**

In 2011, OCNMS began implementation of its climate change action plan by working with Washington Sea Grant and the University of Washington Climate Impact Group to develop a climate change impact scenario for the sanctuary. In 2013, OCNMS released the report, entitled “Climate Change and the Olympic Coast National Marine Sanctuary: Interpreting Potential Futures.” Existing observations and science-based projections from peer-reviewed literature were used to identify an extensive suite of potential climate change impacts to habitats, plants, and animals within the sanctuary and adjacent coastal areas. The report includes recommendations for future action for sanctuary management, including public education, information gathering, and policy and management strategies.

In December 2016, the Commission for Environmental Cooperation hosted a workshop focused on conducting rapid vulnerability assessments of marine protected areas across international borders, including OCNMS, Olympic National Park, and Canada’s Pacific Rim National Park Reserve, to foster collaboration on shared marine resources and similar management challenges. Participants assessed the potential impacts of cumulative stressor, such as storm severity/frequency and ocean acidification, and harvest activities and microplastics. They then collaboratively identified possible management strategies to help mitigate or ameliorate impacts to sensitive habitats and/or species, and to protect resilient habitats and connectivity.

### **OCNMS expands research on ocean acidification while awaiting formal designation as a NOAA Sentinel Site**

As a direct result of the 2016 Ocean Acidification (OA) Sentinel Site Workshop, partners collaborated on two successful proposals funded by NOAA’s Ocean Acidification Program including: “The Olympic Coast as a Sentinel: An Integrated Social-Ecological Regional Vulnerability Assessment to Ocean Acidification,” and “Development of Ocean Acidification “pHyter” – Plankton Monitoring Tools & Curriculum.” Both of these proposals will enhance ocean acidification work along the Olympic Coast and contribute to establishment of the OA Sentinel Site on the Olympic Coast. In addition to the 17-year record from OCNMS’ own oceanographic mooring program, which is a foundational data set for the sentinel site, OCNMS staff have pursued several additional ocean acidification research opportunities. Examples include collaborations with NOAA Pacific Marine Environmental Laboratory (PMEL) scientists to study the water chemistry of Olympic Coast; analysis of benthic foraminifera from push cores collected during the E/V *Nautilus* expedition to establish a record of exposure to OA over time; support for a University of Chicago study on how kelp forests may serve as a refuge to OA; and analysis of eDNA samples drawn from the same water samples that PMEL will analyze for water chemistry. These and other activities promoting establishment of the OA sentinel site will continue in FY 2018 and beyond.

**Vessel traffic management is improved in sanctuary**

In 2011, the 57<sup>th</sup> Session of the International Maritime Organization (IMO) Sub-Committee on Safety of Navigation approved amendments to the Area to be Avoided (ATBA) off the Washington Coast as proposed by the U.S. delegation to IMO. This ATBA was originally adopted in 1994 to reduce the risk of a marine casualty and resulting pollution to OCNMS. Previously, the ATBA applied to all ships and barges carrying cargoes of oil or hazardous materials, and all ships 1600 gross tons and above solely in transit. The proposal, which went into effect on December 1, 2012, called for an expansion of the ship categories subject to the existing ATBA from 1600 gross tons down to 400 gross tons. The ATBA is a successful management tool that helps mitigate the potential of a large oil spill due to drift groundings in the sanctuary. Monitoring vessel traffic is time-consuming and requires a unique set of software, hardware, and computer expertise. Several sanctuaries are independently monitoring vessels using different technical solutions. In 2012, OCNMS conducted a pilot project to determine if satellite automatic identification system (S-AIS) vessel traffic monitoring data could be used for ATBA vessel traffic monitoring, precipitated by the loss of access to Canadian Coast Guard data. OCNMS developed routines that allowed the processing of S-AIS data and the integration of value added vessel data based on USCG provided data, which has also supported ONMS in evaluating the efficacy of a sanctuary-wide enterprise solution for vessel traffic monitoring. OCNMS works with both the U.S. and Canadian coast guards on an ATBA monitoring and outreach program that has an estimated voluntary compliance rate of 97 percent since 2011. The sanctuary works with the coast guards to conduct outreach to non-compliant vessels to seek future compliance. Since 2011, OCNMS sent 137 ATBA flyers to non-compliant vessels.

**OCNMS responds to tsunami marine debris on the Washington Coast**

Since 2012, OCNMS has been actively engaged in regional efforts associated with the marine debris appearing on the West Coast as a result of the March 2011 earthquake and tsunami in Japan. OCNMS led and participated in regional efforts to monitor and respond to the threat of marine debris, which is a potential vector for invasive species. OCNMS has collaborated with the Washington Clean Coast Alliance, which coordinates the annual CoastSavers beach cleanup (see above), stepping up to lead planning efforts in the absence of a partnership coordinator. In 2012, OCNMS was awarded a small grant to initiate quantitative monitoring of shoreline debris with a focus on outer coast beaches. OCNMS has been an active partner in development of a proposal led by The Nature Conservancy, with coastal treaty tribes and outer coast Marine Resources Committee support and partnerships, to fund derelict gear assessment and removal efforts.

In 2012, a 185-ton dock that washed out to sea during the Japanese tsunami was removed from the Olympic Coast. NOAA contracted with a local salvage company to remove the dock from the remote wilderness coast in OCNMS and Olympic National Park. The removal effort was supported by several state and federal agencies. Washington's Marine Debris Task Force provided support for the initial response in December 2012 and mitigation for non-native species growing on the dock, and the Task Force continued involvement as the primary information source via its website. The cost for the removal effort was paid for by ONMS and the Olympic National Park, with the majority of funds provided to NOAA from the government of Japan to help with cleanup of marine debris from the tsunami. The safe and successful removal involved significant collaboration, problem-solving, and rapid action. As a result of this action, NOAA staff received the NOAA Administrator's Award for outstanding interagency collaboration to

reduce the impact of the 2011 Japan tsunami marine debris on OCNMS. In addition to marine debris response, the sanctuary's education and outreach team has integrated marine debris into its education and outreach programs and engaged students and the public in personal actions to reduce marine debris.

### **OCNMS updates response protocols and drills to prepare for potential oil spills**

In 2015, OCNMS drafted an incident response plan to update existing procedures in the event of a vessel incident, spill, or marine mammal stranding. The plan is primarily a job aid for OCNMS staff during initial stages of an incident within the sanctuary and provides guidance on immediate actions that should be taken in the event of an incident. The plan defines staff functions, provides online resources, and includes regularly updated training plans. Recommendations are provided on how OCNMS staff would support responses conducted under the Northwest Area Contingency Plan, the official oil spill response plan for Washington, Oregon, and Idaho. In 2017, SeaRiver Maritime, ExxonMobil, U.S Coast Guard, Makah Tribe, Washington Department of Ecology, NOAA Office of Response and Restoration, OCNMS, and several oil spill response corporations conducted an oil spill drill focusing on the outer coast of Washington state. OCNMS participated in the environmental unit, helping to identify resources at risk and as a liaison to area governments, agencies, and communities. This was the first oil spill drill in the sanctuary since 2008.

### **Sanctuary takes both reactive and proactive actions on sanctuary incidents**

The waters off the Olympic Coast of Washington state are a national treasure, deserving of special recognition and protection. They also serve as an important marine highway, and provide a livelihood and recreation site for many that ply its waters in vessels large and small. Since OCNMS was designated in 1994, it has worked to help prevent oil spills. While there have been no large spills in this period, it is not uncommon for smaller vessels to be lost. As an example, in late 2016, OCNMS responded to two groundings within sanctuary boundaries, both of which were successfully removed from the sanctuary. On September 6, the U.S. Coast Guard (USCG) responded to a distress call from the 40-foot, wooden-hull sailboat S/V *Soteria*. USCG determined that it was not safe to tow the vessel and evacuated the three-person crew. The abandoned vessel was sighted on October 9 by the sanctuary vessel R/V *Tatoosh*. The vessel, which was grounded in the Olympic National Park wilderness, subsequently broke apart. OCNMS observed cleanup operations by Global Diving and Salvage, which was contracted to remove the debris. On December 7, the 58-foot F/V *Qualaysquallum* ran aground on the coast of the Quinault Reservation in OCNMS. 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, but remained intact. *Qualaysquallum* was hard aground at low tide and in the surf at high tide. Salvors used a helicopter to pass a towline from *Qualaysquallum* to an offshore tug and were able to tow it off the beach at high tide, prior to the arrival of a significant storm event.

The sanctuary reviewed the circumstances of these two vessels and 44 others that have sunk, grounded, or capsized over a 22-year period. The report can be downloaded at <http://sanctuaries.noaa.gov/science/conservation/olympic-coast-vessel-incident-1994-to-2016.html>. The OCNMS Advisory Council created a vessel incident working group to review the report. Representatives from marine industry, commercial fishing, resource agencies, academia,

marine salvage, and vessel response provided recommendations on actions that the sanctuary, or partner agencies, could consider to prevent future incidents. Recommendations included enhancing boater education, improving insurance coverage for vessels, and improving incident reporting and response.

### **Sanctuary investigates report of ocean dumping**

In 2013, a Makah fisherman pulled up several crushed cars in his trawl net in OCNMS. Since that time two additional Makah fishermen have reported similar occurrences in the vicinity of Cape Flattery, both within the Makah Tribe's usual and accustomed fishing area and sanctuary boundaries. In response, ONMS authorized the investigation of these reported ocean dumping incidents. A September 2015 survey utilizing side-scan sonar and an ROV was conducted to locate and document debris on the seafloor. OCNMS and the Makah Tribe observed the contracted survey, which successfully located and documented a debris field of 13 cars consistent with the initial reports. Regional news sources have reported at least three other similar cases of lost cargo from the open deck barges used in shipping of scrap metal. OCNMS reviewed vessel traffic data and identified 44 potential tug/barge transits through the sanctuary that may have been involved in this trade. NOAA is currently examining the collected information and determining a course of action.

### **Sanctuary supports annual beach cleanups**

CoastSavers organizes the popular Earth Day weekend shoreline cleanup each year in April, which covers the entire outer coast from Cape Flattery to the Columbia River. OCNMS is a founding partner of CoastSavers and contributes significantly to the group's efforts through actions that include organizing registration stations and coordinating volunteers at some of the locations. From 2011 to 2017, over 8,700 volunteers celebrated Earth Day by turning out for the annual Washington Coast Cleanup, hauling away an estimated 145 tons of plastic water bottles, household trash, lost fishing gear, and other marine debris. Many items collected, including multiple floats and buoys, were suspected to have originated from the Japanese tsunami. Sanctuary volunteers also initiated a scientific monitoring program for shoreline debris at six locations in in May and June 2012. Monitoring included specific indicators of Japan tsunami debris. Similar to monitoring programs implemented in Hawai'i, Alaska, Oregon, and British Columbia, this effort provides quantitative data for amounts and types of marine debris useful for analysis of trends and informing management responses. With technical and financial support from NOAA's Marine Debris Program starting in 2012, OCNMS coordinated citizen science volunteers in conducting monthly monitoring of shoreline debris at more than a dozen sites along the Strait of Juan de Fuca and outer Washington coast. The volunteer-collected data are entered into a national marine debris database. With assistance from OCNMS, CoastSavers was awarded a grant in 2013 from the Bank of America through Ocean Conservancy to support expansion of the International Coastal Cleanup to Washington's outer coast. As a result, OCNMS staff members have participated at CoastSavers volunteer registration stations, in outreach, and directly in beach cleanups with the International Coastal Cleanup, where over 1,700 volunteers removed more than seven tons of debris between 2013 and 2017. Additionally, between October 2013 and September 2014, OCNMS staff coordinated Washington Conservation Corps (WCC) Veterans Crews that focused on debris removal from remote areas not accessed by CoastSavers volunteers. In 11 weeks, the WCC crews hauled out over 4,000 pounds of debris for recycling and disposal.

### **Sanctuary supports University of Washington COASST (Coastal Observation and Seabird Survey Team)**

In 2012 and 2014, the Coastal Observation and Seabird Survey Team (COASST) program worked with OCNMS to host several volunteer training opportunities on the western Olympic Peninsula. COASST is a citizen science project of the University of Washington dedicated to involving volunteers in the collection of high quality data on the status of coastal beaches and seabird populations. COASST volunteers systematically count and identify bird carcasses that wash ashore along ocean beaches from northern California to Alaska. Each team of volunteers monitors an assigned beach monthly to tag and record dead seabirds and check for evidence of oil spills. Some COASST volunteers also conduct marine debris surveys.

### **UNDERSTANDING THE SANCTUARY’S CULTURAL, HISTORICAL, AND SOCIOECONOMIC SIGNIFICANCE**

#### **NOAA report highlights economic benefits of recreation in and near OCNMS**

To be better informed and to make sound management decisions, OCNMS is developing improved information about the socioeconomic values of resources in the sanctuary, as well as current and potential human uses of the sanctuary. In 2013, ONMS social scientists completed a study area profile for OCNMS based on 2010 information from U.S. Department of Commerce Census Bureau and Bureau of Economic Analysis and the U.S. Department of Labor, Bureau of Labor Statistics. This study area profile was the first step in this effort and provided a basis of analysis to establish the dependencies of local communities and economies on uses of resources in the sanctuary. The study will also support assessment of how people can adapt to or mitigate policy/management changes that may impact their use patterns. The profile is available on the ONMS website at <http://sanctuaries.noaa.gov/science/socioeconomic>.

Following the completion of the study area profile for OCNMS, NOAA spearheaded a study on the outdoor recreation activities of Washington households on the outer coast of Washington. The primary focuses were on the entire outer coast of Washington to support the state’s marine spatial planning initiative and on OCNMS to support its 2011 socioeconomics action plan. The report found that visitors to OCNMS and the immediate area boosted the region’s economy with \$102 million in spending, supporting nearly 1,200 jobs and generating \$46 million in local income for business owners and employees in 2014. The report looked at the spending patterns of recreational visitors to the sanctuary region, as well as what they did there. About 41 percent of Washington state’s 2.62 million households visited the outer coast, benefiting the economies of an eight-county area near the sanctuary, which includes Clallam, Grays Harbor, Jefferson, King, Kitsap, Mason, Pierce, and Thurston counties. Fourteen percent of these visitors participated in recreation in and near the sanctuary. The top four most popular recreational activities were visiting the beach, coastal sightseeing, wildlife watching, and hiking/biking.

A series of peer-reviewed volumes make up the full report published in 2014, “Socioeconomics of Recreation on the Outer Coast of Washington state and Olympic Coast National Marine Sanctuary.” ONMS produced the report in collaboration with NOAA’s National Centers for Coastal Ocean Science, Ecotrust/Point97, Surfrider Foundation, and Washington state.

Information was collected from recreational users through an online survey conducted between 2014 and 2015. The report is available at <http://sanctuaries.noaa.gov/science/socioeconomic/olympiccoast/recreation>.

### **Improvements are made in maritime heritage and cultural resource management**

In 2014, OCNMS staff and the ONMS maritime heritage director conducted a number of meetings with key partners to discuss maritime heritage in the sanctuary. Meetings were held with the Washington Department of Archeology and Historic Preservation, Grays Harbor Historical Seaport Authority, Olympic National Park, and the Makah Cultural and Research Center to discuss cultural resource education and management, as well as a proposal in Congress to designate a Washington Maritime National Heritage Area. Specific actions were taken to update the OCNMS maritime heritage database to improve permit review related to NOAA's obligations under the National Historic Preservation Act (NHPA) and the National Marine Sanctuaries Act. Through an extensive review, 197 records were updated and reviewed for location reliability. A new database and spatial data layers were created and provided to the Washington Department of Archeology and Historic Preservation. In 2016, OCNMS drafted a maritime heritage resources management guidance document to support the sanctuary's compliance with the NHPA. The plan details how OCNMS observes its federally-mandated responsibilities regarding maritime heritage resource management by collaborating with partner agencies and tribes. While the primary focus of the plan is OCNMS' responsibility under the NHPA, other aspects of sanctuary maritime heritage efforts are discussed. In addition to its NHPA responsibilities, OCNMS has a role in enhancing community and national understanding of the unique and rich cultures that give this area its special character. The plan advances strategies articulated in the sanctuary's 2011 maritime heritage action plan. The document also lays out the groundwork for a NHPA Section 106 programmatic agreement between OCNMS and the Washington Department of Archeology and Historic Preservation.

## **CHALLENGES AND OPPORTUNITIES**

During the reporting period, OCNMS has experienced both challenges and opportunities that have influenced management decisions on sanctuary resource allocations to implement our management plan priorities. Our most important resource is staff time and expertise. Since the management plan was drafted in 2011, sanctuary staffing has been reduced by approximately 25 percent, which has resulted in both the loss of some functional areas of expertise and the number of hours available to implement programs. To make up for shortfalls, OCNMS is continually assessing staffing and contracting needs, and reaching out to partners (both inside and outside NOAA) to look for alternative means to achieve sanctuary goals and objectives.

Related to staffing challenges is our annual appropriations. Since 2011, OCNMS has not received appropriations until well into the second quarter of the fiscal year, and sometimes as late as the third quarter, well into the major operating period for many sanctuary programs. This has been an ongoing challenge to annual planning. The overall ONMS budget has decreased since FY 2011, while fixed costs have continued to rise. This has resulted in decreasing "discretionary" funding for OCNMS programs.

OCNMS's ability to implement many action plans is dependent on access to research vessels. This has been accomplished using both the NOAA fleet and the sanctuary's own R/V *Tatoosh*. Due to agency cuts, OCNMS's access to the NOAA fleet has been limited, with no cruises from 2011 through 2015. The situation improved in 2016 and 2017 with a number of large research vessels working in OCNMS. With the lack of access to the NOAA fleet, for several years OCNMS had to depend solely on the R/V *Tatoosh* to support operations. Mid-season mechanical difficulties with the R/V *Tatoosh* from FY 2011 through FY 2016 decreased operational efficiency and reduced the number of days the vessel was available for operations. During this period, we estimate an approximate loss of 25 percent of days at sea. The R/V *Tatoosh*, which is beyond its scheduled service life, has been designated by ONMS as the number one priority for replacement, which will be dependent upon appropriations.

Limits to OCNMS staffing, budget, and days at sea are only part of the story. There have also been important opportunities and substantive improvements in sanctuary management related to collaborative efforts by sanctuary partners. Several of these are described throughout the document, including a significant effort by the Olympic Coast Intergovernmental Policy Council in creating a first draft of a habitat framework. Another significant and related milestone is the creation of the Washington State Outer Coast Seafloor Atlas, a collaborative effort by OCNMS, Washington state, and Oregon State University. Washington state's multi-year effort to draft a marine spatial plan for the Washington coast will also greatly assist sanctuary management. Significant progress in the implementation of our Ocean Literacy action plans have been possible through extensive partnerships and the use of volunteers, interns, and AmeriCorps members.



### III. Performance measures

Performance evaluation is an integral component of ONMS efforts to improve sanctuary management. Performance measures identified in the 2011 OCNMS management plan are designed to serve three purposes: 1) to better understand OCNMS' ability to meet its objectives; 2) to track OCNMS' success in addressing the issues identified in the 2011 management plan; and 3) to identify tangible examples of how OCNMS is contributing to both the performance targets developed for the ONMS and achievement of the purposes of the National Marine Sanctuaries Act.

As the 2011 management plan is implemented, OCNMS staff will monitor these performance measures over time and collect data on progress towards their achievement. One management plan strategy, OPS 10, addresses management plan implementation reporting and includes activities that call for:

- Reporting on implementation of the management plan on an annual basis, particularly on performance measure achievement
- Annual reporting on OCNMS' response to emerging issues
- Annual documentation of clarifications, enhancements, or recommended changes to existing strategies and activities

Eight outcomes and associated performance measures identified in the 2011 OCNMS management plan are listed below, and a status summary table is provided to address progress during the period from FY 2011-2017.

**OUTCOME 1:** OCNMS is recognized by its partners and constituents as an organization that effectively seeks and considers information and opinions from external sources in its management and decision making.

**Performance measure 1:** Maintain undiminished or improve ratings of OCNMS' effectiveness as evaluated by key partners and constituents through a brief annual survey (e.g., using a Web survey tool) designed to assess their involvement in sanctuary management processes and the perceived effectiveness of this involvement in sanctuary management processes over the past year. This survey should use the same survey questions each year so that results can be compared over time.

Management Plan Year	Survey activity
FY 2011 – year zero	no activity
FY 2012 – year one	survey completed
FY 2013 – year two	no activity
FY 2014 – year three	no activity
FY 2015 – year four	no activity
FY 2016 – year five	no activity
FY 2017 – year six	no activity

**OUTCOME 2:** Increased involvement of communities on the Olympic Peninsula in sanctuary management issues and ocean conservation.

**Performance measure 2:** Demonstrate an increase in 1) individual public attendance at OCNMS-hosted public meetings and events (e.g., open houses, Advisory Council meetings), and 2) volunteer hours in OCNMS-led education, stewardship, and research efforts (e.g., Discovery Center, COASST, intertidal monitoring). This measure will be evaluated on an annual basis.

Management Plan Year	Public Attendance	AC & Volunteer Hours
FY 2011 – year zero	28	17,603
FY 2012 – year one	31	20,934
FY 2013 – year two	38	18,958
FY 2014 – year three	63	22,085
FY 2015 – year four	43	22,603
FY 2016 – year five	48	21,211
FY 2017 – year six	45	20,010

**OUTCOME 3:** Increase the area of sanctuary seafloor where efforts to map, ground-truth, characterize, and/or analyze habitats have been completed.

**Performance measure 3:** Map, ground-truth, characterize, and/or analyze 300 square nautical miles of sanctuary seafloor each year.

Management Plan Year	Mapping nm <sup>2</sup>	Ground-truthing nm <sup>2</sup>	Characterization nm <sup>2</sup>
FY 2011 – year zero	130	86.4	128
FY 2012 – year one	16.1	331.5	86.4
FY 2013 – year two	3.9	5.2	162.4
FY 2014 – year three	3*	0	230.0
FY 2015 – year four	10	0	900.8
FY 2016 – year five	246.2	10	2,407
FY 2017 – year six	737	0	0

**OUTCOME 4:** OCNMS will support collaborative and coordinated management through timely sharing of data collected by OCNMS.

**Performance measure 4:** On an annual basis, track the progress made analyzing and distributing each data set that OCNMS collects. For each data set, report on 1) the date(s) the data were collected, 2) the expected annual and ultimate end product(s), 3) data sharing methods, 4) the time taken to analyze the data, 5) the time to disseminate the data, and 6) if necessary, when OCNMS anticipates completing a final analysis, report, and dissemination.

Management Plan Year	Projects Supported	Data status in year reported
FY 2011 – year zero	1 Coastal habitats 1 Deep-sea coral 1 Oceanography 3 Seafloor mapping 4 Wildlife research	Pre-FY11 datasets are not covered in this table  FY11 datasets have been disseminated except 1 Deep-sea coral

Management Plan Year	Projects Supported	Data status in year reported
FY 2012 – year one	1 Coastal habitats 2 Seafloor mapping 2 Oceanography 4 Wildlife research	1 Deep-sea coral-FY11 not yet disseminated  FY12 datasets have been disseminated, except 1 Seafloor mapping
FY 2013 – year two	2 Coastal habitats 1 Oceanography 3 Seafloor mapping 1 Wildlife research	1 Deep-sea coral-FY11 1 Seafloor mapping-FY12 not yet disseminated  FY13 processing in process
FY 2014 – year three	2 Coastal habitats 1 Oceanography 3 Seafloor mapping* 1 Wildlife research	1 Seafloor mapping–FY13 not yet disseminated  FY14 data processing is in progress. All seafloor mapping, including earlier projects, with OSU Seafloor Atlas Project
FY 2015 – year four	2 Coastal habitats 4 Oceanographic 2 Seafloor mapping 2 Wildlife research	None, all FY11-14 data have been disseminated  FY15 field data processing is in progress. Seafloor Atlas is complete and prepared for web.
FY 2016 – year five	4 Coastal habitats 1 Oceanographic 4 Seafloor mapping 1 Wildlife research	All FY15 data have been disseminated  FY16 data processing is in progress.
FY 2017 – year six	5 Coastal habitats 1 Deep-sea coral 2 Oceanography 4 Seafloor mapping	All FY16 data have been disseminated, but WA seafloor atlas was not updated  FY17 data not yet disseminated.

**OUTCOME 5:** Determine the effectiveness of sanctuary Ocean Literacy programs whose audiences include sanctuary users, students, teachers, volunteers, and partner organizations.

**Performance measure 5:** Track progress made during each year toward improving the quality of Ocean Literacy programs and their impacts on participants in improving their understanding of ocean processes and resources and enhancing their commitment to act as stewards.

Management Plan Year	Professional Development (# workshops) # teachers	K-12 (# programs) # students	Interns supported	AmeriCorps supported
FY 2011 – year zero	(3) 79	(3) 2,526	2	
FY 2012 – year one	(2) 40	(4) 2,361	1	
FY 2013 – year two	(3) 61	(5) 1,705	3	
FY 2014 – year three	(4) 55	(8) 1,400+	3	
FY 2015 – year four	(6) 97	(12) 1,900+	4	1
FY 2016 – year five	(8) 132	(14) 2,000 +	3	1
FY 2017 – year six	(8) 150	(13) 2,600+	2	1

**OUTCOME 6:** Communicate the importance of the sanctuary and its unique resources, and the unique role of NOAA and Olympic Coast National Marine Sanctuary as a marine resource manager using a wide variety of media and methods to reach broad audiences.

**Performance measure 6:** Track effort and outputs of outreach programs, using tools appropriate for the media, communication methods, and audiences.

Management Plan Year	Website visits	Facebook fans	Twitter	Olympic Coast Discovery Center visits	Outreach events
FY 2011 – year zero	194,308	356		7,015	7
FY 2012 – year one	140,175	700		7,491	7
FY 2013 – year two	181,011	1,058		5,390	7
FY 2014 – year three	234,418	2,473		5,400	11
FY 2015 – year four	292,383	6,803	301	5,479	17
FY 2016 – year five	356,099	11,358	602	6,020	18
FY 2017 – year six	358,824	12,333	907	4,971	67

**OUTCOME 7:** OCNMS is prepared for an oil or hazardous spill in or near the sanctuary.

**Performance measure 7:** On an annual basis, 1) summarize and evaluate OCNMS participation in regional response planning efforts and spill drills, and 2) confirm that all OCNMS staff have completed their assigned oil spill response training plan on an annual basis.

Management Plan Year	Regional planning	Drills	Training
FY 2011 – year zero	RRT/NWACP scoping meeting RRT technology working group	0	Completed by some, not all staff
FY 2012 – year one	NW Area Committee summit WDE contingency rule committee	0	Completed by some, not all staff
FY 2013 – year two	Comments on Ecology's Contingency Rule; NW Area Committee summit; Shoreline Cleanup Assessment Team task force; PS/BC Oil Spill Task Force summit.	0	Completed by some, not all staff
FY 2014 – year three	NW Area Committee summit; Shoreline Cleanup Assessment Team task force; Environmental Sensitivity Index mapping effort.	0	Completed for all key staff
FY 2015 – year four	NW Area Committee summit; Best Available Protection from Oil Spills workshop	0	Completed by some, not all staff
FY 2016 – year five	NW Area Committee summit	0	Completed for all staff
FY 2017 – year six	NW Area Committee summit Sea River Cape Flattery Drill	1	Completed for all staff

**OUTCOME 8:** The condition of water quality, habitat, and living resources in the sanctuary is maintained or improved.

**Performance measure 8:** Every five years, evaluate if the condition of sanctuary resources has been maintained or improved, as assessed through an OCNMS condition report.

Management Plan Year	Evaluation
FY 2011 – year zero	no activity
FY 2012 – year one	no activity
FY 2013 – year two	no activity
FY 2014 – year three	no activity
FY 2015 – year four	no activity
FY 2016 – year five	no activity
FY 2017 – year six	no activity

#### **IV: Years zero through six management plan implementation status by action plan/strategy**

Whereas the outcomes and performance measures provide assessment of progress on specific and, in some cases, quantifiable aspects of Olympic Coast National Marine Sanctuary accomplishments, many strategies identified in the management plan are not addressed by performance measures. The table below presents an assessment of progress made in years zero through six (FY 2011-2017) on OCNMS management plan strategies and activities.

##### **TABLE EXPLANATION**

**Action Plans/Strategies** – The titles and numbering scheme relate to the structure of the 2011 Olympic Coast National Marine Sanctuary Final Management Plan and Environmental Assessment.

**Priority Level MP Priorities** – To have fully implemented the original 2011 management plan would have required resources well beyond what was available at the time the plan was completed. Recognizing this, the sanctuary worked with the OCNMS Advisory Council, the Olympic Coast Intergovernmental Policy Council and ONMS leadership to develop three implementation scenarios, representing three different funding levels. Implementation ratings were assigned as “high” (H), “medium” (M), and “low” (L) to indicate expected progress. The priority levels shown below represent the level funding scenario.

**FY11-17 AOP Status** – The AOP Status columns show the annual progress for each reporting year’s Annual Operating Plan (AOP) activities. The symbols used to describe the implementation status are: Not initiated or planned (○); Initiated and less than 50 percent completed (◐); Initiated and 50 percent or greater completed (◑); or Completed (●).

In several cases an additional explanation of the meaning of these scores may be needed.

**Example 1:** In the case that an activity was not specifically mentioned in the AOP, it would be given a score of “Not initiated or planned (○)” even if work did occur. However, that work would be summarized under status.

**Example 2:** Many strategies could be considered ongoing and will never be completed. There are many examples in the Collaborative and Coordinated Management Action Plan. Many of the strategies have to do with partnerships, which will be ongoing. The status of “Completed (●)” refers to the completion of activities planned for the fiscal year and not the completion of the overall strategy, which will be ongoing.

**Effort Level** – This field represents a self-assessment by OCNMS staff of the level of effort that has gone into each reported strategy from the completion of the management plan, through FY 2017. The criteria for assessing the level of efforts included:

- The amount of staff time and/or funding that was dedicated to each strategy;
- The thoroughness of consideration of listed activities;
- The consistency in completing planned actions in each reported fiscal year;

- The level of complexity, e.g., new program development or rulemaking.

***Status*** – A brief summary of the activities that took place in the reporting period.

## Implementation by Action Plan Tables

Table Legend	
<b>Implementation Ranking:</b>	<b>Reporting Status:</b>
H – High	○ – Not initiated or planned
M – Medium	◐ – Initiated <50%
L – Low	◑ – Initiated >50%
	● – Completed

### A1. Collaborative and Coordinated Sanctuary Management Action Plan:

OCNMS has a strong capacity to engage with partners on specific projects of mutual interest and tries to engage at an early stage of planning to ensure effective collaboration. Ongoing, high-level coordination is important but sometimes challenged by competing priorities.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
CCM1 External Evaluation	L	○	●	○	○	○	●	●	L	In 2012, students from University of Michigan completed a report evaluating OCNMS's institutional relationships. As a result, OCNMS implemented changes in sanctuary AC operations. Relative priority and limited resources have prevented the development of an annual evaluation as originally envisioned.
CCM2 Coastal Treaty Tribes	H	○	○	○	◐	●	●	●	H	Collaboration and coordination with coastal treaty tribes is a core function of sanctuary operations that will always be highly prioritized. During the reporting period, OCNMS continually worked with coastal treaty tribes at the staff-to-staff level and in more formal consultation as needed. Examples include consultation on proposed regulatory changes, on a permit consultation policy with Makah Tribe, and on individual sanctuary permits and activities on reservations proposed by the sanctuary. The OCNMS superintendent participated in the development of the 2013 NOAA Tribal Consultation Handbook. OCNMS conducted staff training on government-to-government consultation and provided a training to other staff in the National Ocean Service, attended by over 40 NOAA employees.
CCM3 Olympic Coast Intergovernmental Policy Council	H	●	●	●	◐	●	◐	◐	H	The sanctuary has continued to implement the 2012 memorandum of agreement (MOA) to support the IPC to discuss and collaborate on issues of ocean governance. A five-year renewal of the MOA is currently in progress. OCNMS has supported an annual joint meeting between the IPC and the Advisory Council (AC) and presented briefings about upcoming sanctuary activities annually. A separate IPC meeting with the ONMS director was held almost every year. OCNMS supported the creation of the IPC Habitat Framework. In the latter part of the reporting period, the resources to support the IPC and number of meetings have both declined.



Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
CCM4 Washington State	H	●	●	●	●	●	●	●	H	OCNMS supported Washington state marine spatial planning through support for the development of a Washington Marine Seafloor Atlas, spatial prioritization for seafloor mapping, a non-market recreational study, and vessel traffic summaries, and provided information on sanctuary permitting and allowable uses. OCNMS also contributed to other state initiatives such as ocean acidification work with the Marine Resources Advisory Council (MRAC).
CCM5 Department of Interior	H	⊙	●	●	●	●	●	⊙	M	OCNMS used a variety of methods to stay connected to Department of Interior partners (Olympic National Park), including annual meetings, formal consultation, managers meetings, discussion of permits, and incident response. Both Olympic National Park and Washington Maritime National Wildlife Refuge Complex (USFWS) have representatives on the AC.
CCM6 US Coast Guard	H	⊙	⊙	●	⊙	●	●	⊙	M	OCNMS had an MOA with the USCG, which expired in September 2017. USCG has representatives on the AC. OCNMS met regularly with 13th CG district leadership to work on law enforcement, ATBA monitoring, and incident response.
CCM7 US Navy	H	●	●	●	●	●	●	●	H	OCNMS conducted consultation with the U.S. Navy on the Northwest Area Testing and Training Range (NWTTR) EIS under Section 304(d) of the National Marine Sanctuaries Act. The U.S. Navy has given briefings to the AC and has a representative on the AC. OCNMS collaborated extensively with the U.S. Navy on the ROV dive, archaeological survey, and public outreach related to the USS <i>Bugara</i> .
CCM8 NOAA Fisheries	M	●	⊙	●	●	●	●	●	H	OCNMS staff regularly meets with NOAA Fisheries regional leadership to discuss issues of concern and consults on activities of the fisheries science centers in OCNMS, such as the review of essential fishing habitat (EFH) and specifically the proposal to modify the Olympic 2 EFH Conservation Area. OCNMS conducted consultation under Section 304(d) of the NMSA with NOAA Fisheries on Makah whaling and the Navy NWTTR EIS.
CCM9 Office of National Marine Sanctuaries	H	●	●	●	●	●	●	●	H	This is a core function of sanctuary operations that will always be highly prioritized since OCNMS is part of a national system of marine sanctuaries. OCNMS's full participation in ONMS efforts has been consistently staffed at an appropriate level. For example, staff attended leadership meetings and strategic planning meetings and served as regional leads on a variety of topics.
CCM10 Canadian Government	L	○	○	○	○	○	●	●	L	OCNMS continued to discuss the "Big Eddy" as a transboundary issue with the Canadian government, although efforts have declined in recent years. OCNMS worked with the Council on Environmental Cooperation on the topic of climate change with Canadian marine protected areas counterparts and trained staff on doing a rapid vulnerability assessment for marine protected areas.

## A2. Community Involvement in Sanctuary Management Action Plan

OCNMS looks to its Advisory Council as its primary avenue of engagement for Olympic Peninsula communities. For that reason, OCNMS has consistently prioritized engaging the AC. Other groups are engaged on a project-by-project basis when opportunities arise.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
COM1 Advisory Council	H	●	●	●	●	●	●	●	H	Supporting the AC is a core function of sanctuary operations that will always be highly prioritized, and OCNMS continuously focused effort on maintaining and coordinating with the AC. Seats were filled as quickly as possible and OCNMS held six AC meetings each year. During the reporting period, OCNMS supported 12 working groups and subcommittees to solicit input on significant issues.
COM2 Marine Resource Committees	M	●	●	●	●	●	●	●	M	OCNMS monitors the work of the North Pacific Coast Marine Resource Committee (MRC) and Grays Harbor MRC, often participating in meetings. OCNMS collaborated with the MRCs on projects including development of grant proposals and educational material. More recently, staff have been more selective by engaging in meetings with topics of relevance to OCNMS.
COM3 Non-government Organizations	H	●	●	●	○	●	●	●	M	OCNMS is actively engaged with non-government organizations, such as Coastal Observation and Seabird Survey Team (COASST), Washington Coast Savers (formerly Washington Clean Coast Alliance), Surfrider, The Nature Conservancy, Ecotrust, the National Marine Sanctuary Foundation, and the Feiro Marine Life Center. The OCNMS superintendent is on the board of COASST.

### A3. Sanctuary Operations Action Plan

This is a core function of sanctuary operations that will always be prioritized. OCNMS has continued to maintain basic staffing, infrastructure, and administrative functions.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
OPS1 Vessel Infrastructure and Operations	H	●	●	●	●	●	●	●	H	Maintaining vessel infrastructure and operations is a core OCNMS function. Annual operational plans for vessels were developed to support management plan priorities and identify requisite resources for vessel support. OCNMS performed annual preventative maintenance to ensure vessels remain operational and in compliance. However, the R/V <i>Tatoosh</i> is in need of replacement, which is currently an operational challenge for OCNMS. OCNMS recently finalized requirements and operational specifications for a new vessel and ensured vessel replacement is first priority for ONMS Small Boats Program.
OPS2 Facilities	H	●	●	●	●	●	●	●	H	OCNMS completed a five-year facility strategy and secured new long-term lease for office space. OCNMS has been exploring the feasibility of developing a joint marine discovery center for the Port Angeles waterfront, looking at various locations and potential partnerships (e.g., Feiro Marine Life Center, City of Port Angeles, Port Angeles Waterfront Center, National Marine Sanctuary Foundation).
OPS3 Annual Planning	H	●	●	●	●	●	●	●	H	Annual budgets were prepared and executed to ensure efficient obligation of funds in support of identified management plan priorities. This is a core function of sanctuary operations that will always be highly prioritized.
OPS4 Safe Operations	H	●	●	●	●	●	●	●	H	OCNMS annually maintained and tested the continuity of operations plan. OCNMS developed and implemented interim environmental compliance protocols for standard vessel operations. ONMS maintained compliance with NOAA Safety and Environmental Compliance Office inspections. Safety is a core function of sanctuary operations that will always be highly prioritized.
OPS5 Staffing	H	●	●	●	●	●	●	●	H	OCNMS identified vacancies for full-time employees and has been able to establish contracts for support services that cannot be filled by federal positions. However, since 2011, six federal staff have retired or resigned, and only two federal employees have been hired. Current staffing is below what was envisioned as the status quo when developing the management plan.
OPS6 Volunteer Program	M	●	●	●	●	●	●	●	H	Since 2011, OCNMS has been supported by an average of over 20,000 volunteer hours per year. OCNMS staff annually train volunteers for the Olympic Coast Discovery Center. Recently, OCNMS volunteer hours have declined due to the completion of the marine debris monitoring project and changes with how OCNMS engages with COASST.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
OPS7 Permitting and Consultation	H	●	●	●	●	●	●	●	H	This is a core function of sanctuary operations that will always be highly prioritized. The processing of permits is a legal requirement and OCNMS has processed and estimated 76 permits since 2011. Improvements have been made in consulting on permits with coastal treaty tribes and the Washington State Historic Preservation Officer. Consultations under section 304(d) of the National Marine Sanctuary Act have increased in frequency in reporting period, resulting in enhanced opportunities to engage with other agencies to further sanctuary resource protection.
OPS8 Voluntary Compliance	M	○	◎	●	○	○	●	○	H	OCNMS updated information to inform pilots on recent changes to sanctuary regulations and the agreement of the Federal Aviation Administration to publish NOAA regulations on the aeronautical charts. A new overflight poster was posted on an updated OCNMS overflight webpage and mailed to approximately 150 Washington state airports. OCNMS conducted outreach to the cruise ship industry following changes to discharge regulations related to their operation. The OCNMS area to be avoided (ATBA) flyer was updated to document changes in Canadian Coast Guard management. ATBA flyers are directly mailed to non-compliant vessels. During the reporting period, 137 outreach letters and flyers were mailed. The estimated compliance rate with ATBA recommendations has consistently been around 97 percent.
OPS9 Enforcement	L	◎	◎	●	●	●	●	●	M	OCNMS completed changes to sanctuary regulations identified in the management plan in 2011. OCNMS conducted bi-annual meetings with the law enforcement technical advisory committee including the NOAA Office of Law Enforcement (OLE), U.S. Coast Guard, and Washington Department of Fish and Wildlife. OCNMS provided training material to the U.S. Coast Guard Pacific Regional Fisheries Training Center to promote their understanding of sanctuary regulations. OCNMS worked with NOAA OLE on sanctuary violations, including seven vessels lost, but not salvaged, in the sanctuary since 2011. OCNMS conducted a review of 46 vessel incidents that have sunk, grounded, or capsized over a 22-year period from 1994 to 2016 to assist the sanctuary in identifying ways to reduce future losses. The AC created a vessel incident working group to review the report and provide recommendations to reduce future incidents.
OPS10 Implementation Reporting	H	○	●	●	●	●	●	●	H	OCNMS drafted annual management plan implementation reports, which were presented to the AC and IPC.

Table Legend	
<b>Implementation Ranking:</b>	<b>Reporting Status:</b>
H – High	○ – Not initiated or planned
M – Medium	◎ – Initiated <50%
L – Low	● – Initiated >50%
	● – Completed

## B1. Habitat Mapping and Classification Action Plan

Habitat mapping is one of the highest research priorities for OCNMS and, as such, significant progress has been made during the reporting period. OCNMS put a lot of effort into building internal mapping capacity, which resulted in critical mapping products. However, that level of effort has been challenging to maintain. OCNMS has been successful recently in getting time on NOAA ships and other vessels of opportunity for collecting data in deeper waters.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
MAP1 Regional Coordination	H	○	○	⊙	○	●	●	●	H	OCNMS helped organize the May 2015 Washington state mapping prioritization effort bringing together 18 other agencies, which resulted in the development of priority mapping areas for the Washington coast. Subsequently, OCNMS closely coordinated with NOAA's Integrated Ocean and Coastal Mapping Program to map the offshore priority areas identified at the May 2015 workshop.
MAP2 Seafloor Habitat Mapping	H	●	●	●	⊙	●	●	●	H	Significant progress has been made to map offshore priority areas, with 10 surveys being conducted in the reporting period. Less progress has been made for nearshore mapping, which is complicated by navigation and sea state challenges.
MAP3 Habitat Classification	H	●	●	●	○	●	●	●	H	OCNMS characterized 3,914.6 square nautical miles of seafloor. OCNMS did ground-truthing onboard the R/V Tatoosh on 433.1 square nautical miles. OCNMS applied NOAA's Coastal and Marine Ecological Classification Structure (CMECS) to existing data to support the habitat framework project, a joint effort with the IPC.
MAP4 Mapping Products	H	●	●	●	○	●	●	●	H	A seafloor atlas of the entire sanctuary was produced with data from 2000-2013, under contract with Oregon State University's Active Tectonics and Seafloor Mapping Lab. The atlas includes layers of seafloor habitat, backscatter, and ground-truthing. OCNMS contributed to the IPC habitat framework published online in 2017.

## B2. Physical and Chemical Oceanography Action Plan

Maintaining an oceanographic monitoring program is essential to understanding overall water quality in the sanctuary and measuring ocean conditions that are changing beyond natural variability. Significant OCNMS resources are allocated to physical and chemical oceanographic monitoring to leverage the expertise of outside researchers.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
OCEO1 Coastal Mooring Program	H	⊙	●	●	●	●	●	●	H	OCNMS deploys a seasonal 10-buoy oceanographic mooring network to monitor key physical and chemical oceanographic parameters in coastal waters every year. Data were successfully disseminated to the research community and made available on the OCNMS website. This constitutes the longest-term data set for oceanographic monitoring on Washington's outer coast. OCNMS is augmenting mooring data by implementing whole water samples and collection of surface organisms using bongo nets. OCNMS also provides operational support for important regional ocean observing systems including NANOOS.
OCEO2 Hypoxia	M	⊙	●	●	○	●	●	●	M	Hypoxia is one of the phenomena monitored by the OCNMS oceanographic mooring program. As a result of this program, OCNMS provides notification to the Washington-Oregon Hypoxia Network and tribal partners on low oxygen levels.
OCEO3 Ocean Acidification	H	⊙	●	●	○	●	●	●	H	Ocean acidification was identified as a priority topic for the West Coast OCNMS. OCNMS oceanographic mooring data was provided to PMEL to support development of an ocean acidification algorithm, which is a way to describe the carbon chemistry based on collected proxy values. OCNMS initiated new work on OA in collaboration with NOAA's Ocean Acidification Program, including biological sampling, benthic push cores, genetic and genomic analysis, and whole water sampling. OCNMS collaborated with ocean acidification researchers working in the sanctuary.
OCEO4 Harmful Algal Blooms	M	⊙	●	●	○	●	●	●	M	OCNMS participated in the Olympic Region Harmful Algal Bloom partnership since 2011. OCNMS supported the Quileute Natural Resources sampling program at OCNMS mooring locations, and other harmful algal bloom research programs, such as the Environmental Sample Processor.

### B3. Populations, Communities, and Ecosystems Action Plan

Collaboration with other agencies, tribes, and researchers has improved OCNMS' understanding of changes in the sanctuary's ecosystems, with emphasis on deep-sea corals, intertidal rocky sites, and, more recently, sea otter population studies.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
ECO1 Water Column Communities	L	○	○	○	○	○	●	●	L	As a low priority, OCNMS did not focus significantly on water column communities early in the reporting period. However, since this topic relates to the Olympic Coast Ocean Acidification Sentinel Site, there is a need to better understand water column communities. Recently, OCNMS started sampling plankton communities and plans to continue to make progress in this area.
ECO2 Intertidal	M	●	●	●	●	⊙	●	●	M	Until 2015, OCNMS monitored intertidal rocky and sand sites. Since then, OCNMS has shifted to only sampling intertidal rocky sites, with the sand sites being monitored by another entity. These efforts are part of the Multi-Agency Rocky Intertidal Network (MARINE) monitoring network for the entire West Coast. OCNMS also supported the efforts of tribes and others to monitor intertidal resources along the Olympic Coast.
ECO3 Subtidal	L	○	○	○	○	●	●	●	M	OCNMS initiated a subtidal monitoring project in collaboration with NWFSC in order to look at nearshore community changes over time in response to sea otter reintroduction. OCNMS uses Partnership for Interdisciplinary Study of the Coastal Ocean (PISCO) protocols to provide context to monitoring data collected in the nearshore environment of OCNMS.
ECO4 Benthic	M	●	●	⊙	⊙	⊙	⊙	●	H	OCNMS worked with the NOAA Deep Sea Coral Research and Technology Program and the National Center for Coastal Ocean Science Deep-Sea Coral Ecology Laboratory to archive the video and analysis from several years of deep-sea coral and sponge surveys. OCNMS completed the report, "Seafloor Impacts and Management Implications of Submarine Telecommunications Cables in OCNMS," which will be published as an ONMS conservation series report. This report includes a review of Pacific Crossing fiber optic cables installed in OCNMS in 1999 and 2000. As part of the 2017 E/V Nautilus expedition, scientists conducted 16 ROV dives in OCNMS, concentrating efforts on high-slope rocky substrates likely to support long-lived species such as corals, sponges, and rockfish. During the expedition, scientists utilized an AUV for 12 quantitative surveys of low-slope habitat dominated by sand and mud substrates.
ECO5 Fish	L	○	○	⊙	○	○	○	○	L	While limited activities were planned for this strategy, OCNMS supported academic efforts to study rocky habitat use by fish (e.g., Ph.D. dissertation and Dr. Nancy Foster Scholar research). In 2013, OCNMS and the Washington Department of Fish and Wildlife (WDFW) jointly responded to a request for proposals from the PFMC as part of its review of Pacific groundfish essential fish habitat with a report containing options to increase protection of sensitive biogenic and rocky reef habitats both within and adjacent to the existing Olympic 2 Conservation Area. Though the report was subsequently recalled, it represented a significant effort and accomplishment on the part of OCNMS staff.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
ECO6 Marine Birds	M	●	●	◉	●	◉	◉	◉	L	Summer pelagic seabird at-sea surveys have been conducted intermittently as weather and vessel availability permit. In addition, OCNMS supports COASST volunteers documenting dead birds on the coastline. OCNMS collaborated with National Centers for Coastal Ocean Science (NCCOS) on predictive mapping of seabirds and marine mammals.
ECO7 Marine Mammals	M	●	●	◉	○	●	●	●	M	OCNMS staff supported a Dr. Nancy Foster Scholar researching population dynamics of Washington sea otters and participated in annual sea otter surveys with WDFW. OCNMS collaborated with NCCOS on predictive mapping of seabirds and marine mammals. OCNMS assisted with acoustic research (e.g., High-frequency Acoustic Recording Packages (HARPs), NOAA Ocean Noise Reference Station Network) and completed inventory of acoustically active species in OCNMS in 2017. OCNMS staff participated in the ONMS ocean noise working group and represented ONMS at a meeting of marine mammal researchers funded by the U.S. Navy.
ECO8 Stranding Network	L	●	●	●	○	●	●	●	L	OCNMS coordinated with the Northwest Marine Mammal Stranding Network on incidents that occurred in OCNMS.
ECO9 Ecosystem Processes	M	◉	◉	○	◉	●	◉	○	L	OCNMS followed Washington state efforts on identifying ecosystem indicator species and how they may be applied to future OCNMS condition reports.

#### B4. Data Management, Sharing, and Reporting Action Plan

OCNMS made significant improvements in data sharing to improve the awareness and accessibility of information related to sanctuary resources and ecological health.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
DATA1 Data Quality Control and Management	H	●	◉	●	●	●	●	●	M	Field reports were produced annually and shared with the AC. These reports included research and monitoring activities from mooring, habitat mapping, and other research areas.



Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
DATA2 Data Distribution	H	⊙	⊙	●	●	●	●	●	M	Summaries of projects and data (where available) were provided through the OCNMS website through 2016 in response to recommendations received from the AC data management working group. 2017 data is being reviewed.
DATA3 Adaptive Management	L	○	○	○	○	⊙	○	○	L	Due to its low priority, OCNMS has not focused specific activities on this topic. However, OCNMS has been able to adapt and collaborate in addressing some emerging issues, such as ocean acidification and climatic anomalies.
DATA4 Condition Report	M	○	○	○	○	●	⊙	⊙	L	OCNMS is in the planning stages for its next condition report, which will include innovations such as the inclusion of an ecosystem services section. OCNMS staff have tracked progress on the Washington state list of indicator species and ecological indicators in preparation for the next condition report.

Table Legend	
<b>Implementation Ranking:</b>	<b>Reporting Status:</b>
H – High	○ – Not initiated or planned
M – Medium	⊙ – Initiated <50%
L – Low	● – Initiated >50%
	● – Completed

## C1. K-12 Education Action Plan

By working with partners, OCNMS is able to leverage resources to achieve significant impacts in place-based and remote-access K-12 education.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
ED1 K-12 Partnerships	H	●	●	●	●	●	●	●	H	Education is one of the top priorities for OCNMS. OCNMS worked with regional education organizations, including West Coast region NOAA and B-WET partners, to leverage resources for K-12 ocean literacy programs. For example, OCNMS began administering the Pacific Northwest portion of the B-WET program in 2009 in partnership with the NOAA Office of Education, providing \$2,132,874 in funding to regional partners in Washington and Oregon and reaching approximately 36,000 students and 1,500 teachers in this reporting period (2011-2017). B-WET grants incorporate NOAA resources (staff, curricula, facilities, marine protected areas, etc.). OCNMS also provided Ocean Literacy and STEM professional development opportunities and resources to 613 formal and informal educators.
ED2 Place-Based Education	M	●	●	●	●	●	●	●	H	OCNMS worked collaboratively with rural schools and tribal communities within the region to develop place-based educational opportunities for K-12 students including Ocean Science, Ecosystem Pen Pals, NOW Science, and ROV programs, supporting 13,823 students since 2011. Programs such as Ocean Science Trash-Free Seas have spearheaded citizen science and stewardship activities for K-12 students. OCNMS also developed and supported summer youth programs reaching 669 students in Port Angeles and coastal tribal communities.
ED3 Regional Initiatives	L	●	●	●	○	●	●	●	L	OCNMS participated actively in relevant regional education organizations and initiatives, such as B-WET, Ocean Guardian, Pacific Education Institute, NANOOS, Northwest Aquatic and Marine Educators, Northwest Indian College, National Environmental Education Foundation, 21st Century Community Learning Center, Every Kid in A Park, and Washington E3.
ED4 Using Technology	L	●	●	●	●	○	●	●	M	OCNMS launched a new website in 2012 and continues to enhance the OCNMS Ocean Literacy website. OCNMS provided webinars and telepresence for events such as the Indigenous Youth Summit on Climate Change and Ocean Change, Earth Echo International webinar, and Nautilus ship-to-shore outreach.

## C2. Higher Education Action Plan

OCNMS has provided career-building opportunities for students such as AmeriCorps members, Dr. Nancy Foster and Hollings scholars, and students at local and regional colleges and universities.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
HED1 Internship Development	L	○	●	●	●	●	●	●	H	OCNMS formalized an internship coordination process to develop and support sanctuary internships, such as the NOAA Hollings and Dr. Nancy Foster scholarship programs as well as informal internship opportunities through Peninsula College. Since 2011, OCNMS supported 18 internships.
HED2 Volunteer Positions	L	●	●	◐	●	●	●	●	H	OCNMS developed necessary agreements and recruited and mentored three AmeriCorps service corps members since 2014. The value of AmeriCorps service corps member efforts is equivalent to \$40,488 per 10.5-months internship. OCNMS also supported Student Conservation Association volunteers doing marine debris removal work in Olympic National Park from 2014 to 2015.
HED3 College Partnerships	L	●	●	◐	○	●	●	●	L	OCNMS worked with local colleges to develop joint education programs (e.g., GIS course with Northeastern University; on-the-water learning experience for Peninsula College oceanography students), speaker series, and guest lectures opportunities (e.g., with Western Washington University's Huxley College of the Environment and the University of Washington School of Marine and Environmental Affairs). OCNMS also participated in career fairs, with the University of Washington School of the Environment's fair reaching 300-500 students annually.

### C3. Visitor Services Action Plan

In the reporting period, OCNMS improved awareness of OCNMS and increased visitor awareness of ocean issues through regional partnerships, website, social media, "voluntourism", visitor services, and telepresence.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
VISIT1 Visitor Experience	L	●	●	●	●	●	●	●	M	OCNMS operates the Olympic Coast Discovery Center in Port Angeles to educate visitors and school groups, reaching approximately 6,000 people annually. OCNMS participated in the Olympic Peninsula Tourism Commission to highlight the sanctuary as a tourism destination and hosted events such the annual "Get Into Your Sanctuary" celebration. Based on recommendations from the AC, OCNMS developed "voluntourism" opportunities focusing on the annual coastal clean-up. OCNMS supported interpretive programs with Makah Tribe and Olympic National Park.
VISIT2 Long-Range Interpretive Plan	M	⊙	⊙	●	●	⊙	●	●	M	OCNMS developed a site long-range interpretive plan to contribute to the ONMS West Coast Long-Range Interpretive Plan. The plan has provided key messaging and strategies for developing partnerships and tools for interpretive outreach specific to facilities, kiosks, and signs. OCNMS developed four Whale Trail signs, a 3D map in Clallam Bay Visitor Center, three electronic kiosks (Forks Visitor Center, Kalaloch Lodge, and Pacific Science Center), and a walk-inside humpback whale (Big Mama). OCNMS provided content and support in development of an OCNMS exhibit at the New England Aquarium. In partnership with Feiro Marine Life Center, the Port Angeles Waterfront Center and the National Marine Sanctuary Foundation, OCNMS began planning for a new marine discovery center in Port Angeles.
VISIT3 New Technology	L	●	●	●	●	●	●	●	L	In 2012, OCNMS launched a new website, with 1,757,218 hits since 2011. The website is currently being updated to meet ONMS best practices format. OCNMS created Facebook and Twitter accounts, with a following of 35,000 and 1,800, respectively. OCNMS provided content to Google Ocean, YouTube, TripAdvisor, Yelp, and Earth Echo International. OCNMS supported ship-to-shore technology utilized for outreach during the E/V <i>Nautilus</i> mission, reaching over 500,000 people in 2017.

#### C4. Community Outreach Action Plan

OCNMS continues to engage local communities through on-the-ground marine conservation efforts such as community events, citizen science and stewardship programs, and other community-based efforts.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
OUT1 Stewardship and Citizen Science	L	●	●	●	●	●	●	◎	M	OCNMS supported COASST and, while transitioning away from directly managing volunteers in 2016, has continued to provide expertise to the organization by serving on its advisory board. OCNMS continued to be an active partner and leader in the Washington Clean Coast Alliance, supporting Washington coast clean-up events around Earth Day (April), the International Coastal Clean-Up (September), and year-long outreach efforts. From 2012 to 2017, OCNMS supported a five-year marine debris citizen science program to document debris from the 2011 Japanese tsunami.
OUT2 Staff Presence on Outer Coast	L	○	○	○	○	○	○	○	L	OCNMS evaluated the need for staff presence on the outer coast in the 2012 Facilities Plan. While no action to secure a facility has been taken to date, alternatives such as installing interpretive kiosks for visitors at the Forks Visitor Center and at Kalaloch Lodge have been implemented.
OUT3 Community Events	M	●	●	●	●	●	●	●	M	OCNMS has developed a prioritized list of key community events and festivals throughout the region to support with staff presence, participating in over 130 events since 2011. Recently, the number of annual events with OCNMS presence has increased due to the additional support from Americorps Washington Service Corps members.
OUT4 Community-Based Efforts	L	●	●	●	●	●	●	●	L	OCNMS supported projects for coastal marine resource committees, including a Discover Olympic Coast video and curriculum, the Ocean and River Festival, and Vision 2020 outreach event (Grays Harbor).

Table Legend	
<b>Implementation Ranking:</b>	<b>Reporting Status:</b>
H – High	○ – Not initiated or planned
M – Medium	◎ – Initiated <50%
L – Low	● – Initiated >50%
	● – Completed

## D1. Spills Prevention, Preparedness, Response, and Restoration Action Plan

While the risk of a catastrophic oil spill continues to be one of the largest threat to sanctuary resources, maintaining proper staffing and readiness is a continuing challenge for sanctuary management. While OCNMS continually works to maintain an adequate capability with available resources, we are dependent on partners with dedicated oil spill response staff such as the U.S. Coast Guard and Washington Department of Ecology. Critical oil spill prevention mechanisms, including IMO-designated area to be avoided (ATBA) and a Neah Bay emergency rescue towing vessel, are ongoing.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
SPILL1 ATBA Management, Compliance, and Monitoring	H	●	●	●	●	●	●	●	H	As required by Congress, an OCNMS-USCG proposal to the IMO expanding ATBA applicability for vessels 1,600 gross tons down to 400 gross tons was approved and implemented in 2012. Despite losing access to Canadian Coast Guard data in 2012, by changing data sources, OCNMS was able to maintain vessel monitoring, ATBA compliance, and outreach activities. 137 outreach letters were co-signed by the USCG Captain of the Port and OCNMS superintendent have been sent to non-compliant vessels during the reporting period. ATBA estimated compliance rates have consistently been over 97 percent. OCNMS is in the process of working with NOAA Fisheries Protected Resources Division on a more efficient process for vessel monitoring.
SPILL2 Regional Vessel Management Forums	L	○	○	○	○	●	○	○	L	OCNMS participates in regional vessel management and oil spill prevention forums, such as the Salish Sea Vessel Oil Spill Risk Assessment and Management Workshop. OCNMS provided comments on the 2014 Marine & Rail Oil Transportation Study, and provided updates on the study to the North Pacific Marine Resources Committee and the AC.
SPILL3 Regional Planning and Training Exercises	H	●	●	◎	◎	●	◎	●	M	OCNMS participates in Northwest Area Committee meetings and working groups and periodically reviews the Northwest Area Contingency Plan to make sure sanctuary concerns are included. OCNMS provided sanctuary data to assist in updating environmental sensitivity index maps and the Pacific Northwest Environmental Response Management Application (ERMA) online mapping tool. OCNMS participated in the 2017 Cape Flattery SeaRiver Maritime oil spill drill, including associated Shoreline Cleanup and Assessment Training (SCAT). OCNMS conducts appropriate annual training for staff.
SPILL4 Outer Coast Trustees Working Group	M	●	○	○	○	○	○	○	L	Under existing staffing levels, the creation of an outer coast trustees group has not been prioritized. Instead, OCNMS involvement has primarily been with the Northwest Area Committee.
SPILL5 OCNMS Organizational Response Plan	H	◎	◎	◎	◎	●	●	●	M	OCNMS has created and annually updates an OCNMS incident response plan, including training requirements and staff roles. Plans for an OCNMS-specific database have been superseded by the development of Pacific Northwest ERMA and OCNMS staff have ensured that critical new data is incorporated into ERMA.
SPILL6 Damage Survey and Assessment Protocols	H	○	○	○	○	○	●	●	L	OCNMS has not made progress on the natural resource damage assessment (NRDA) response plan due to competing priorities. However, OCNMS completed a number of damage assessment reports on vessels abandoned in the sanctuary and on a significant marine dumping incident.

## D2. Climate Change Action Plan

While this action plan was not rated as a high priority in 2011 and it remains a challenge to address a global issue on a regional scale, OCNMS has put significant effort into implementing climate change strategies because of increasing knowledge about the issue and opportunities with recent regional initiatives.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
CLIM1 Climate Smart Sanctuary Program	L	●	⊙	●	●	●	●	○	H	OCNMS made significant progress in achieving ONMS recognition as a Climate Smart Sanctuary, as recommended by the AC climate change working group. Most significantly, OCNMS drafted a climate change site scenario titled: "Climate Change and the Olympic Coast National Marine Sanctuary: Interpreting Potential Futures." An audit and calculation of OCNMS' carbon footprint was completed. OCNMS staff completed the Climate Academy training from the National Conservation Training Center. The current Climate Smart Sanctuary certification process is in review across the National Marine Sanctuary System, and further work is on hold.
CLIM2 Sanctuary as Sentinel Site	M	○	○	⊙	⊙	●	●	●	H	OCNMS made significant progress in designating the sanctuary as a sentinel site for ocean acidification, as recommended by the AC climate change working group. OCNMS worked with the NOAA OA Program to host a regional workshop focused on the concept of ocean acidification sentinel sites. As a result, participants self-declared the Olympic Coast as a sentinel site for OA. More recently, OCNMS collaborated on a successful regional vulnerability assessment proposal submission to the NOAA OA Program and OCNMS staff participated in the weeklong 2017 OA Program review. OCNMS continues to seek formal designation as a sentinel site through ONMS.
CLIM3 Resilient Ecosystems	L	○	○	○	○	○	●	●	M	OCNMS participated in the Ocean Climate Summit in San Francisco and in the Commission on Environmental Cooperation's West Coast Marine Protected Area and Climate workshop. As a result of participation, the Council for Environmental Cooperation (CEC) has offered to fully support a pilot rapid vulnerability assessment in the Pacific Northwest. OCNMS staff participated in a two-day climate change rapid vulnerability assessment workshop sponsored by the CEC in December 2016. Staff also attended summary workshop on outcomes of assessments in Santa Barbara in March 2017 and have continued networking with partners made during the workshops.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
CLIM4 Communicating Climate Change	L	○	○	●	●	●	●	●	H	OCNMS has been a catalyst in leading efforts on communicating climate change, primarily ocean acidification, during the reporting period through public presentations, teacher professional development workshops, K-12 classroom and field activities, and public events. OCNMS started focusing its educational efforts on ocean acidification in 2009. Pacific Northwest B-WET has identified ocean acidification as a priority area since 2014. OCNMS also worked closely with tribal communities on topics pertaining to climate change, including First Stewards, Ecosystem Pen Pals (including co-hosting the Indigenous Youth Summit on Climate Change and Ocean Change), and <i>Nautilus</i> outreach. Data collected by OCNMS on climate change and reports on its effects on sanctuary resources have been made available to the public.

### D3. Marine Debris Action Plan

OCNMS has focused effort on the response to the arrival of marine debris from the Japanese tsunami of 2011, with significant success such as the removal of a 185-ton dock from a remote wilderness beach.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
MD1 Submerged or Floating Debris	H	○	●	●	○	●	●	●	H	OCNMS has supported a number of derelict fishing gear and crab pots removal programs, including those programs established by the Makah Tribe, Quileute Tribe and Quinault Indian Nation. OCNMS assisted in developing an invasive species response plan for Japanese tsunami debris and collaborated in the removal of a dock originating from Misawa, Japan, from the Olympic National Park wilderness. OCNMS successfully conducted a deep-water side-scan and ROV survey to investigate reported marine debris in the Juan de Fuca Canyon.
MD2 Beach Debris	H	●	●	●	●	●	●	●	H	OCNMS collaborated with CoastSavers in the planning of regional coastal clean-up activities, including updating site plans for coordination of activities. Each year, OCNMS has staffed registration stations for two major annual beach clean-up events. With funding from NOAA's Marine Debris Program, OCNMS led a five-year study to document marine debris including debris from the 2011 Japanese tsunami event.



#### D4. Wildlife Disturbance Action Plan

OCNMS efforts to minimize disturbance to wildlife have largely focused on targeted outreach on sanctuary overflight regulations and interagency consultation with NOAA Fisheries.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
WD1 Outreach on Wildlife Disturbance	L	○	○	●	○	○	○	○	L	While limited work has occurred under this strategy, OCNMS made improvement in outreach materials related to changes in overflight regulations.
WD2 Overflight Restriction Zone	L	●	●	●	○	○	●	●	M	OCNMS supported ONMS efforts to modify overflight regulations in West Coast sanctuaries and have them posted on FAA aeronautical charts. To communicate these changes, overflight outreach materials were developed and distributed. OCNMS consulted with the Washington Department of Transportation Aviation Division and Washington State Parks and Recreation about the Washington State Copalis Airport. OCNMS continually trains Olympic National Park rangers on overflight regulation violations in OCNMS. OCNMS staff participated in ONMS discussions on the impact of small unmanned aircraft systems (UAS)/ to wildlife and possible management recommendations.
WD3 Marine Mammal Disturbance	M	○	○	○	○	○	●	○	M	While limited activity has been done on this strategy, required federal consultation under Section 304(d) of the National Marine Sanctuaries Act with the US Navy and NOAA Fisheries Office of Protected Resources (OPR) focused on marine mammal disturbance from U.S. Navy testing and training activities. National Marine Sanctuaries Act 304(d) consultation with OPR on Makah whaling focused on disturbance of seabird colonies and pinnipeds haul-outs from whaling activity.

### D5. Water Quality Action Plan

OCNMS efforts to improve and maintain high water quality to ensure protection of natural resources have largely focused on reducing discharges from vessels.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
WQP1 Vessel Discharges	H	●	●	●	◎	○	●	●	H	OCNMS revised sanctuary regulations to prohibit cruise ship discharges in 2011. OCNMS worked with the Washington Department of Ecology on informing the cruise ship industry and enforcing the new regulation. In addition, OCNMS informally consulted with managers of marinas adjacent to the sanctuary on sewage pumpout stations for smaller vessels; however, no new pumpout stations are planned at this time. OCNMS conducted required federal consultation under Section 304(d) of the National Marine Sanctuaries Act with EPA on proposed general permit for offshore seafood processing, focusing on water quality concerns related to hypoxia and harmful algal blooms.
WQP2 Contaminants	L	○	●	○	○	○	○	○	L	Early in the reporting period, OCNMS assisted with the Mussel Watch Program. The program was discontinued in 2015.

### D6. Habitat Protection Action Plan

OCNMS made significant progress on this action plan, with direct threat assessments, new habitat characterization, and reduction of invasive species threats from marine debris from the Japanese tsunami of 2011.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
HP1 Threat Assessment and Mitigation	M	○	○	○	○	◎	◎	●	M	OCNMS and NCCOS produced the report, "Seafloor Impacts and Management Implications of Submarine Telecommunications Cables in OCNMS," which will be published as an ONMS conservation series report. The report included a review of Pacific Crossing fiber optic cables installed in OCNMS in 1999 and 2000. Since 2013, OCNMS staff has worked on a significant marine dumping event in the sanctuary. OCNMS has supported a number of derelict fishing gear and crab pots removal programs, including programs with the Makah Tribe and Quinault Indian Nation.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
HP2 Habitats of Special Importance	H	⊙	⊙	●	●	●	●	●	H	In 2013, OCNMS and the Washington Department of Fish and Wildlife jointly submitted a report of options to increase protection of essential fish habitat both within and adjacent to the existing Olympic 2 Essential Fish Habitat Conservation Area to the Pacific Fishery Management Council. After subsequent discussions with tribal representatives and the IPC, the proposal was withdrawn to focus on a more comprehensive approach on habitats. As part of the new approach, OCNMS worked with the IPC to establish criteria for identifying important habitat types and their location and priorities for management. The habitat framework was completed in 2017, and represents the most extensive application of NOAA's Coastal and Marine Ecological Classification Standard (CMECS) to date. In addition, OCNMS participated in a regional effort to consult with NOAA Fisheries under Section 304(d) of the National Marine Sanctuaries Act to assess threats to resources from population assessment surveys.
HP3 Invasive Species	M	○	○	○	○	●	⊙	○	H	OCNMS contributed to an interagency effort to remove a dock originating from Misawa, Japan, from the remote Washington shoreline. It was removed from the shoreline due to the high risk of introduction of invasive species, nearly 300 of which were found on debris from the Japanese tsunami. OCNMS communicated threats of invasive species to the public through citizen science volunteers and other partners.

### D7. Regional Ocean Planning Action Plan

OCNMS was an active participant in regional ocean planning processes, improving sanctuary management by integrating efforts in a regional context.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
MSP1 Marine Spatial Planning	L	●	●	●	●	●	●	●	H	OCNMS committed to substantially support the state's efforts to develop a comprehensive marine spatial plan and successfully encouraged the state to include the entire sanctuary, including federal waters, in the scope of the effort. OCNMS helped plan and participated in the Washington state seafloor mapping prioritization process, the development of the Washington seafloor atlas, socioeconomic studies, and coastal vessel traffic characterization. OCNMS also contributed to the identification of indicator species and reviewed OCNMS-related sections in the draft Washington marine spatial plan, which was released in 2017 for public comment.

Table Legend	
<b>Implementation Ranking:</b>	<b>Reporting Status:</b>
H – High	○ – Not initiated or planned
M – Medium	◐ – Initiated <50%
L – Low	◑ – Initiated >50%
	● – Completed

## E1. Maritime Heritage Action Plan

OCNMS made significant progress in creating a framework for maritime heritage conservation. The sanctuary investigated ways to improve understanding of treaty rights and how traditional lifeways form a vital connection to past, present, and future sanctuary resources.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
MH1 Cultural Resource Conservation	L	◐	○	○	●	◐	●	●	M	Following consultation with Washington State Historic Preservation Officer (SHPO), Makah Tribal Historic Preservation Officer (THPO), coastal treaty tribes cultural resources management staff, and Olympic National Park, OCNMS completed a draft maritime heritage resource management guidance (MHRMG) document. The MHRMG includes the historical context of the sanctuary, a maritime heritage resource inventory, a summary of applicable laws and regulations, and permit and consultation procedures, which lay the groundwork for National Historic Preservation Act Section 106 programmatic agreement. OCNMS developed a maritime heritage resources database including locational reliability and GIS data layers, which was shared with the Department of Archaeology and Historic Preservation to assist in future Section 106 consultations. OCNMS arranged for a number of maritime heritage resources public presentations. OCNMS coordinated dive planning and outreach surrounding the ROV archaeological survey of the USS <i>Bugara</i> .
MH2 Local and Customary Knowledge	L	○	○	●	●	○	○	○	M	OCNMS and the ONMS Maritime Heritage Program collaborated with BOEM, the Yurok and Makah tribes, and the Confederated Tribes of the Grand Ronde on the Tribal Cultural Landscapes Project. The project resulted in a guidance document published in 2015 that presents a method for agencies to consult with the tribes more effectively and appropriately in advance of any proposed undertakings. It also suggests a means for tribes and other indigenous communities to relate their interests and concepts of landscape to federal agencies and other management entities. OCNMS collaborated with the Hoh Tribe on a four-day adventure camp for Hoh youth in 2015 that featured traditional knowledge, such as identification of traditional practices and harvesting sites.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
MH3 Public Understanding of Treaty Rights	L	○	○	○	●	○	○	○	L	OCNMS staff actively supported the understanding of treaty rights within NOAA and contributed to the development of the 2013 NOAA Tribal Consultation Handbook, provided training to NOAA National Ocean Service and NOAA Fisheries staff, and presented to the NOAA Leadership Competencies Development Program. OCNMS has developed training on treaty trust responsibility for staff and volunteers and incorporates messages about treaty rights in public presentations. More recently, during the 2017 <i>Nautilus</i> expedition, OCNMS staff worked with coastal treaty tribes to prepare talking points for use during dive narrations to explain the special relationship the tribes have with the Olympic Coast and its resources. Two experts were invited to sail with the expedition to ensure that tribal perspectives were well-represented. OCNMS also engages in important cultural events such as community festivals, tribal journeys, and other significant celebrations.

## E2. Socioeconomic Values of Sanctuary Resources Action Plan

In the reporting period, ONMS improved understanding of the non-market value of the recreation economy.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
SV1 Existing Socioeconomic Information	L	○	○	●	○	○	○	○	L	While plans to develop an annotated bibliography of existing socioeconomic information did not take place, OCNMS completed a standard study area profile from existing sources as part of a system-wide effort.
SV2 New Socioeconomic Information	L	○	○	○	●	●	●	●	M	OCNMS supported the development of the Pacific Regional Ocean Uses Atlas Project, published in 2015, with BOEM and various NOAA partners. OCNMS collaborated with NCCOS and the Hollings Marine Laboratory to conduct a social values mapping project; however, the project was not funded. NOAA, ONMS, and NCCOS completed a series of four reports on a 2014-2015 study on socioeconomic profiles of OCNMS users and the economic value of coastal recreation uses. ONMS and OCNMS staff started planning a study of the contribution of sanctuary research to local economic activity.

### Actions Outside of Management Plan

This section was created in recognition that issues not covered in the 2011 management plan could arise and should be documented. With the exception of FY 2011, OCNMS did not identify any actions that did not fit under one of the 20 action plans in the current management plan.

Action Plans/Strategies	Priority Level	FY11 AOP Status	FY12 AOP Status	FY13 AOP Status	FY14 AOP Status	FY15 AOP Status	FY16 AOP Status	FY17 AOP Status	Effort Level	Status Notes
Management Plan Review Process	n/a	●	n/a	n/a	n/a	n/a	n/a	n/a	L	In FY 2011, OCNMS documented the completion of the management plan review actions in this section. Since then this section has not been used, with all sanctuary work described within the existing 20 action plans and 84 strategies.

# NATIONAL MARINE SANCTUARY SYSTEM



*The sites of the National Marine Sanctuary System are America's underwater treasures. Within these waters, whales breed and bear young, corals flourish, and shipwrecks tell stories of our marine history. Sanctuary habitats include beautiful coral reefs, lush kelp forests, whale migrations corridors, spectacular deep-sea canyons, and underwater archaeological sites. These special places also provide homes to thousands of unique or endangered species and are important to America's cultural heritage. Encompassing more than 600,000 square miles, the National Marine Sanctuary System includes 13 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments.*