

## UPDATE ON OLYMPIC COAST NATIONAL MARINE SANCTUARY MANAGEMENT PLAN REVIEW PROCESS

The Olympic Coast National Marine Sanctuary (OCNMS or Sanctuary) Management Plan is in the initial stages of review and revision. The OCNMS Management Plan is a planning document that describes OCNMS objectives, policies, and activities and guides management actions. This is the first review of the OCNMS Management Plan since its original completion in 1993.

The Sanctuary's management plan review began in 2008 shortly after completion of the OCNMS' Condition Report (Agenda Item E.1.b, Attachment 1). The Council reviewed a draft of the OCNMS Condition Report at its April 2008 meeting in Seattle. The final Condition Report was published in September 2008, and soon thereafter OCNMS began a public scoping period that ran through November 2008. Following public scoping, the OCNMS published a Scoping Summary (Agenda Item E.1.b, Attachment 2) and Topics Analysis Report (Agenda Item E.1.b, Attachment 3) to guide the current process of identifying key issues for the management plan review. Topics identified through scoping that may be of particular interest to the Council include: ecosystem impacts of fishing, treaty trust responsibility, fisheries stock assessment, habitat characterization and protection, and living resources monitoring and conservation.

OCNMS and its Advisory Council (AC) held an Issue Prioritization Workshop on January 29-30, 2009 and are scheduled to adopt a final issue prioritization workshop report (Agenda Item E.1.b, Attachment 4) at its March 20, 2009 meeting. At this meeting OCNMS staff will also brief the AC on their draft work plan, which outlines working groups and workshops that will address seven identified priority management needs (Agenda Item E.1.b, Attachment 5).

Sanctuary Superintendent Carol Bernthal is scheduled to present an update on the management plan review process, a description of the priority issues to be addressed, and a timeline for future activity (Agenda Item E.1.b, Attachment 6).

### **Council Task:**

#### **1. Discuss OCNMS Management Plan Review Process and Future Council Involvement.**

##### Reference Materials:

1. Agenda Item E.1.b, Attachment 1: Final OCNMS Condition Report 2008 (**electronic distribution only**).
2. Agenda Item E.1.b, Attachment 2: OCNMS Public Scoping and Issues Analysis Part 1: Scoping Summary (**electronic distribution only**).
3. Agenda Item E.1.b, Attachment 3: OCNMS Public Scoping and Issues Analysis Part 2: Topics Analysis Report (**electronic distribution only**).
4. Agenda Item E.1.b, Attachment 4: OCNMS Public Scoping and Issues Analysis Part 3: Advisory Council Issue Prioritization Workshop Report (**electronic distribution only**).
5. Agenda Item E.1.b, Attachment 5: Draft OCNMS Public Scoping and Issues Analysis Part 4: Priority Issue Work Plan (**electronic distribution only**).
6. Agenda Item E.1.b, Attachment 6: OCNMS Management Plan Review Update

Agenda Order:

- a. Agenda Item Overview
- b. OCNMS Report
- c. Reports and Comments of Advisory Bodies
- d. Public Comment
- e. **Council Task:** Discuss OCNMS Management Plan Review Process.

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Carol Bernthal

PFMC  
03/18/09

# Olympic Coast

National Marine Sanctuary

# CONDITION REPORT 2008



September 2008





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**Photos:**

Rock Fish: Olympic Coast National Marine Sanctuary; Petroglyph: Bob Steelquist, Olympic Coast National Marine Sanctuary; Elephant Rock: Olympic Coast National Marine Sanctuary; Canoers during tribal journeys: Bob Steelquist, Olympic Coast National Marine Sanctuary; Kelp Forest: Steve Fisher; Seastars: Nancy Sefton

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## Olympic Coast National Marine Sanctuary

- *Designated as a national marine sanctuary in 1994.*
- *The sanctuary extends 217 kilometers (135 miles) along the Washington coast from near Cape Flattery to the Copalis River. Ninety kilometers (56 miles) are shared with Olympic National Park and include some of the last remaining wilderness coastline in the lower 48 states.*
- *The seaward boundary of the sanctuary varies from about 40 to 72 kilometers (25 to 45 miles) offshore. This covers the continental shelf as well as parts of three major submarine canyons. Sanctuary waters include many types of productive marine habitats, including nearshore kelp beds, subtidal reefs, rocky and sandy intertidal zones, submarine canyons, rocky deep-sea habitat, and plankton-rich upwelling zones, all of which support the sanctuary's rich biodiversity.*
- *29 species of marine mammals and over 100 species of seabirds spend at least part of their lives in the sanctuary.*
- *Three national wildlife refuges, collectively called the Washington Island National Wildlife Refuges, are located within the sanctuary. These refuges are part of the Washington Maritime National Wildlife Refuge Complex and protect over 600 named and unnamed offshore rocks, seastacks and islands.*
- *The Olympic Coast has sustained human communities for at least 6,000 years.*
- *The sanctuary lies within the traditional fishing areas for four coastal Indian tribes: the Makah, Quileute and Hoh tribes and the Quinault Indian Nation.*
- *Over 180 documented shipwrecks have historical association with the Olympic Coast.*

### About this Report

This “condition report” provides a summary of resources in the National Oceanic and Atmospheric Administration’s Olympic Coast National Marine Sanctuary, pressures on those resources, current condition and trends, and management responses to the pressures that threaten the integrity of the marine environment. Specifically, the document includes information on the status and trends of water quality, habitat, living resources and maritime archaeological resources and the human activities that affect them. It presents responses to a set of questions posed to all sanctuaries (Appendix A). Resource status of Olympic Coast National Marine Sanctuary is rated on a scale from good to poor, and the timelines used for comparison vary from topic to topic. Trends in the status of resources are also reported, and are generally based on observed changes in status over the past five years, unless otherwise specified.

Sanctuary staff consulted with outside experts familiar with the resources and with knowledge of previous and current scientific investigations. Evaluations of status and trends are based on interpretation of quantitative and, when necessary, non-quantitative assessments, and

the observations of scientists, managers and users. The ratings reflect the collective interpretation by sanctuary staff of the status of local issues of concern, based on their knowledge and perception of local problems, as rated and informed by outside experts. The final ratings were determined by sanctuary staff. Before public release, this report was peer reviewed to comply with the White House Office of Management and Budget’s peer review standards as outlined in the Final Information Quality Bulletin for Peer Review. Further details are provided in Appendix B.

This is the first attempt to describe comprehensively the status, pressures and trends of resources at Olympic Coast National Marine Sanctuary. Additionally, the report helps identify gaps in current monitoring efforts, as well as causal factors that may require monitoring and potential remediation in the years to come. The data discussed will enable resource managers to not only acknowledge prior changes in resource status, but will provide guidance for future management as we face challenges imposed by such potential threats as oil spills, invasive species, commercial development, climate change and underwater noise pollution.

## Summary and Findings

Olympic Coast National Marine Sanctuary represents one of North America's most productive marine ecosystems that lies adjacent to expansive stretches of spectacular undeveloped shoreline. The sanctuary encompasses a variety of habitat types, from sand beaches and rocky intertidal shores to nearshore kelp forests and uninhabited islands, to deep coral and sponge communities and submarine canyons. The sanctuary's temperate location and complex physical environment maintain critical habitats for unique communities of organisms. Twenty-nine species of marine mammals and more than 100 seabird species enrich the system, while fishes occupy a myriad of niches from deep ocean canyons to shallow tide pools. A long history of human interaction with the marine environment is a unique facet of the area's legacy. Native American cultures have lived for millennia in an intimate relationship with the ocean, and beginning in the 16th century, European exploration and settlement made a significant impact on the Olympic Coast.

The overall resources protected by the sanctuary appear to be in good to fair condition. Water quality parameters in the sanctuary appear to be in good condition, which may reflect its isolation from major urban or industrial complexes. There are indications of habitat quality degradation of hard bottom and deep sea biogenic structures that are primarily a result of several decades of bottom contact fishing gear use; however, management decisions have been enacted recently to help reduce this pressure. Living resource conditions have followed trends similar to those of habitats with many seabird, marine mammal and fish population structures significantly altered with respect to historical values. Some uncertainty surrounds our scientific understanding of fishery resources and current levels of exploitation with regards to new initiatives for ecologically based fisheries management that address sustainability of targeted fisheries, as well as marine ecosystem function. Beyond severe natural forces, the principal threats to maritime archaeological resources in the sanctuary come from unauthorized salvage and contact by fishing gear. This condition report will serve as background and supporting material for the review of Olympic Coast National Marine Sanctuary's management plan, which will enable us to better understand, protect and utilize the nation's marine environment.

## National Marine Sanctuary System and System-Wide Monitoring

The National Marine Sanctuary System manages marine areas in both nearshore and open ocean waters that range in size from less than one to almost 362,600 square kilometers (140,000 square miles). Each area has its own concerns and requirements for environmental monitoring, but ecosystem structure and function in all these areas have similarities and are influenced by common factors that interact in comparable ways. Furthermore, the human influences that affect the structure and function of these sites have many similarities. For these reasons, in 2001 the program began to implement System-Wide Monitoring (SWiM). The monitoring framework (National Marine Sanctuary Program 2004) facilitates the development of effective, ecosystem-based monitoring programs that address management information needs using a design process that can be applied in a consistent way at multiple spatial scales and to multiple resource types. It identifies four primary components common among marine ecosystems: water, habitats, living resources and maritime archaeological resources.

By assuming that a common marine ecosystem framework can be applied to all places, the National Marine Sanctuary System developed a series of questions that are posed to every sanctuary and used as evaluation criteria to assess resource conditions and trends. The questions, which are shown on pages vi and vii and explained in Appendix A, are derived from both a generalized ecosystem framework and from the National Marine Sanctuary System's mission. They are widely applicable across the system of areas managed by the Office of National Marine Sanctuaries and provide a tool with which the program can measure its progress toward maintaining and improving natural and archaeological resource quality throughout the system.

Similar reports summarizing resource status and trends will be prepared for each marine sanctuary approximately every five years and updated as new information allows. The information in this report is intended to help set the stage for the management plan review process. The report also helps sanctuary staff identify monitoring, characterization and research priorities to address gaps, day-to-day information needs and new threats.

## Olympic Coast National Marine Sanctuary Condition Summary Table

The following table summarizes the “State of Sanctuary Resources” section of this report. The first two columns list 17 questions used to rate the condition and trends for qualities of water, habitat, living resources, and maritime archaeological resources. The “Rating” column consists of a color, indicating resource condition, and a symbol, indicating trend (see key for definitions). The “Basis for Judgment” column provides a short statement or list of criteria used to justify the rating. The “Description of Findings” column presents the statement that best characterizes resource status, and corresponds to the assigned color rating. The “Description of Findings” statements are customized for all

possible ratings for each question. Please see the Appendix for further clarification of the questions and the “Description of Findings” statements.

**Status:** Good Good/Fair Fair Fair/Poor Poor Undet.

**Trends:** Conditions appear to be improving..... ▲  
 Conditions do not appear to be changing..... —  
 Conditions appear to be declining ..... ▼  
 Undetermined trend..... ?  
 Question not applicable ..... N/A

#	Questions/Resources	Rating	Basis for Judgment	Description of Findings	Sanctuary Response
<b>WATER</b>					
1	Are specific or multiple stressors, including changing oceanographic and atmospheric conditions, affecting water quality and how are they changing?	?	Hypoxic conditions may be increasing in frequency and spatial extent in nearshore waters.	Selected conditions may preclude full development of living resource assemblages and habitats, but are not likely to cause substantial or persistent declines.	Management focuses on oil spill and discharge preventative measures, including relocating ship traffic lanes offshore, tracking ships, enhancing spill response assets in the region, and reducing wastes discharged from ships; moored instruments track nearshore water quality; periodic shipboard surveys are conducted to investigate physical, chemical and biological linkages.
2	What is the eutrophic condition of sanctuary waters and how is it changing?	—	No suspected human influence on harmful algal blooms or eutrophication.	Conditions do not appear to have the potential to negatively affect living resources or habitat quality.	
3	Do sanctuary waters pose risks to human health and how are they changing?	—	Naturally occurring harmful algal blooms result in periodic shellfish closures.	Selected conditions that have the potential to affect human health may exist but human impacts have not been reported.	
4	What are the levels of human activities that may influence water quality and how are they changing?	—	Threat of oil spills from vessels.	Some potentially harmful activities exist, but they do not appear to have had a negative effect on water quality.	
<b>HABITAT</b>					
5	What are the abundance and distribution of major habitat types and how are they changing?	—	Reduction in habitat complexity by bottom-tending gear; short-term impacts from fishing gear and cable installation.	Selected habitat loss or alteration has taken place, precluding full development of living resource assemblages, but it is unlikely to cause substantial or persistent degradation in living resources or water quality.	Sanctuary and partners map and characterize deep habitats and the extent of human impacts and convey information to fisheries managers; large areas have been closed to fishing that uses bottom trawl gear to protect sensitive habitats; negotiated reburial of exposed fiber optic cable; began marine debris removal efforts.
6	What is the condition of biologically structured habitats and how is it changing?	?	Damage by bottom-tending gear in some deep biogenic habitats.	Selected habitat loss or alteration may inhibit the development of living resources, and may cause measurable but not severe declines in living resources or water quality.	
7	What are the contaminant concentrations in sanctuary habitats and how are they changing?	—	Prior studies indicate low levels of contaminants.	Contaminants do not appear to have the potential to negatively affect living resources or water quality.	
8	What are the levels of human activities that may influence habitat quality and how are they changing?	▲	Decrease in bottom trawling and presumably impacts to hard-bottom habitats.	Selected activities have resulted in measurable habitat impacts, but evidence suggests effects are localized, not widespread.	

Table is continued on the following page.

**Olympic Coast National Marine Sanctuary Condition Summary Table (Continued)**

#	Questions/Resources	Rating	Basis for Judgment	Description of Findings	Sanctuary Response
<b>LIVING RESOURCES</b>					
9	What is the status of biodiversity and how is it changing?	?	Ecosystem-level impacts caused by historical depletion of fish, high-order predators, and keystone species.	Selected biodiversity loss may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity.	Sanctuary works with partners to monitor populations of seabirds and marine mammals, to detect non-indigenous species, to conduct regular intertidal monitoring; wide area closures by fisheries management authorities to allow populations to recover.
10	What is the status of environmentally sustainable fishing and how is it changing?	▲	Overexploitation of some groundfish species has led to wide area closures.	Extraction may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity.	
11	What is the status of non-indigenous species and how is it changing?	▼	Invasive <i>Sargassum</i> and tunicate distributions are expanding.	Non-indigenous species exist, precluding full community development and function, but are unlikely to cause substantial or persistent degradation of ecosystem integrity.	
12	What is the status of key species and how is it changing?	?	Populations of Common Murres, sea otters, and numerous rockfish reduced from historic levels, with differing recovery rates.	The reduced abundance of selected keystone species may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity; or selected key species are at reduced levels, but recovery is possible.	
13	What is the condition or health of key species and how is it changing?	?	Diseases detected in sea otters.	The condition of selected key resources is not optimal, perhaps precluding full ecological function, but substantial or persistent declines are not expected.	
14	What are the levels of human activities that may influence living resource quality and how are they changing?	▲	Commercial and recreational fishing pressure has decreased.	Selected activities have resulted in measurable living resource impacts, but evidence suggests effects are localized, not widespread.	
<b>MARITIME ARCHAEOLOGICAL RESOURCES</b>					
15	What is the integrity of known maritime archaeological resources and how is it changing?	?	Deepwater wrecks stable; shallow wrecks subject to environmental degradation; lack of monitoring to determine trend.	The diminished condition of selected archaeological resources has reduced, to some extent, their historical, scientific, or educational value, and may affect the eligibility of some sites for listing in the National Register of Historic Places.	Need to conduct inventories and monitoring, and to assess possible impacts of sea level rise on coastal archaeological resources.
16	Do known maritime archaeological resources pose an environmental hazard and how is this threat changing?	—	Historic wrecks did not carry substantial quantities of hazardous cargoes.	Known maritime archaeological resources pose few or no environmental threats.	
17	What are the levels of human activities that may influence maritime archaeological resource quality and how are they changing?	?	Fishing activities, cable installations offshore, and unauthorized salvaging.	Selected activities have resulted in measurable impacts to maritime archaeological resources, but evidence suggests effects are localized, not widespread.	



Figure 1. Olympic Coast National Marine Sanctuary is located off the western shore of Washington state, with a boundary that follows the international border at the north and approximates the 100-fathom (183 m) depth contour. Source: NOAA

## Site History and Resources



Figure 2. Eroded headlands, like this one at Point of Arches, exhibit the continuous dynamic of the sea's forces pounding against the shoreline.

### Overview

Designated in 1994, the sanctuary's mission is to protect the Olympic Coast's natural and cultural resources through responsible stewardship, to conduct and apply research to preserve the area's ecological integrity and maritime heritage, and to promote understanding through public outreach and education.

Olympic Coast National Marine Sanctuary spans 8,572 square kilometers (3,310 square miles) of marine waters off Washington state's rugged Olympic Peninsula coast (Figure 1). Extending seaward 40 to 72 kilometers (25 to 45 miles), the sanctuary covers much of the continental shelf and the heads of three major submarine canyons, in places reaching a maximum depth of over 1,400 meters (4,500 feet). The sanctuary borders an undeveloped coastline, enhancing protection provided by the 90-kilometer-long

(56-mile) wilderness of the Olympic National Park's coastal strip, as well as more than 600 offshore islands and emergent rocks within the Washington Islands National Wildlife Refuges (Figure 2). Superimposed on a nutrient-rich upwelling zone with high primary productivity and composed of a multitude of marine habitats, the sanctuary is home to numerous marine mammals and seabirds, diverse populations of kelp and other macroalgae, and diverse fish and invertebrate communities.

## Geology

The Olympic Coast is subject to tectonic forces caused by the combined movements of the large Pacific and North American Plates and the smaller Juan de Fuca Plate. The Juan de Fuca Plate and the Pacific Plate are spreading away from each other at a divergent plate boundary offshore, while the Juan de Fuca plate is being pressed toward and beneath the North American Plate (Figure 3). These forces are linked to a chain of volcanoes within the uplifted Cascade Range.

The geologic activity in the area off the Olympic Coast gives rise to potential hazards such as earthquakes and associated submarine landslides, tsunamis and volcanic eruptions. Tsunamis, long-period sea waves produced by submarine earthquakes or volcanoes, occasionally strike the Washington coast. The Alaskan earthquake of 1964 produced a tsunami that reached a height of almost 15 feet (4.5 meters) on the Washington coast south of the sanctuary.

A continental shelf reaches out from Washington's coast from 13 to 64 kilometers (8 to 40 miles), and provides a relatively shallow (200 meters or 660 feet in depth or less) coastal environment within the sanctuary. Several submarine canyons cut into the continental shelf along the western boundary of the sanctuary, and the trough of the Juan de Fuca Canyon winds through the northern portion of the sanctuary towards the Strait of Juan de Fuca. In the northern portion of the sanctuary, the sediments on the shelf are largely glacial deposits from the Ice Age, and the shelf slope is steep and jagged. Modern sediments are carried west through the Strait of Juan de Fuca and north from the Columbia River. These materials are generally transported northward by year-round bottom currents and winter storms, and eventually accumulate on the shelf. The majority of the sanctuary seafloor, however, has not yet been adequately mapped or characterized, so a full understanding of sediments and habitat distribution remains elusive (Intelmann 2006).

Broad beaches, dunes, and ridges dominate the coastline from Cape Disappointment, on the north side of the Columbia River mouth, to the Hoh River. Wave action has eroded the shoreline through time

and has formed steep cliffs at various places along the coast (Figure 2), and forested hills and sloping terraces are found near river mouths. Between Point Grenville and Cape Flattery, cliffs can rise abruptly 15 to 90 meters (50 to 300 feet) above a wave-cut platform that is underwater except during extreme low tides. This wave-cut platform can be almost three kilometers (2 miles) wide in some places. Small islands, sea stacks, and rocks dot the platform's surface.

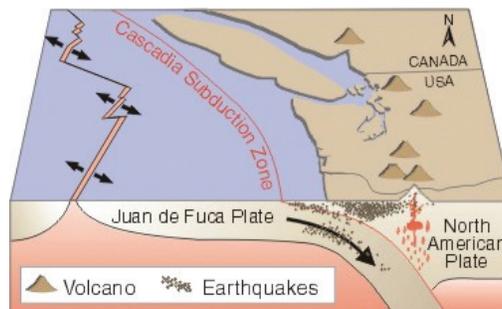


Figure 3. Subduction of the Juan de Fuca Plate under the North American Plate controls the distribution of earthquakes and volcanoes in the Pacific Northwest. Diagram: USGS



Figure 4. Human presence on the Olympic Coast predates historical records and attests to these cultures' long and intricate relationship with the marine environment.

## Original Peoples and European Exploration

The Olympic Coast has sustained human communities for at least 6,000 years and possibly much longer. Native American villages were located at protected harbors and river mouths where people practiced ocean and river-dependent hunting, gathering, fishing and whaling activities (Figure 4). As they are today, Native Americans were among the top or apex predators in the marine ecosystem. Artifacts from one prehistoric site, the Ozette archaeological site near Cape Alava, provide a window into the daily life of that culture immediately before European contact. Clever tools made from natural materials developed from their intimate relationship with natural resources, and complex artwork and rich oral traditions demonstrate the sophistication of these Native American societies. Recent research on earlier sites confirms maritime-adapted cultural practices of offshore fishing and whaling dating at least 4,000 years before present. Today, the Makah, Quileute and Hoh

tribes and Quinault Indian Nation carry their heritage forward, balancing the very modern needs of their communities with long traditions. As provided in their treaties with the United States government, treaty tribes share fishery resources with non-tribal residents, and tribes are active as co-managers of the fisheries.

In 1592, Juan de Fuca, a pilot on a Spanish ship, told mariner's tales of visiting a Northwest Passage that emptied into the Pacific Ocean. For the next 200 years, Spain, England, France and Russia all sent explorers to confirm his report and lay claim to the region and its riches. De Fuca's visit was never confirmed, however his name

was preserved on later English maps and the passage is now known as the Strait of Juan de Fuca (Figure 1).

In 1778, the English explorer Captain James Cook sailed the coast. In 1788, another English sea captain, John Meares, was so impressed by Mount Olympus that he named it after the mythical home of the Greek gods. "If that be not the home where dwell the Gods, it is beautiful enough to be, and I therefore call it Mount Olympus," he wrote. The name was made official 14 years later when Captain George Vancouver entered the name on his maps and referred to the whole range as the Olympic Mountains. Although the Spanish built the first European settlement near Neah Bay in 1792, Spanish influence was short-lived. The settlement was abandoned after only five months when Spain came under the threat of war from Great Britain.

### Commerce

Furs were the key to opening the northwest coast to European trade in the late 1700s, especially profitable sea otter pelts that were obtained from the Indians by English, Russian, Spanish and American fur traders. As the news spread of the great profits to be had in fur trading, sea otter populations dwindled and by the early 1900s, sea otters had been extirpated from Washington waters (Figure 5).



Photo: Ed Bowby, Olympic Coast National Marine Sanctuary

Figure 5. Sea otters in the Northeast Pacific were hunted nearly to extinction in the 18th and 19th centuries for their fur. Because of reintroduction efforts in the 1970s to the Pacific Northwest, they are making a comeback along the Olympic coast.

## Coastal Tribes of the outer coast of Washington - (from south to north)

**Quinault Indian Nation** *The Quinault Indian Nation consists of the Quinault and Queets tribes and descendants of five other coastal tribes. The Quinault Indian Reservation, located in the southwest corner of the Olympic Peninsula, includes 37 kilometers (23 miles) of Pacific coastline and covers 84,271 hectares (208,150 acres) of forested land.*

**Hoh Indian Tribe** *The Hoh Reservation consists of 179 hectares (443 acres) located 45 kilometers (28 miles) south of Forks at the mouth of the Hoh River. The reservation has about 1.6 kilometers (1 mile) of beachfront between the mouth of the Hoh River and Ruby Beach.*

**Quileute Indian Tribe** *Surrounded on three sides by the Olympic National Park, the Quileute Reservation is located on 451 hectares (1,115 acres) along the Pacific Ocean on the south banks of the Quillayute River and includes the town of LaPush.*

**Makah Indian Tribe** *Located in the northwestern most corner of the contiguous U.S., the Makah Reservation consists of 11,007 hectares (27,200 acres) and is bounded by the Pacific Ocean and the Strait of Juan de Fuca. It includes the town of Neah Bay. Over 405 hectares (1,000 acres) of the land bordering the Pacific Ocean have been reserved as a wilderness area. The Makah are part of the Nootkan culture group, which includes two other tribes in British Columbia, Canada.*



Figure 6. Most current-day cities and towns around the Olympic Peninsula grew from Native American village sites. Diagram: OCNMS

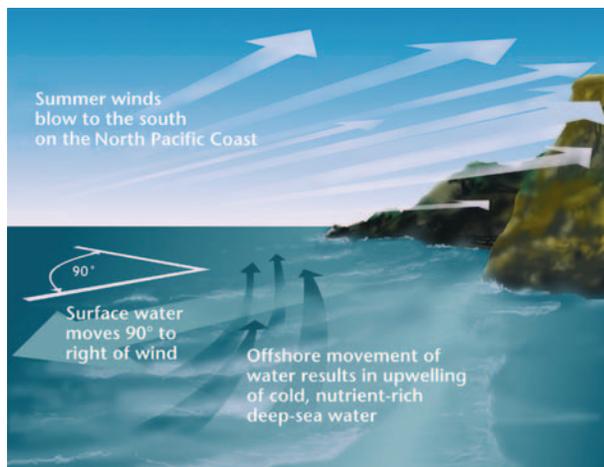


Figure 7. Southward-blowing winds are associated with a net transport of surface waters away from the coastline, resulting in intermittent upwelling. Image: Oregon Sea Grant

Through the latter part of the 1800s, pioneers moved into the Olympic Peninsula to farm, fish, and cut timber. Like Native Americans, most early settlers chose to settle along the coast. In 1851, Port Townsend became the first permanent American settlement on the peninsula, providing a gateway for further settlements to the west (Figure 6). Port Angeles, with its harbor, lighthouse, military reservation, customs house, and strategic location on the Strait of Juan de Fuca, was designated by President Abraham Lincoln as a town site in 1862. Today, it is the peninsula's largest town, with a population of 18,400 (in 2000). Farther west, the town of Forks had European settlers as early as the 1860s. People were originally drawn to Forks for gold prospects, but timber became the mainstay of the economy of Forks and other west end towns. Fishing continues to be an important commercial and recreational venture for coastal communities like Neah Bay and La Push.

Although the area attracted logging, farming and fishing interests, the rugged western coast and interior of the peninsula retain significant roadless wilderness. Olympic National Park was established in 1938 and now includes nearly a million acres of mountain, forest, and coastline designated as wilderness. The coastal strip of the park was added in 1953. The Olympic National Forest was designated in 1897 as the Olympic Forest Reserve and now contains 88,265 acres (15 percent of the total national forest acreage) of designated wilderness.

Throughout the period of European settlement on the western Olympic Peninsula, the link between the land and the ocean has shaped history. All coastal trade vessels working between California and Puget Sound, the link between the land and the ocean has shaped history. All coastal trade vessels working between California and Puget Sound, traversed the area that is now the sanctuary. The lumber trade on the Pacific Coast was a long-lived and very significant aspect of maritime trade along the coast. Beginning in the 1850s with the establishment of sawmills on Puget Sound and environs, larger vessels, many of them veterans of the California Gold Rush, commenced the trade. Early canneries, logging operations and hotels reflected not just the economic opportunities offered by coastal resources, but the hardships imposed by the Olympic Coast's remoteness, such as lack of or limited road transport. Coast-wide trade linked the productive Olympic Peninsula with Seattle and markets in California, Hawaii, Australia and beyond. In addition, the completion of railroad links across the Continental Divide in both Canada and the United States made the ports of Vancouver, Seattle, Everett, Tacoma and Victoria important sources of grain, timber, gold and other resources for the world's economy.

Today, commerce on the Olympic coast still depends largely on commercial and recreational fishing, logging and tourism. In recent years, the local timber industry and the fishing industries have both been impacted by reduced harvests, and the local economy has struggled.

Coastal communities continue to respond to a changing economy by developing innovative enterprises such as value-added wood product manufacturing (local manufacturing rather than export of raw timber) and accommodating the growth of tourism to diversify the economic base.

## Water

The Washington outer coast is known for its rough seas and large waves — extreme wave heights ranging from 15 to 27 meters (50 to 90 feet) have been recorded on and beyond the continental shelf. Winter storms travel across the fetch of the Pacific and the energy is magnified as they encounter the shallower continental shelf, where their force pounds the coast with gathered intensity.

Surface winds generated by atmospheric pressure systems are the main force driving ocean surface circulation off the Pacific Northwest. Spring and summer winds blow generally toward the south and push surface waters southward and offshore. This results in nearshore upwelling of cold, nutrient-rich water to the surface (Figure 7). This influx of nutrients enhances plankton communities that are ultimately responsible for the region's productive fisheries. Downwelling tends to occur in the fall and winter months, when the winds blow generally toward the north and surface water is forced shoreward. Other physical features also play a role in these movements: Shelf platform width, river plumes, submarine canyons, banks, coastal promontories and offshore eddies influence the retention, magnitude and timing of nutrient delivery to plankton, and may explain why primary productivity is higher along the Washington coast than the Oregon coast (Hickey and Banas 2003).

On a regional scale, the California Current transports cold subarctic water southward along the Washington coast, directly influencing the local distribution of marine organisms. The California Current generally occurs from the continental shelf break to a distance of about 1,000 kilometers from shore and rides above the narrower California Undercurrent, which flows northward and is implicated in the transport of larvae and other plankton. The California Current and Undercurrent are strongest in the summer, while the seasonal, nearshore Davidson current flows northward during winter months when the Columbia River plume is transported along the Washington coast. Another seasonal feature is the Juan de Fuca Eddy, which is approximately 50 kilometers in diameter, persists in summertime, and entrains nutrient-rich cold water in a counterclockwise circulation pattern (see Figure 19, page 23).

Oceanographic and atmospheric events across the Pacific basin influence the waters of the Olympic Coast. For example, the El Niño-



Figure 8. Within the nearshore environment, kelp forests are vital habitat for many species of fish, invertebrates, seabirds and mammals.

Southern Oscillation is primarily driven by sea surface temperatures along the Equatorial Pacific Ocean and is a major source of inter-annual climate variability in the Pacific Northwest, with events lasting 6 to 18 months. Similarly, the Pacific Decadal Oscillation is a predominant source of climate variability in the Pacific Northwest, where warm or cool phases can each last 20 to 30 years. Climatic cycles such as these are natural events and often are associated with strong fluctuations in weather patterns and biological resources.

## Habitat

Olympic Coast National Marine Sanctuary contains a broad diversity of habitats including rocky shores, sandy beaches, kelp forests, sea stacks and islands, open ocean or pelagic habitats, the continental shelf seafloor and submarine canyons. Along the shoreline, tide pools are formed amid boulders and rocky outcrops that provide both temporary and permanent homes for an abundance of “seaweeds” (e.g., macroalgae and seagrasses), invertebrate species such as sea stars, hermit crabs, and sea anemones, and intertidal fish. Rocky shores of the Olympic Coast have among the highest biodiversity of marine invertebrates and macroalgae of all eastern Pacific coastal sites from Central America to Alaska (Suchanek 1979; PISCO 2002; Blanchette et al. in press). Nestled between these rocky headlands are numerous sand-covered pocket beaches that host their unique array of intertidal invertebrates and fishes.

Kelp forests form dense stands in nearshore waters, with individual plants reaching up to 20 meters in length (Figure 8). The structure of this living habitat alters the physical forces (waves and currents) in the nearshore area and creates a protective environment for fish

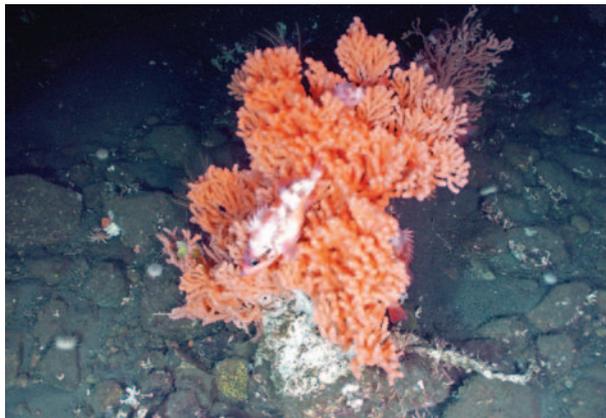


Photo: Olympic Coast National Marine Sanctuary

Figure 9. The red tree coral with darkblotched and sharpchin rockfish are colorful inhabitants of deep rocky areas.

and invertebrates, from their holdfast bases on the seafloor to their canopies at the surface. Sea otters often raft and rest in and near kelp canopies, while many species and ages of fish find protective habitat among the kelp forests.

Pinnacles (sea stacks) and islands along the coast also provide havens and resting sites for California and Steller sea lions, harbor and elephant seals, and thousands of nesting seabirds. High-relief submerged topographic features such as rock piles serve as fish aggregation areas.

A majority of the sanctuary lies over the continental shelf, extending from the nearshore to the shelf break at about the 200-meter contour. The shelf is composed primarily of soft sediment and glacial deposits of cobble, gravel and boulders, punctuated by rock outcrops, and it is inhabited by creatures such as flatfish, rockfish, octopuses, brittle stars and sea pens that have adapted to the darkness, cold, and pressure of the seafloor. Sanctuary boundaries extend beyond the edge of the continental shelf and include portions of the Nitinat, Juan de Fuca, and Quinault submarine canyons (Figure 1). The Quinault canyon is the deepest, descending to 1,420 meters (4,660 feet) at its deepest point within the sanctuary. Many creatures, such as corals, sponges, crinoids, rockfish and shrimp, inhabit these areas of physical extremes. The canyons are also dynamic areas where massive submarine landslides can occur on the steep side walls, undetected by man, and canyon bottoms collect sediment deposited from above. They also serve as conduits for dense, cold, nutrient-rich seawater that is pulled toward shore, where upwelling feeds surface productivity at the base of the food web.

Recent surveys conducted in offshore shelf and canyon habitats have confirmed the presence of hard-bottom substrates that harbor rich invertebrate assemblages, including deepwater coral and sponges (Brancato et al. 2007). Such fauna are commonly thought to be restricted to shal-



Photo: Olympic Coast National Marine Sanctuary

Figure 10. Most killer whales (orca) in the sanctuary belong to resident groups that frequent northern Puget Sound and the Strait of Georgia. Occasionally, wide-ranging oceanic groups (transient orca and offshore orca) visit the region.

low tropical waters. However, an increasing number of studies around the world have recorded coral and sponge assemblages in deeper, cold-water habitats at both northern and southern latitudes. These living organisms with branching, upright structure are, in turn, habitat for other invertebrates and fish (Whitmire and Clarke 2007). Habitat-forming corals and sponges provide hiding places, attachment sites, food sources, and breeding and nursery grounds in relatively inhospitable and otherwise featureless environments (Figure 9).

### Living Resources

Twenty-nine species of marine mammals have been sighted in Olympic Coast National Marine Sanctuary, including eight species listed under the Endangered Species Act. Two species are frequent foragers in the sanctuary: the humpback whale and the killer whale (also called orca) (Figure 10). Gray whales, which were recently removed from the endangered species list, travel through the sanctuary on their annual migrations between breeding and calving grounds off the Baja Peninsula and summer feeding grounds in the northern Pacific. Sea otters, harbor and elephant seals, and Steller and California sea lions aggregate along the shore and haul out on land at many locations along the coast throughout the year.

Seabirds are the most conspicuous members of the offshore fauna of the Olympic Coast. Sea stacks and islands provide critical nesting habitat for 19 species of marine birds and marine-associated raptors and shorebirds, including seven alcid species (murre, puffin, murrelet, etc., Figure 11), three cormorant species, four gull and tern species, two storm-petrel species, two raptors and one shorebird, the Black Oystercatcher. Productive offshore waters attract large feeding aggregations of marine birds that breed in other regions of the world but travel great distances to “winter” in sanctuary waters. The Sooty Shearwater, for example, breeds



Photo: Bob Steequis, Olympic Coast National Marine Sanctuary

Figure 11. The distinctive Tufted Puffin is a familiar seabird that nests in burrows on remote islands far from any mammalian predators.



Photo: Nancy Sefton

Figure 12. Nearly every surface in the rocky intertidal zone is used by something, and space is at a premium. Predatory ochre sea stars search for mussels among communities of green sea anemones and rockweed.

along the coasts of New Zealand and Chile in the austral summer and congregates along the Pacific coast in its non-breeding season. Black-footed and Laysan Albatross travel far from their breeding grounds in Hawaii and Japan to forage in the eastern Pacific. Nearer to shore, sand and gravel beaches furnish foraging areas for shorebirds, crows, gulls and a host of other birds and mammals. The coastline forms an important migratory pathway for millions of birds that pass through each year, guiding waterfowl, cranes, shorebirds and raptors toward northern breeding areas during the spring and southward as winter approaches.

Sanctuary waters are inhabited by diverse and abundant fish and invertebrate populations (Figure 12). Commercially important fish and shellfish include at least 30 species of rockfish (including 13 state species of concern, of which three are also federal species of concern), plus Pacific halibut, herring, Pacific cod, Pacific whiting, lingcod, sablefish, 15 or more species of flatfish, Dungeness crab, razor clams, and several species of shrimp. Five species of Pacific salmon (chinook, sockeye, pink, chum and coho) occur along the outer coast of Washington and breed in the Olympic Peninsula's rivers and streams. Three similar salmonid species found in freshwater systems (sea-run cutthroat trout, bull trout, and steelhead) spend portions of their lives in nearshore marine waters. Olympic Coast populations of Ozette sockeye and bull trout were added to the federal list of threatened species in 1999. Nearshore habitats of the sanctuary are important for salmon that spawn in adjacent streams. The sanctuary also encompasses the migration corridor of both juvenile and adult salmonids from California, Oregon and British Columbia, and from other rivers in Washington. Sharks, albacore, sardines, mackerel, anchovies and other migratory species are also found in the sanctuary seasonally. These fast-moving fishes are important resources for tribal and non-tribal fishers.

Intertidal habitats challenge inhabitants with extreme temperature,

salinity and oxygen fluctuations, along with powerful physical forces such as sand scouring and wave action. Invertebrate communities in rocky intertidal zones are some of the richest on the West Coast and include a wide diversity of sea stars, sea urchins, nudibranchs, chitons and polychaetes. Macroalgae or seaweeds are also extremely diverse in the region, with an estimated 120 species thought to occur within the sanctuary rocky intertidal zone (Dethier 1988). Sandy intertidal areas host sand-dwelling invertebrates and several notable fish species including starry flounder, staghorn sculpin, sand lance, sand sole, surfperch and sanddab. Surf smelt spawn at high tide on sand-gravel beaches where surf action bathes and aerates the eggs. Rocky intertidal habitats hold another roster of residents: tidepool sculpins, gunnels, eelpouts, pricklebacks, cockcombs and warbonnets, to name few.

In the deeper areas of the sanctuary (greater than 80 meters or 250 feet) investigations have revealed stunning colonies of brightly colored, cold-water corals and sponges. These unique assemblages include soft corals such as gorgonian species, stony corals (e.g., *Lophelia* spp.), giant cup corals (e.g., *Desmophyllum* spp.) and at least 40 species of sponges (Brancato et al. 2007). The distribution of such deepwater communities, as well as their species richness and basic biology, are unknown but are currently under scientific investigation.

## Maritime Archaeological Resources

### *Native and Prehistoric Maritime Heritage*

The modern shoreline of the Olympic Peninsula contains dozens of late prehistoric archaeological sites that are rich in materials documenting the character of the maritime environment and the use of this environment by the region's native peoples. Nearshore coastal forests adjacent to the sanctuary contain mid-Holocene shorelines and older prehistoric archaeological sites. These older sites are rich

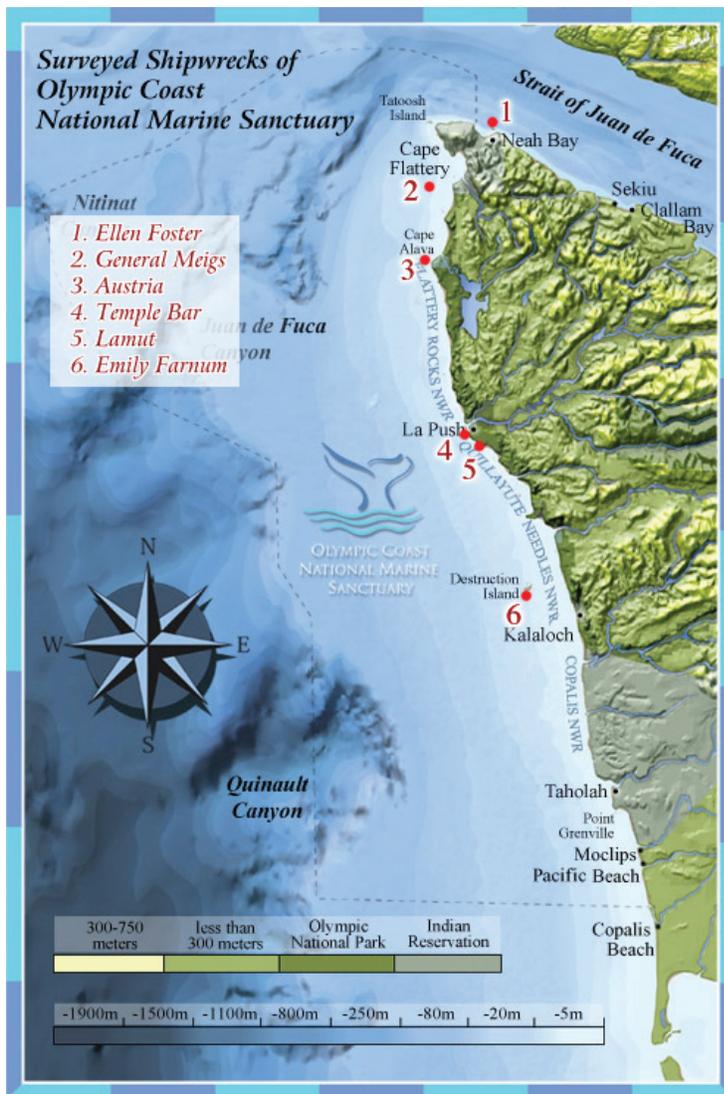


Figure 13. Surveyed shipwrecks in Olympic Coast National Marine Sanctuary. Source: OCNMS

in materials documenting the character of maritime paleo-environments, the history of environmental change, and the record of use of these environments by the region’s native peoples.

The earliest dated archaeological site on the Washington Coast occurs adjacent to the sanctuary on the Makah Indian Reservation, establishing human presence for the last 6,000 years. Although complex geological and climatic factors have changed the shoreline due to tectonic uplift and global sea level rise, it is evident that humans have occupied the coastal zone and adapted to changing habitats over time. The recent investigation of paleoshoreline sites on the

Makah Reservation reveals high sea-stand village sites inland along the Sooes and Waatch river valleys, in some cases greater than 10 meters above current sea level and kilometers from the current ocean shore (Wessen 2003). These sites indicate complex interactions with marine resources of the period and yield important clues to large-scale ocean and climate regimes, marine wildlife and fish populations, habitat distribution and cultural patterns of marine resource use. Late prehistoric cultural patterns are particularly well documented. The Makah Cultural and Research Center in Neah Bay houses an extraordinary collection of artifacts from the Ozette archaeological site, a Makah village that was partially buried by a mudslide nearly 500 years ago and excavated in the 1970s. Items used for research and display include whaling, seal hunting and fishing gear.

Other tangible records of prehistoric human occupation include petroglyphs — both above the intertidal zone and within it — and canoe runs, or channels cleared of boulders to facilitate landing of dugout watercraft. Research and preservation of coastal native languages, traditional cultural properties, and traditional practices of song, dance and activities like whaling also enhances awareness in native and non-native peoples of the region’s rich ocean-dependent heritage. The recent resurgence of the canoe culture in the annual “Tribal Journeys” celebration transfers knowledge and understanding of coastal culture to new generations.

### Historic Maritime Heritage

Olympic Coast National Marine Sanctuary is one of the more significant and unique maritime cultural landscapes in the United States. It lies at the entrance to a major inland maritime highway, the Inside Passage to Alaska, as well as serving as the gateway to several historically significant and active ports. The combination of fierce weather, isolated and rocky shores, and thriving ship commerce have, on many occasions, made the Olympic Coast a graveyard for ships. More than 180 shipwrecks have been documented in the vicinity of the Olympic Coast through a literature review, yet only a few have been investigated using modern survey techniques (Figure 13). There are few recorded shipwrecks prior to the mid-19th century and no verified wrecks during the 18th century. The number of vessel losses increased significantly as Puget Sound developed into an economic center and as Victoria, British Columbia, developed on the north side of the Strait of Juan de Fuca in the 19th century. The 19th-century lumber trade, in particular, greatly expanded vessel traffic — for example, more than 600



Photo: Olympic Coast National Marine Sanctuary

Figure 14. The wild coastline leading to the western entrance of the Strait of Juan de Fuca, the passageway for ships bound to major ports in the Pacific Northwest, is unforgiving to vessels whose bearings, visibility or propulsion are compromised.

vessels entered and cleared Puget Sound past Cape Flattery in 1886. Ship losses were predominantly weather-related and included foundering, collisions and groundings. Many ships simply disappeared, their last known location recorded by the lighthouse keeper at Tatoosh Island before they disappeared into watery oblivion (Figure 14).

Historic structures on land, while technically outside of sanctuary boundaries, remain as important tangible fragments of the past and

provide insight into past human interactions with the ocean. These include historic lighthouses at Tatoosh and Destruction islands, lifesaving station remnants at Waadah Island and LaPush, wartime defense sites at Cape Flattery and Anderson Point, and sites of coastal patrol cabins scattered along the Olympic Coast. Homesteads, resorts, graves, and memorials also reflect a human dimension to the coast now largely reclaimed by time, the forest, or the sea.

## Pressures on the Sanctuary

**H**uman activities and natural processes both affect the condition of natural and archaeological resources in marine sanctuaries. This section describes the nature and extent of the most prominent human influences upon Olympic Coast National Marine Sanctuary.

### Commercial Development

With advances in technologies and changes in our society's needs come proposals for new projects, many of which could not have been anticipated at the time of the sanctuary's designation and are not addressed in the existing management plan. The design of these developments and their potential impacts must be carefully considered to assess their compatibility with the sanctuary's primary goal of resource protection.

### Fiber Optic Telecommunications

In 1999-2000, a pair of trans-Pacific fiber optic telecommunication cables, called the Pacific Crossing-1 (PC-1) system, was laid across the northern portion of the sanctuary en route from Mukilteo, Washington, to Japan. Submarine cable installation involves substantial seafloor disturbance along a narrow swath as a plow cuts about a meter into the substrate to bury and protect the cable and to avoid future entanglement with anchors, fishing gear or organisms. Although successful cable burial was reported, surveys of the PC-1 cables in the sanctuary conducted in 2000 revealed that substantial portions of each cable were not buried at a sufficient depth to avoid risks, and in many places the cables were unburied and suspended above the seafloor. In this condition, the cables could be physically damaged by fishing trawl gear and require repairs that could repeatedly disturb seafloor communities. Additionally, where unburied and suspended, the cables pose a serious safety concern for fishers employed in bottom contact fisheries who could snag gear on an exposed cable, a risk that limits access of Native American tribal fishers to portions of their treaty-reserved fishing grounds. In light of these risks, the cable owners agreed to recover and re-lay the cables in the sanctuary, an effort that was completed in late summer 2006 (NOAA 2005, Tyco 2006).

### Proposed Ocean Wave Energy Project

The Makah Bay Offshore Wave Energy Pilot Project has been in development for several years and is currently undergoing environmental review and permitting approvals. In December 2007, this project was issued a conditional license by the Federal Energy Regulatory Commission; this is the first federal license for an ocean energy project in the U.S. This one-megawatt demonstration project would test a novel technology and deliver power to the Clallam County Public Utility District's grid from a renewable, "green" energy source — ocean waves. As proposed, the project includes four interconnected, floating buoys tethered to the ocean floor with a complex anchoring system and a submarine electrical transmission cable laid across the

seabed to the shore and routed underground past sensitive near-shore habitat. Authorization from the sanctuary will be required, but the project proponent has not yet applied for a sanctuary permit.

The in-water portion of the project is within Olympic Coast sanctuary boundaries, and the shore-based facilities are on tribal land of the Makah Indian Nation. The development company, Finavera Renewables, has conducted preliminary site evaluation studies and is developing final designs and plans for the installations. Federal, state and tribal representatives are working with Finavera to develop maintenance and monitoring plans to mitigate and assess potential environmental impacts of this new technology, including damage to seafloor habitats and threats to marine mammals and seabirds (FERC 2007).

### Open-Ocean Aquaculture

NOAA's Aquaculture Program is currently exploring possibilities for open-ocean or offshore aquaculture production in federal waters, which include all sanctuary waters more than three nautical miles (5.5 kilometers) off the Washington coast. Open-ocean aquaculture is a controversial issue for some segments of the public and raises regulatory concerns with regard to pathogens, nutrient loading, fishing area restrictions and habitat and ecosystem impacts. To date, no projects have been proposed for open-ocean aquaculture in the sanctuary. Although sea conditions are dynamic and challenging in the sanctuary, technological developments in anchoring and structural design may make such development feasible in the sanctuary in the future. If projects are proposed for the sanctuary, it will be necessary for sanctuary staff to investigate potential environmental impacts and weigh these against sanctuary goals and mandates while making permitting decisions.

### Fishing

Commercial and recreational fishing are important components of the coastal economy and provide valuable food resources to the Northwest and beyond. Fishing occurs within the sanctuary, and commercial, tribal and recreational fishers are significant stakeholders in the health of the fisheries. However, some aspects of fishing practices and regulations are under scrutiny from co-managers for their potential negative impacts to habitat and to ecosystem functions.

In recent years, the NOAA Fisheries Service has implemented regulations on the West Coast to restore stocks of overfished species and prevent physical damage to Essential Fish Habitat. Research has documented damage to deep coral and sponge communities by bottom contact fishing gear around the world (Fosså et al. 2002, Morgan et al.

2005, Rogers 2004, Morgan et al. 2006). The distribution of existing and historic deep coral and sponge communities in the Olympic Coast region is poorly known, as is the extent of impact to those areas (Brancato et al. 2007).

Rough waters and complex seabed features of the sanctuary increase the potential for fishing gear entanglement and loss. Studies from Puget Sound and beyond reveal that abandoned fishing gear can remain for decades, potentially entangling and killing species that encounter the gear (NRC Inc. 2008). This phenomenon has been called “ghost fishing,” where derelict gear continues to fish by attracting, trapping and killing a wide variety of marine mammals, seabirds, shellfish and other invertebrates, and fish. Dead organisms attract other feeding animals, thus perpetuating the cycle of unintended mortality. A direct economic impact of ghost fishing is the reduction of fishery stocks otherwise available for commercial and recreational fishers. Accumulations of gear on critical spawning and rearing habitat can significantly impact fishery stocks. Derelict fishing gear also can threaten human safety, restrict other legitimate sanctuary uses — such as regulated fishing, anchoring and operation of vessels — and diminish the aesthetic qualities for activities such as scuba diving.

### Ballast Water and Invasive Species

Millions of liters of seawater are routinely carried around the world as ballast aboard oil tankers and other commercial vessels to increase stability. If ships empty their ballast tanks of water transported from other regions there is a risk of introducing non-native fish, invertebrates and plants, many of which can alter ecosystems, sometimes in catastrophic ways. Washington state recently implemented regulations to minimize this risk by requiring ballast water treatment or exchange in offshore waters beyond the sanctuary. Still, invasive species can also be introduced through hull fouling, smaller commercial and recreational vessels, aquaculture practices, release of captive animals and plants (e.g., aquarium specimens), floating marine debris, or range expansion.

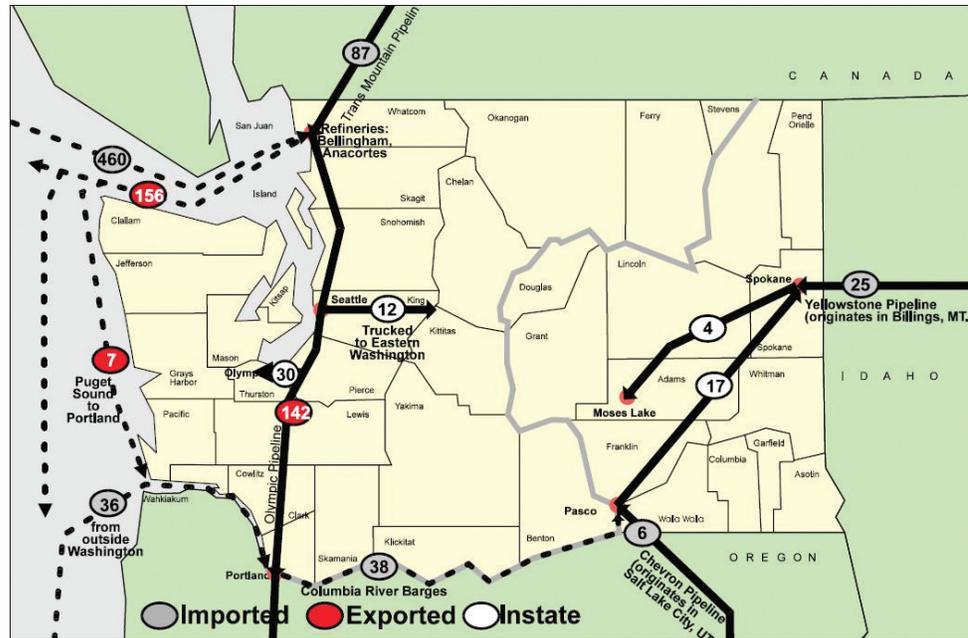


Figure 15. Primary transportation routes and quantities of petroleum products transported in Washington state, with specific routes scaled in thousands of barrels per day. Source: Washington State Department of Ecology

Several established and emerging non-indigenous invaders, such as the invasive alga *Sargassum muticum* and the European green crab, *Carcinus maenas*, threaten both critical habitat and important commercial species in the Pacific Northwest. There is widespread recognition that invasive species can affect fisheries, waterways and facilities operating adjacent to waterways, as well as the functioning of natural ecosystems. The introduction of aquatic invasive species into the coastal waters of the Pacific Northwest poses serious economic and environmental threats recognized by resource managers, the aquaculture industry, non-governmental organizations and concerned citizens. Coastal estuaries in Washington, which provide critical habitat for many commercially important species such as Dungeness crab, shellfish and many marine fish species, are particularly susceptible to rapid development of aquatic invasive species populations.

### Oil Spills

As one of North America's major gateways to Pacific Rim trade, the Strait of Juan de Fuca is one of the busiest waterways in the world, with vessel traffic going to several busy ports in Washington state and Vancouver, British Columbia. Every year, approximately 5,000 vessels greater than 300 gross tons transit the northern part of the sanctuary on approach to the Strait of Juan de Fuca, and a comparable number of outbound transits occur immediately north of the sanctuary in Canadian waters.

Washington is also one of the nation's primary petroleum refining centers. Tank vessels inbound to Puget Sound move crude oil to Washington's refineries. Large quantities of crude oil also come into refineries through the Trans Mountain Pipeline from Canada. Refined products are exported from Washington to other western states primarily through pipelines, barges and tankers. These transportation corridors are at greatest risk to major spills (Figure 15) (WDOE 2007) <http://www.ecy.wa.gov/pubs/97252.pdf>. Cargo, fishing and passenger vessels involved with Pacific Rim commerce can also hold substantial quantities of petroleum products in their fuel tanks.

Oil contamination of marine mammals and seabirds can cause eye irritation, impairment of thermal regulation, loss of buoyancy, toxicity, reproductive abnormalities, and ultimately death. Oil spills can deplete food sources and destroy habitat characteristics essential for survival of vertebrate species. A spill could wipe out at least one generation of a population, and in a worst-case scenario, extinguish multiple species on a local or regional scale. Sea otters and many species of seabirds that inhabit or utilize the ocean's surface are particularly susceptible to damage from oil in nearshore environments.

Oil spills can have lethal as well as long-term, sub-lethal effects on fish (e.g., behavioral changes, reproductive abnormalities) and can also contaminate fish targeted for human consumption. Some sectors of the fishing and shellfish industries could be shut down for years by an oil spill, causing long-term negative effects on the economy of local tribes and other coastal fishers. Nearshore habitats, critical for survival of juvenile fish, can also be severely impacted by oil spills that smother or poison kelp, sea grasses and other marine plants. Oiling of intertidal areas can cause significant damage to invertebrates, with negative impacts that can linger for many years (Downs et al. 2002).

The Washington coast has endured the damages of several oil spills in recent times, including the 1988 Nestucca barge spill, which released 231,000 gallons of fuel oil into waters off Grays Harbor, impacting many kilometers of coastline as far north as Canada. In 1991, a fishing vessel, Tenyo Maru, spilled 100,000 gallons of diesel fuel that spread as far south as Oregon but most heavily impacted the Makah Indian Reservation and Olympic National Park wilderness coast. Although state and federal oil spill prevention and response policies are continually improving, the potential for severe environmental damage remains a strong concern in the region.

### Increased Human Use

Long-time residents as well as day-use visitors are drawn to the many recreational opportunities of the Olympic Coast, including sport fishing, kayaking, surfing, wildlife viewing, clamming and beachcombing. Recreational use can sometimes cause unintended pressures to the coastal ecosystem. Motorized and non-motorized recreational boaters and sight-seeing pilots can inadvertently disturb wildlife, often with

devastating consequences. Although human access to most seabird colonies is restricted by the U.S. Fish and Wildlife Service's WA Maritime Refuge Complex regulations (USFWS 2007), wildlife on the refuge islands is vulnerable to disturbance from low-flying aircraft that do not comply with the 2,000-foot elevation requirement established by the sanctuary. Cliff-nesting seabirds can abandon their nests if frightened, leaving eggs and nestlings exposed to avian predators. Resting pinnipeds can abandon their haulout sites for the water when disturbed, often at a large energetic cost, especially to young animals. Beach users such as bird watchers, dog walkers, ATV users and surfers can displace foraging migratory birds at important resting and staging areas. Popular intertidal areas show signs of trampling in localized patches.

Watershed alterations from increased land use such as timber harvesting may affect water quality by increasing sediment loads and nutrient runoff. Excessive sediment introduced to the nearshore environment can suffocate benthic marine life and reduce water clarity. Some persistent industrial chemicals, even those no longer in use in this country such as DDT, have found their way into marine food webs and can be detected in tissue samples of higher-order predators (Brancato et al. 2006, Ross et al. 2000, Ross 2006). Some are carried from land to sea through watersheds, while others may be transported via air currents.

Garbage and lost fishing gear — particularly items composed of non-biodegradable products like plastic — are elements of what is collectively called marine debris. The amount of marine debris in open-ocean and coastal systems is on the rise throughout the world. Impacts from marine debris include entanglement and drowning of animals, inadvertent ingestion of plastics by mammals, turtles and birds, transfer of diseases from land-based sources to marine wildlife, fouling of active fishing gear, and benthic habitat degradation.

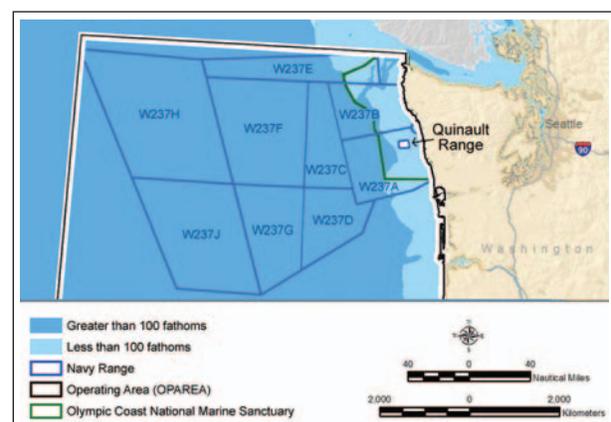


Figure 16. Operations areas for the U.S. Navy off the northern Washington coast. The green line is the boundary of Olympic Coast National Marine Sanctuary. Source: adapted from U.S. Navy

## **Military Activities**

In or adjacent to the sanctuary, the military has pre-established training areas that are part of the Northwest Training Range Complex. These training areas include two warning areas (W-237A and W-237B) and two military operation areas (MOA Olympic A and B) that are designated training and operating areas for the Pacific Fleet air and surface forces (Figure 16). Military activities in these areas consist of subsurface, offshore surface, aerial training activities, and other military operations as discussed in the sanctuary's original environmental impact statement (NOAA 1993). Military operations that are exempt from sanctuary regulations include:

- Hull integrity tests and other deepwater tests
- Live firing of guns, missiles, torpedoes and chaff
- Activities associated with the Quinault Range including the in-water testing of non-explosive torpedoes; and
- Anti-submarine warfare operations

The Navy's Underwater Warfare Center (NUWC) Division Keyport operates and maintains the Quinault Underwater Tracking Range located in Navy Operations Area W-237A. This range is instrumented to track surface vessels, submarines and various undersea vehicles. It is the policy of NUWC Division Keyport not to test in the presence of cetaceans. The Navy has proposed expansion of the Quinault Range's area more than 50-fold to support existing and future needs in manned and unmanned vehicle programs development. The proposed geographic expansion would include a surf-zone landing site.

Potential effects associated with Navy research, development, testing and evaluation, and fleet training activities are currently being evaluated in separate environmental impact statements (EIS) via the National Environmental Policy Act (NEPA) process. The Navy has proposed extending the Quinault Range site activities and geographic boundaries to support existing and future needs in manned and unmanned vehicle programs development. The extension would coincide with the existing W-237A Military Warning Area and one surf-zone access site. The Navy has no plan under this EIS to extend any permanent bottom-mounted instrumentation by the proposed action, but has proposed temporary installations on the seafloor. The fleet training activities are being evaluated under a separate, ongoing NEPA process. During scoping, the Olympic Coast Sanctuary Advisory Council requested that this review consider a wide variety of issues, including: disturbance to birds, fish, and mammals from increased activity and noise; damage to seafloor habitats and wildlife from cables, anchors, targets, torpedoes and unmanned undersea

vehicles; accidental discharges of pollutants; interference with tribal fishing and subsistence harvest activities; and restrictions on the ability of sanctuary and affiliated scientists to conduct research.

## **Underwater Noise Pollution**

The level of noise pollution in the oceans has increased dramatically during the last 50 years. The primary source of low-frequency ocean noise is commercial shipping (NRC 2003). Although impacts to wildlife in the Olympic Coast sanctuary have not been documented, underwater noise pollution in other locations has been linked to disturbance and injury. Many marine mammals respond to noise by altering their breathing rates, spending more time underwater before coming up for air, changing the depths or speeds of their dives, shielding their young, changing their vocalization content and durations, and swimming away from the affected area (Richardson et al. 1995). Acute sound intensities may cause marine mammals and other organisms to undergo temporary or permanent hearing loss. The disorientation and hearing loss may account for some cases in which ships collide with marine mammals that are apparently unaware of the approaching vessel. Most strikes occur in coastal waters on the continental shelf, where large marine mammals concentrate to feed. High levels of noise could also affect predation efficiency for marine mammals that use sound to hunt or capture prey. Underwater noise has also been found to negatively affect social behaviors in fish because many species rely on vocalizations when courting potential mates, and most detect sound vibrations that can be used to localize food or avoid predators (Myrberg 1990). In extreme cases, such as air guns used for seismic exploration, extensive damage was reported in laboratory study to the sensory epithelia of fish ears with no subsequent repair or replacement of damaged sensory cells (McCauley et al. 2003).

## **Climate Change**

Over the next century, climate change is projected to profoundly impact coastal and marine ecosystems on a global scale, with anticipated effects on sea level, temperature, storm intensity and current patterns. At a regional scale, we can anticipate significant shifts in the species composition of ecological communities, seasonal flows in freshwater systems, rates of primary productivity, sea level rise, coastal flooding and erosion, and wind-driven circulation patterns (Scavia et al. 2002). Rising seawater temperatures may give rise to increased algal blooms, major shifts in species distributions, local species extirpations, and increases in pathogenic diseases (Epstein et al. 1993, Harvell et al. 1999). A better understanding of ocean responses to global scale climatic changes is needed in order to improve interpretation of observable ecosystem fluctuations, such as temperature changes, hypoxic events and ocean acidity, that may or may not be directly coupled to climate change.

# State of Sanctuary Resources

This section provides summaries of the conditions and trends within four resource areas: water, habitat, living resources, and maritime archaeological resources. Sanctuary staff and selected outside experts considered a series of questions about each resource area. The set of questions derive from the National Marine Sanctuary System’s mission, and a system-wide monitoring framework (National Marine Sanctuary Program 2004) developed to ensure the timely flow of data and information to those responsible for managing and protecting resources in the ocean and coastal zone, and to those that use, depend on, and study the ecosystems encompassed by the sanctuaries. The questions are meant to set the limits of judgments so that responses can be confined to certain reporting categories that will later be compared among all sanctuary sites and combined. Appendix A (Rating Scale for System-Wide Monitoring Questions) clarifies the questions and presents statements that were used to judge the status and assign a corresponding color code on a scale from “good” to “poor.” These statements are customized for each question. In addition, symbols are used to indicate trends. Methods for consultation with experts and development of status and trends ratings are described in Appendix B.

This section of the report provides answers to the set of questions for Olympic Coast National Marine Sanctuary. Answers are supported by specific examples of data, investigations, monitoring and observations, and the basis for judgment is provided in the text and summarized in the table for each resource area. Where published or additional information exists, the reader is provided with appropriate references and web links.

## Water Quality Status and Trends

Water quality within the sanctuary is largely representative of natural ocean conditions, with relatively minor influence from human activities at sea and on land. By conventional measures, marine water quality within the sanctuary is not notably compromised. There are very few point sources of pollution in the vicinity, such as sewage outfalls or industrial discharge sites, to degrade water conditions. To date, the sparse human population has limited nonpoint source pollution — the harmful byproducts of everyday activities, such as pathogens from failing septic systems, residues from domestic products, excess nutrients, petroleum combustion byproducts, or hydrocarbons from roads and highways — that might enter the oceanic food web. However, increased sediment loading in rivers from logging, road building and upland development has been a concern for impacts to nearshore habitats.

Although water quality within the sanctuary is currently good, the potential for contamination by petroleum products, pathogens and chemicals is a concern. Four of the five largest oil spills in Washington state history have occurred in or moved into the area now designated as the sanctuary. In the decade before sanctuary designation, two major oil spills released more than 1,230,258 liters (325,000 gallons) of petroleum products that impacted marine ecosystems and human communities on the outer Washington coast. Moreover, naturally occurring harmful algal blooms can elevate the risk of shellfish poisoning. Recently documented, widespread hypoxic conditions in

## Water Quality Status & Trends

#	Issue	Rating	Basis for Judgment	Description of Findings
1	Stressors	?	Hypoxic conditions may be increasing in frequency and spatial extent in nearshore waters.	Selected conditions may preclude full development of living resource assemblages and habitats, but are not likely to cause substantial or persistent declines.
2	Eutrophic Condition	—	No suspected human influence on harmful algal blooms or eutrophication.	Conditions do not appear to have the potential to negatively affect living resources or habitat quality.
3	Human Health	—	Naturally occurring harmful algal blooms result in periodic shellfish closures.	Selected conditions that have the potential to affect human health may exist, but human impacts have not been reported.
4	Human Activities	—	Threat of oil spills from vessels.	Some potentially harmful activities exist, but they do not appear to have had a negative effect on water quality.

**Status:** Good Good/Fair Fair Fair/Poor Poor Undet.

**Trends:** Improving (▲), Not Changing (—), Getting Worse (▼), Undetermined Trend (?), Question not applicable (N/A)

nearshore areas off Oregon and part of the Washington coast appear to result from anomalous weather and oceanographic patterns.

The following information summarizes assessments by sanctuary staff and subject area experts of the status and trends pertaining to water quality.

**1. Are specific or multiple stressors, including changing oceanographic and atmospheric conditions, affecting water quality?** Whereas sanctuary waters are not degraded by persistent chemical contamination, periodic incursion of oxygen-depleted water to continental shelf and nearshore waters has killed organisms in its pathway. Potential and early evidence of linkages between climate change and changing oceanic conditions with these hypoxic events, as well as local effects on toxic algae blooms, increasing water temperature and acidity, all lead to uncertainty about the trends in these stressors.

Oxygen serves a critical role in defining ocean habitats. Deep waters on the continental shelf normally have low oxygen concentrations, and resident organisms are adapted to oxygen levels that can be lethal to animals living in near-surface and nearshore waters. Further depression of oxygen levels near the deep seafloor and movement of oxygen-depleted waters toward shore, however, can stress living communities. Hypoxia (low oxygen levels, or dissolved  $O_2$  below 1.4 ml/L) is often associated with high nutrient loading from land-based sources, while off Washington's outer coast it is a function of wind-driven upwelling dynamics and ocean conditions that control the delivery of oxygen-poor, nutrient-rich deep water across the continental shelf (Grantham et al. 2004). Hypoxic conditions severe enough

to cause widespread fish and invertebrate mortality were documented off the Washington and Oregon coasts in 2006. Figure 17 provides data from the sanctuary's monitoring station off Cape Elizabeth showing hypoxic conditions that persisted close to shore for more than two weeks in July 2006. Other invertebrate and fish mortality events have been observed along Washington's coast, for example in 2001 and 2002, but historic records and oxygen monitoring data are not available to definitively link previous mortality events to hypoxic conditions.

A major oceanographic feature off the eastern Pacific Coast, the oxygen minimum zone, is a layer of deep water along the upper continental slope extending to depths greater than 1,000 meters where dissolved oxygen levels are persistently low (Deuser 1975). Analysis of a long-term data set, the 50-year data record from the eastern subarctic Pacific, indicates that deep waters beyond the continental shelf, although normally hypoxic, show trends of increased temperature and lower oxygen (Whitney et al. 2006). As this occurs, deep waters transported across the continental shelf and upwelling toward shore may be increasingly depleted of oxygen and may cause more stress to living resources in the sanctuary.

Grantham et al. (2004) described the development of nearshore hypoxic conditions in the Pacific Northwest as "a novel emergence" that may represent a critical link between climate variability and ecosystem sensitivity to such changes. Although there is some historic evidence that hypoxic conditions have occurred along the Oregon and Washington coasts in the past (Hickey pers. comm.), a comprehensive set of historic data from Oregon's shelf waters indicates that the severity, geographic extent, and duration of hypoxic conditions off Oregon have increased since 2000, and

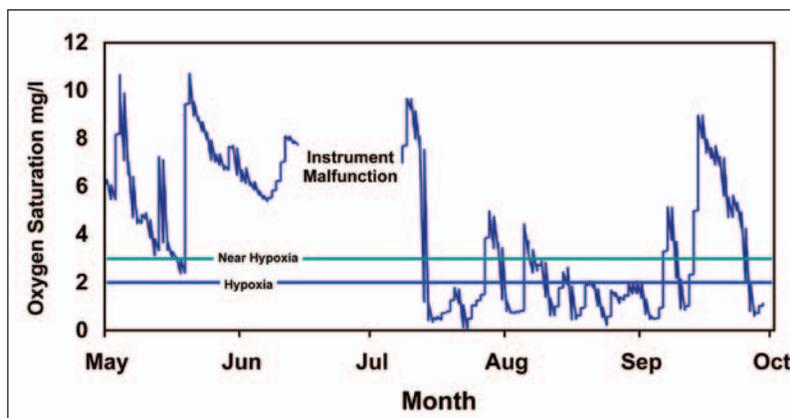


Figure 17. Oxygen data taken concurrently with the July 2006 fish kill first reported by Quinalt Natural Resources Department. Oxygen was measured at 1 meter from the bottom at an Olympic Coast sanctuary mooring station off Cape Elizabeth in 15-meter-deep water. Source: OCNMS data

anoxic conditions (water completely devoid of oxygen) had never been recorded before the 2006 event (Chan et al. 2008).

Harmful algal bloom (HAB) events are common in sanctuary waters and can affect wildlife and marine ecosystems, as well as human health. Figure 18 shows the presence and unpredictability of high-domoic acid events at two beaches approximately 40 kilometers (25 miles) apart on the shores of the sanctuary (domoic acid is a toxin produced by one particular type of harmful algae). Some scientists suspect that HABs off the outer coast are increasing in frequency, but long-term records are not available for confirmation.

Recent evidence of increasing seawater acidity (low pH), increases in water temperature, and shifts in oceanographic conditions have been attributed to anthropogenically influenced climate change (Wootton unpublished data, Grantham et al. 2004, Barth et al. 2007, Chan et al. 2008). However, such cause-and-effect linkages are uncertain and will require more data before they are fully accepted.

Existing levels of contaminants (metals, persistent organic pollutants, hydrocarbons, PCBs) are generally at low levels off the Olympic Coast. Measurements of chemical levels in water, sediment and biota in 2003 at 30 stations in the Olympic Coast sanctuary as part of the Environmental Monitoring and Assessment Program indicated good water quality throughout the sanctuary (Partridge 2007).

**2. What is the eutrophic condition of sanctuary waters and how is it changing?** Human-caused eutrophication is not a concern in the sanctuary due to the absence of problematic sources of nutrients, such as population centers or significant municipal discharges in or near the sanctuary. In fact, sampling

in 2003 indicated that conditions for primary production can be limited by a low availability of essential nutrients in summer months off the Washington coast (Partridge 2007). This would suggest that if nutrient supplies were to increase during that time of year, blooms could be triggered. Local inputs of nutrients are not expected to increase significantly, but because long-term datasets and sufficient instrumentation are lacking, there is not information to document a change or trend in nutrient concentrations in sanctuary waters.

The Juan de Fuca Eddy system is a naturally occurring, seasonally intensified water circulation feature covering northern sanctuary waters (Figure 19). It covers a broad region beginning roughly 70 kilometers west of Cape Flattery and contains elevated macronutrients levels. Nutrients in this system are derived primarily from upwelling of nutrient-rich deep waters from the California Undercurrent, combined with lesser contributions from the Strait of Juan de Fuca outflow (MacFadyen et al. 2008). The feature's retentive circulation patterns and nutrient supply promote high primary productivity within the eddy, and periodic advection of these water masses toward shore has been identified as a trigger for HABs in sanctuary waters (Foreman et al. 2007, MacFadyen et al. 2005). Consequently, HABs in the sanctuary are currently considered natural phenomena that are not enhanced by anthropogenic inputs of nutrients or eutrophic conditions.

**3. Do sanctuary waters pose risks to human health and how are they changing?** The main risk to human health posed by sanctuary waters is through consumption of tainted shellfish. Levels of naturally occurring biotoxins in excess of action levels to protect human health have been detected once or

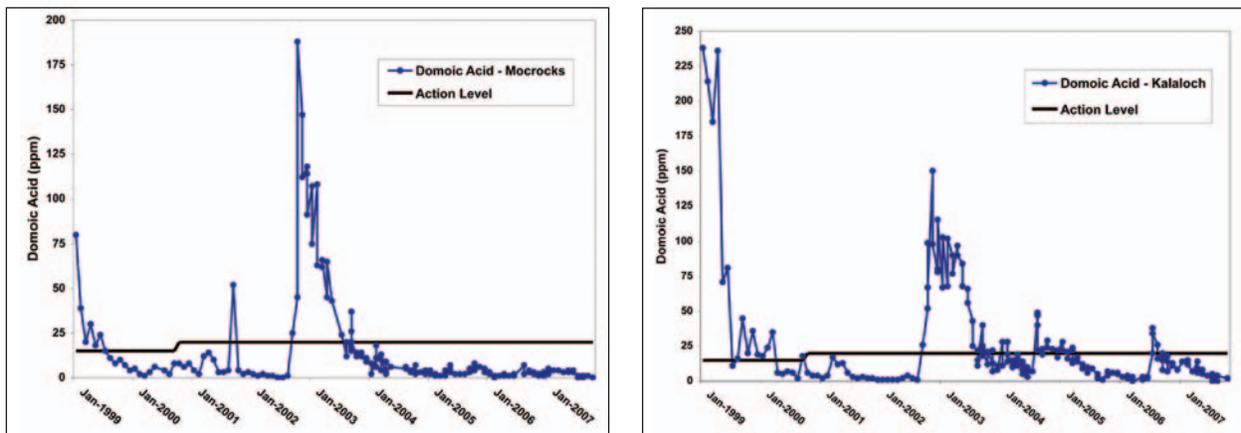


Figure 18. Domoic acid levels in razor clams from the Kalaloch and Moclips (near Moclips River) razor clam management areas, where large recreational razor clam fisheries occur. Shellfish harvesting is closed when tissue levels exceed the action level. Source: WDFW data

twice a year, on average, over the past 16 years, but the limited historical record precludes the identification of any long-term trend in the frequency of toxin level spikes.

Shellfish on the outer Washington coast is normally safe for human consumption, yet during HAB events filter feeding organisms, such as hard-shelled clams and mussels, can concentrate toxins produced by some species of plankton, rendering them toxic to consumers. Routine monitoring is conducted at selected locations by coastal tribes and Washington state, and shellfish harvest closures are enacted when concentrations exceed action levels for protection of human health. Rapid detection techniques are being sought to enhance the ability to monitor for toxins. Risk of human exposure remains, however, because it can be difficult to reach all subsistence and recreational harvesters on this remote coast.

For centuries, consumers of bivalves in the Pacific Northwest have known about paralytic shellfish poisoning (PSP), which is caused by saxitoxins produced by dinoflagellates. In 1991, domoic acid, a neurotoxin produced by diatoms in the genus *Pseudo-nitzschia* that causes amnesic shellfish poisoning (ASP), was first detected in clams on Washington's outer coast. High levels of either toxin have led to multiple restrictions on the popular recreational razor clam harvest and commercial harvest by local Indian tribes (Figure 18). For the shoreline adjacent to the sanctuary, Washington State Department of Health records since 1991 indicate 14 shellfish harvest closures based on ASP and nine closures based on PSP concerns. The state health department has received no reports of shellfish poisoning on the outer coast since 1991, although exposures (but no deaths) have been reported from other areas in Washington.

As discussed above, harmful algal blooms in the Olympic Coast sanctuary are naturally occurring phenomena. With more intensive monitoring in recent years, there is a perception that blooms have increased in frequency. However, there are insufficient data to confirm a trend because monitoring began only in the 1990s and shellfish poisoning may have been misdiagnosed in the past (Juan de Fuca Eddy Steering Committee 2004, Train-

er 2005, Trainer and Suddeson 2005). If HABs are increasing in frequency, contributing factors may include increased advection of offshore waters shoreward as a result of reduced volume of the Columbia Plume (due to dams and water removals) and altered wind and current patterns due to climate change (Juan de Fuca Eddy Steering Committee 2004, Hickey pers. comm.).

Limited bacterial monitoring in marine waters is conducted by the state health department with assistance from coastal tribes in order to assess human health risks in shellfish harvest areas (Washington State Department of Health 2008). In addition, Surfrider's Blue Water Task Force volunteers monitored five additional sites in the sanctuary during 2003-2005 (<http://www.surfrider.org/whatwedo3c.asp>).

These data indicate there are no significant concerns regarding bacteria such as fecal coliform, *E. coli* and *Enterococcus* in the sanctuary waters.

#### 4. *What are the levels of human activities that may influence water quality and how are they changing?*

The high volume of marine traffic, particularly through northern sanctuary waters, introduces the threat of catastrophic injury to marine resources from an oil spill. This threat is persistent but not changing significantly because vessel management procedures and preventative measures have been implemented, and vessel traffic volumes have been stable in recent years.

The potential for a large-volume oil spill is generally considered the greatest threat to the sanctuary's water quality — a low-probability but high-impact threat. The northern area of the sanctuary lies at the western Strait of Juan de Fuca, the major passage for the incoming and outgoing shipping traffic that lead to the Pacific Northwest's major ports: Seattle, Tacoma and Vancouver, British Columbia. Large commercial vessels, including oil tankers and freighters with large fuel capacity, transit through and near the sanctuary daily, creating a persistent and elevated risk of accidental and catastrophic release of toxic products. An estimated 5.7 billion liters (1.5 billion gallons) of oil are transported through the area each year. Tanker and container traffic occurs daily through all seasons and weather, with about 5,500 freighters and 1,400 tankers transiting the Strait of Juan de



Figure 19. The Juan de Fuca Eddy (also called the Big Eddy) is west of the Strait of Juan de Fuca and spans the international boundary between U.S. and Canadian waters. Image: Canadian Parks and Wilderness Society

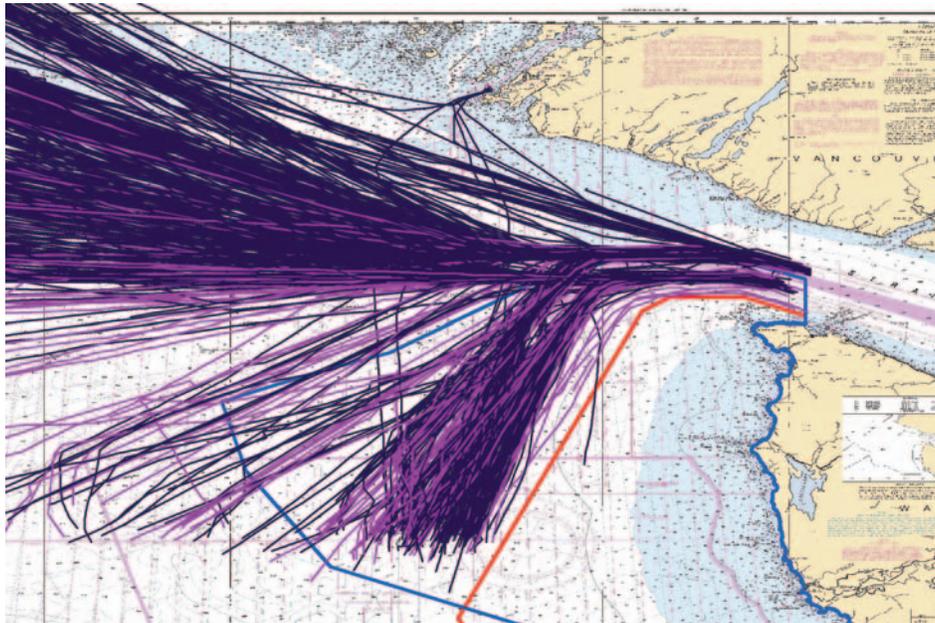


Figure 20. Track lines from large commercial vessels transiting the western Strait of Juan de Fuca in June 2007. Purple lines are tanker traffic. Darker lines are freighter traffic. The light blue line is the sanctuary boundary, and the red line marks the Area-To-Be-Avoided. Source: OCNMS

Fuca in 2006 (data from Marine Exchange of Seattle) (Figure 20). Vessel entry and transit data for the Strait of Juan de Fuca compiled by Washington State Department of Ecology indicate the number of large non-tank vessels (less than 300 gross tons; cargo, passenger, and commercial fishing industry vessels) has decreased by about 17 percent in the past decade, while the number of tank ship transits has increased by 50 percent (from 547 in 1998 to 820 in 2007). Overall, the number of large vessels transiting the Strait may have increased over the past few decades, but has been stable in the past decade.

In the previous century, weak environmental regulations allowed logging and road building practices to damage freshwater habitats and riparian systems in the Pacific Northwest. Rivers and creeks in logged watersheds discharging into marine waters of the outer Washington coast carried elevated burdens of suspended materials that increased turbidity of nearshore marine waters. Although definitive documentation is not available, these

conditions may have inhibited growth of macroalgae in areas near river mouths (Devinny and Volse 1978, Dayton et al. 1992, Norse 1994). Logging remains a major industry on the Olympic Peninsula, and whereas improved regulatory oversight of logging practices may have led to reduced inputs of fine particulates from recent harvest areas, effects from historic activities continue to impact freshwater systems flowing into the sanctuary.

Sanctuary waters are protected from impacts of ballast water discharge by regulations that prohibit discharge within 50 nautical miles (93 kilometers) of shore. The cruise ship industry is rapidly expanding in the Pacific Northwest, with passenger numbers increasing from 120,000 to 781,000 through the Port of Seattle between 2000 and 2007 (WDOE 2008). In 2007, the industry agreed to avoid discharge of biosolids (i.e., sewage sludge) in sanctuary waters. These ships can, however, discharge treated sewage, graywater and blackwater in the sanctuary, in accordance with state and federal law. Cruise ships generate an average of 79,500

liters (21,000 gallons) per day per vessel, but the majority have advanced wastewater treatment systems (EPA 2007).

Coastal development adjacent to the sanctuary is sparse, with a few small population centers on tribal reservation lands and growing residential development along the southern shores of the sanctuary. State and county development regulations should minimize impacts of the growing coastal populations on marine water quality, but this remains a potential threat because of ever increasing pressure for coastal development.

### Habitat Status and Trends

Marine habitats of the sanctuary extend from the intertidal, which is accessible daily during low tides, to the depths of submarine canyons that are only seen by humans via submarines, sensors, or lenses on remotely or autonomously operated vehicles. The sanctuary covers a large area, with physically and biologically complex habitats. Exploration and habitat mapping involves carefully planned and costly

surveys from large vessels using sophisticated technology. Thus far, the sanctuary has completed detailed habitat mapping for about 25 percent of its seafloor, while information on remaining areas lacks resolution and specificity (Figure 21). As a result, generalizations about the sanctuary’s habitats are difficult to make. The following discussion focuses on available information wherever possible, but also includes speculative analysis based on habitats from similar areas and impacts to these habitats documented at other locations.

The Olympic Coast sanctuary’s habitats, similar to its waters, are relatively uncontaminated by chemicals introduced by human activities. Intertidal and nearshore habitats are not considered substantially altered or degraded. Underwater noise pollution and marine debris do compromise habitat quality, but their impacts in the sanctuary are not well-documented. The most significant concern relates to several decades of intensive efforts by fisheries using bottom-contact gear. At locations where biologically structured habitats existed on the sanctuary seafloor, it is likely they have been altered by fishing practices, except perhaps in the roughest of terrain that fishermen avoided. Recovery of biologically structured habitats is expected to occur very slowly, even in the absence of future pressures.

The following information provides an assessment by sanctuary staff and subject area experts of the status and trends pertaining to the current state of marine habitats.

### Habitat Status & Trends

#	Issue	Rating	Basis for Judgment	Description of Findings
5	Abundance/ Distribution	—	Reduction in habitat complexity by bottom-tending gear; short-term impacts from fishing gear and cable installation.	Selected habitat loss or alteration has taken place, precluding full development of living resource assemblages, but it is unlikely to cause substantial or persistent degradation in living resources or water quality.
6	Structure	?	Damage by bottom-tending gear in some deep biogenic habitats.	Selected habitat loss or alteration may inhibit the development of living resources, and may cause measurable but not severe declines in living resources or water quality.
7	Contaminants	—	Prior studies indicate low levels of contaminants.	Contaminants do not appear to have the potential to negatively affect living resources or water quality.
8	Human Activities	▲	Decrease in bottom trawling and presumably impacts to hard-bottom habitats.	Selected activities have resulted in measurable habitat impacts, but evidence suggests effects are localized, not widespread.

**Status:** Good Good/Fair Fair Fair/Poor Poor Undet.

**Trends:** Improving (▲), Not Changing (—), Getting Worse (▼), Undetermined Trend (?), Question not applicable (N/A)

**5. What are the abundance and distribution of major habitat types and how are they changing?** This question focuses on changes to the type and physical composition of marine habitats, whereas Question 6 focuses on biologically structured habitats. Past or ongoing modification of habitat types (e.g., conversion of coastal marsh into upland) from extensive physical disturbance or alterations to physical forces is not a concern in the sanctuary. Some reduction to the physical complexity of deep seafloor habitats, however, has resulted from extensive bottom trawling activity over the past half-century. Recent fishery management measures have limited bottom trawl efforts in areas where the seafloor is most susceptible to physical alteration, so future alteration of habitat from this activity is likely to be minimal, as long as trawl area closures remain in effect.

With limited exceptions, nearshore and intertidal habitats in the sanctuary are remarkably undisturbed by human use and development that has modified habitats in more urbanized areas, such as shoreline armoring, wetlands alteration, dredging, and land-based construction. The remote location, low levels of human habitation, protections provided by the wilderness designation of Olympic National Park’s coast, and restricted access to tribal reservations have allowed these coastal habitats to persist largely intact. At the

few locations where shoreline armoring has been employed or where human visitation has focused on intertidal areas for food collection and recreation, impacts do not appear to be dramatic or widespread (Erickson and Wullschlegler 1998; Erickson 2005).

Data on habitats of the deeper waters of the sanctuary are limited. Only 25 percent of the sanctuary has been characterized using modern, high-resolution acoustic and imaging methods (Intelmann 2006, Bowlby et al. 2008). Low-resolution surveys have revealed a generally wide and featureless continental shelf in the southern portion of the sanctuary dominated by soft substrates with areas of rock outcrop and spires, and the Quinault Canyon. High-resolution mapping may reveal more complex features along the shelf than presently indicated. The northern portion of the sanctuary is dominated by the Juan de Fuca Canyon and trough, complex, glacially carved features containing a mixture of soft sediments, with significant cobble and boulder patches and scattered large glacial erratics deposited during ice retreat. Most of the trough, the shallower extensions of the canyon closer to the Strait of Juan de Fuca, has been mapped using high-resolution methods. Comprehensive surveys with both multi-beam and side-scan techniques have not been completed for the Nitinat, Juan de Fuca, and Quinault canyons.

The most significant physical alteration of sanctuary habitats, besides that caused by natural forces, is likely to have resulted from commercial fishing with bottom trawl gear. Known physical impacts of bottom trawl gear on seafloor habitats from similar areas, in combination with historic fishing patterns in the sanctuary, are evidence that such habitat alterations have likely occurred. Bottom trawl gear is known to reduce complexity and alter the physical structure of seafloor habitats (NRC 2002). Bottom trawling can smooth sedi-

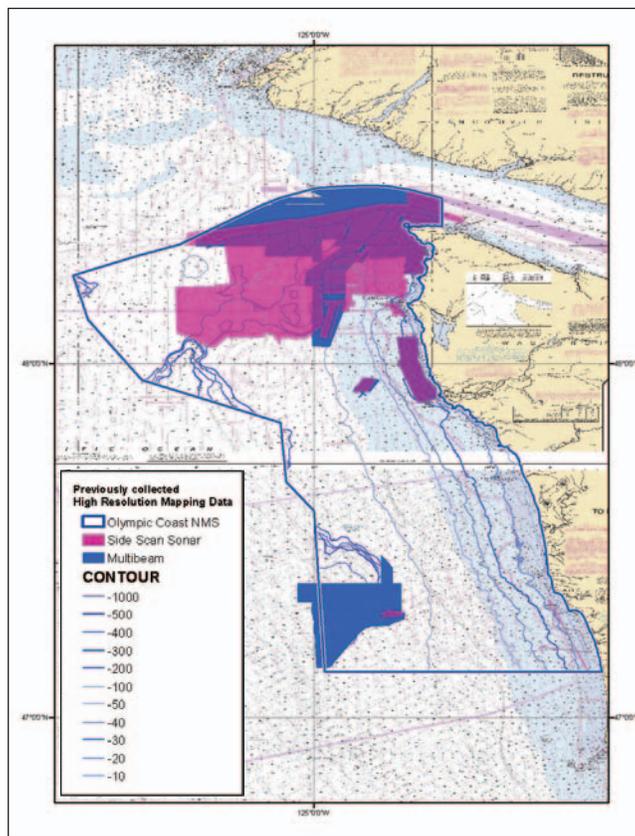


Figure 21. Areas where high-resolution seafloor habitat mapping has been completed by NOAA in Olympic Coast National Marine Sanctuary. Source: OCNMS

mentary bedforms, such as sand waves, reduce bottom roughness, alter the size distribution of surficial features, impact biogenic structures, and roll and move boulders on the seafloor (Auster et al. 1996, Auster and Langton 1999, Whatling and Norse 1999, Thrush and Dayton 2002). Moreover, monitoring by the sanctuary has shown that acute and localized seafloor impacts from submarine cable installations result in short-term habitat disturbance in soft sediments and more persistent physical disturbance in hard substrates. Cable trenching, however, covers a very small portion of the sanctuary seafloor. Monitoring by the sanctuary has also revealed rolled and displaced boulders as a result of cable trenching and bottom-contact commercial fishing gear. Dredging, another fishing technique that causes acute physical disruption of the seafloor, has not been widely employed in the sanctuary.

NOAA Fisheries Service statistics indicate that the northern waters of the sanctuary were one of the most intensively fished bottom trawl areas along the West Coast of the United States in the later half of the 1900s (Shoji 1999). Groundfish landings in Washington, the majority of which were from bottom trawlers, averaged 30 to 40 million pounds annually from the mid-1950s through about 1980. To put this into perspective, non-tribal bottom trawl landings into Washington have averaged about 7 million pounds per year in recent years (2004-06), which represents a decline of about 80 percent since the earlier time period. The number of vessels participating in the fishery shows similar trends. About 100 trawl vessels landed and sold groundfish on the Washington coast (excluding Puget Sound) between the late 1970s and early 1990s (Shoji 1999). As a result of a federal buy-back program in 2003 and attrition in the fishery, in some cases, as a direct result of increasing fishing restrictions, the number of non-tribal trawl vessels landing into Washington has declined to less than 10 vessels per year, which represents about a 90 per-

cent decrease from historical participation levels. Another statistic relevant to potential habitat impact is trawl effort. The total hours of trawler fishing effort on the outer coast averaged about 10,000 hours per year between 1989 and 1997 (Shoji 1999), yet a subsequent decline in the amount of trawl hours has also occurred as the number of vessels has decreased, coupled with a general reduction in trawl trip limits for target species. While Washington bottom trawl fishermen typically used moderate-sized vessels (e.g., less than 30.5 meters or 100 feet length), there was an especially high-impact fishery practiced in deeper waters for more than two decades. Beginning in 1966, a large Soviet fleet of factory trawlers began fishing off the U.S. coasts of California, Oregon and Washington. The vessels were large stern ramp trawlers exceeding 76 meters (250 feet) in length using large gear that fished mostly on the continental shelf and upper slope at depths ranging from about 91 to 220 meters (300 to 720 feet). Their efforts continued until 1991, when all commercial fishing by foreign vessels was excluded from waters within 200 nautical miles (370 kilometers) of the U.S. coastline.

Although the manner in which data were collected in the past makes it difficult to map precisely the level of bottom trawl effort by area, there clearly has been significant interaction between the fishery and the sanctuary seafloor for several decades. Although bottom trawl effort in different areas has changed over time, analysis of Washington Department of Fish and Wildlife (WDFW) commercial trawl logbooks between 1989 and 1997 indicates that trawling occurred widely throughout the sanctuary during this period (Figure 22). There is also an indication of increased trawling pressure within the individual blocks depicted in Figure 21, where the number of blocks with greater than 120 tows per year increased from zero to 11 for the time intervals of 1991-1993 and 1997-1999, respectively (data compiled from NRC 2002). Moreover, large footrope gear (i.e., footrope greater than eight inches in diameter) that allows trawlers to access rockier areas by bouncing the bottom of the trawl net over larger obstructions without tearing nets, was not restricted West Coast-wide until 2000 (PFMC 2005). In recent years, fish-

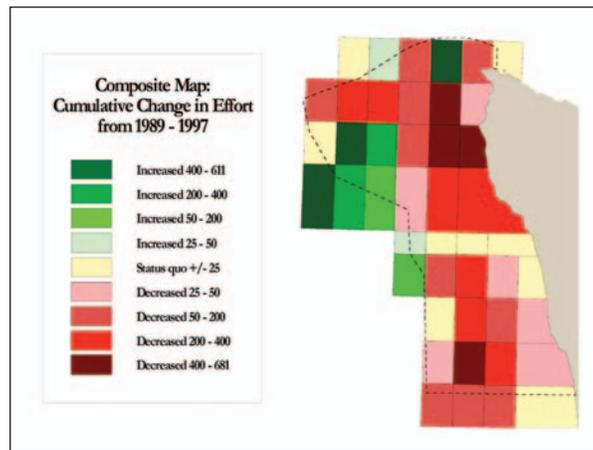


Figure 22. Composite map of overall change in bottom trawl effort by WDFW block area over 1989-1997. Source: Shoji 1999

ery management measures that restrict footrope gear size and limit areas open to trawlers have focused trawl effort more toward soft seafloor substrates where gear impacts on the physical habitat are less of a concern. Off of Washington, WDFW has had a five-inch footrope restriction on non-tribal trawling in state waters (within three nautical miles or 5.5 kilometers of shore) since 1996; WDFW then followed up with a complete prohibition on bottom trawl gear in state waters in 2000. More recent designation of Essential Fish Habitat and

Rockfish Conservation Areas, which restrict bottom trawl fishing by non-tribal commercial vessels, and Non-Trawl Rockfish Conservation Areas that restrict longline and pot gear, also reduces seafloor impacts in the sanctuary by non-tribal fishers. These measures are discussed in more detail in the Response to Pressures section of this report. Although detailed information on historic and current conditions in the sanctuary's deep seafloor habitats is limited, the degree and extent of alteration to the physical complexity of these habitats resulting from past bottom trawling activity are cause for concern, based on evidence from other locations in both the Pacific and Atlantic (Auster and Langton 1999, NRC 2002, Thrush and Dayton 2002). The most significant threat, however, is the impact of these damages to the distribution and abundance of biologically structured habitats on the sanctuary seafloor (see Question 6).

6. **What is the condition of biologically structured habitats and how is it changing?** Intertidal and nearshore habitats structured by living or once-living organisms are intact and thriving in the sanctuary. Of concern are biogenic habitats in deeper areas of the sanctuary that are presumed to have been degraded by extensive practice of bottom trawl and longline fisheries. The trend is undetermined because these habitats may not recover quickly or may never re-establish to their original composition, and recovery can occur only where bottom contact gear is prohibited.

Biologically structured habitats in rocky intertidal areas include macroalgae and invertebrate communities (e.g., mussel beds) that provide micro-habitats for many species of invertebrates and fish. Monitoring conducted by Olympic National Park since 1989

indicates that these habitats are healthy and do not appear to be changing substantially in response to human influences. Large-scale disturbances related primarily to extreme winter weather cause periodic damage to mussel beds (Paine and Levin 1981). Coastal ecologists have begun to design studies to better detect changes that may result from effects of global climate change, such as sea level rise, reduced pH, increasing temperatures, and changes in storm frequency and magnitude. Local trends in these parameters are uncertain, however, and no definitive results have yet been published.

In nearshore areas, canopy kelp beds form a productive, physically complex and protected habitat with a rich biological community association of fish, invertebrates and sea otters. The first historical record for Washington kelp occurred in 1912 (Rigg 1915) as part of the war effort to assess potential sources of potash. Annual monitoring and quantification of the floating kelp canopy has been conducted since 1989 by the Washington Department of Natural Resources and in collaboration with the sanctuary since 1995. Although the canopy changes every year, these kelp beds are generally considered stable. In fact, the area covered by floating kelp has been increasing along the outer coast and western portion of the Strait of Juan de Fuca (Figure 23; Berry et al. 2005; [http://www1.dnr.wa.gov/htdocs/aqr/nshr/pdf/floating\\_kelpbed.pdf](http://www1.dnr.wa.gov/htdocs/aqr/nshr/pdf/floating_kelpbed.pdf)). This increase may be due in part to a growing population of sea otters and subsequent decline in grazing sea urchins or may be influenced by changes in oceanographic conditions. In contrast, extensive logging of the Olympic Peninsula, an area of very high rainfall, has markedly increased sediment loads in rivers in the past. Long-term residents along the coast have noted a reduction in kelp beds near river mouths, which may have been associated with siltation of nearshore habitat and reduced light penetration (Chris Morgan-rot III, personal communication in Norse 1994).

Some deepwater corals found off the Pacific Coast are designated as "structure forming" because they provide vertical structure above the seafloor that serves as habitat for other invertebrate and fish species (Whitmire and Clarke 2007). Other emergent epifauna, such as sponges, hydroids and bryozoans,

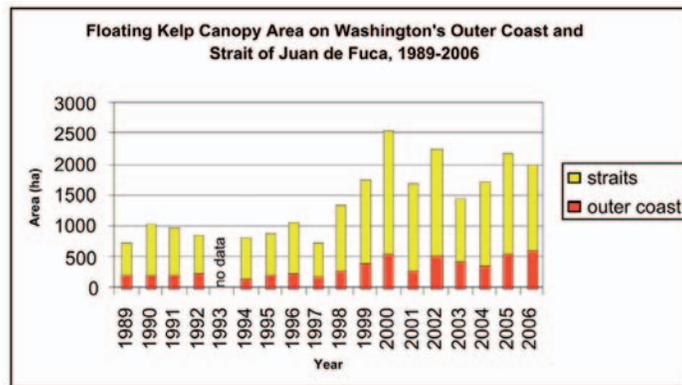


Figure 23. Annual floating kelp canopy area since 1989 along the Washington coast and the Strait of Juan de Fuca. Source: WDNR data

also provide living habitat for invertebrates and fishes. These organisms are vulnerable to damage from bottom contact fishing gear, and because many have slow growth and recruitment rates, damage can be long-lasting (Auster and Langton 1999, Whitting and Norse 1999, NRC 2002, Thrush and Dayton 2002). Information on the historic distribution and condition of habitat-forming

corals in the sanctuary is extremely limited, based on observations compiled from NOAA Fisheries trawl surveys from which identification of invertebrates was very limited particularly prior to 1980 (Whitmire and Clarke 2007) and occasional observations by West Coast research institutions (Etnoyer and Morgan 2003). These data, augmented by video surveys conducted more recently by the sanctuary in limited areas, indicate the presence of several habitat-forming species. The paucity of data is indicated by the first discovery in 2004 of *Lophelia pertusa* in the sanctuary (Hyland et al. 2005), a species with high potential as a biogenic habitat producer (Whitmire and Clarke 2007). Surveys conducted since then have documented additional living and dead colonies of *L. pertusa* and several other species of corals and sponges in the sanctuary (Brancato et al. 2007). Analysis of seafloor habitat data used for Essential Fish Habitat (EFH) designation indicates that approximately 6 percent of the sanctuary is hard substrate with potential to host biologically structured habitat (Figure 24). Of this, 29 percent lies within the Olympic 2 EFH conservation area (see Figure 35, page 46). Recent surveys by Olympic Coast sanctuary researchers have documented corals and other biologically structured habitat in other areas, which indicates this analysis may underestimate the historic or current distribution of biologically structured habitat.

Of all fishing gear types used in the region, bottom trawls have the highest ranking (in terms of severity and extent of damage) for potential impacts to deep corals (Morgan and Chundpagdee 2003). A single pass of a bottom trawl was shown to have significant impacts on corals in Alaska (Krieger 2001). Bottom trawls are followed in severity by bottom longlines. Longline gear can travel significant distances over the seafloor, particularly during retrieval, snaring or undercutting emergent structures (Whitmire and Clarke 2007). Several recent man-

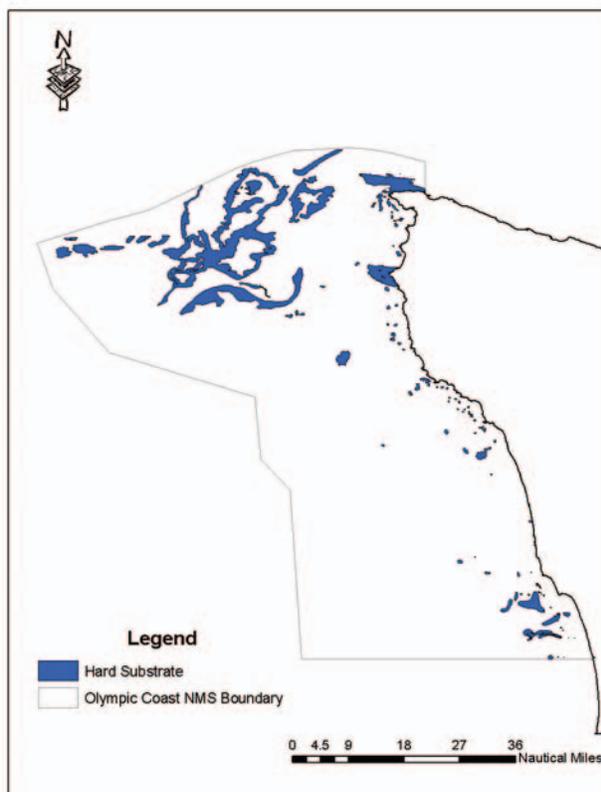


Figure 24. Potential historic distribution of biologically structured habitat associated with hard substrate in the Olympic Coast sanctuary. Source: NOAA data

agement measures implemented through the Pacific Fisheries Management Council for non-tribal commercial fisheries, such as footrope size restrictions, EFH designations, vessel buy-back programs, and Rockfish Conservation Area designations restricting use of trawl and non-trawl gear, will reduce ongoing impacts to such habitats.

The condition of the sanctuary's biologically structured habitats prior to modern fishing activities may never be known. However, we do know that bottom trawl and longline fisheries have been widely practiced in the sanctuary for many decades, likely over all but the roughest of seafloor habitats. We also know that the sanctuary waters contain hard-bottom habitats that can support biogenic structures that are susceptible to damages from these activities. Consequently, we believe it is reasonable to assume that where trawl and longline fisheries have occurred on deep-sea biogenic habitats, it is likely they have been degraded and may not quickly recover. For example, growth rate studies of red tree coral from Alaska indicate recovery of fish habitat from trawl impacts may take 100 years or more (Andrews et al. 2002).

Intensive survey efforts will be required to determine the extent of detectable damage, and the rate of recovery can only be determined within areas where these practices are no longer allowed.

7. **What are the contaminant concentrations in sanctuary habitats and how are they changing?** Sediment contamination levels (i.e., heavy metals and organic pollutants) in the Olympic Coast sanctuary are generally low and do not appear to be increasing. In 30 sediment samples taken in 2003 as part of the West Coast Environmental Monitoring and Assessment Program, there were no PCBs, DDT, or other chlorinated pesticides detected (Partridge 2007). Polycyclic aromatic hydrocarbons (PAHs; found in oils and byproducts of petroleum combustion) and metals were found in the sediment throughout the sanctuary, but no concentrations exceeded Washington state sediment quality standards (WDOE 1995). At one location, a sediment quality guideline predictive of toxicity called the Effects Range-Low (ERL) was exceeded for silver, and at four locations the ERL was exceeded for chromium. The ERL is a concentration correlated with a low likelihood of toxicity to biological organisms (Long et al. 1995, O'Connor 2004). Anthropogenic sources for these metals are not known, but given the low level of human development along the shoreline, these conditions are not likely to change in the near future. Lost lead fishing weights may be a contaminant source, particularly if ingested by wildlife, but there have been no investigations to assess this risk in sanctuary waters.

Concentrations of contaminants in tissues can provide an integrated measure of bioavailability of compounds that are present at low or variable levels in the marine system. Chemical concentrations were recently measured in a variety of invertebrates and sea otters for a study of sea otter health (Brancato et al. 2006), the West Coast Environmental Monitoring and Assessment Program, and for NOAA's Status and Trends, Mussel Watch Program. Contaminant concentrations were found to be low in all organisms, with very few exceptions.

Two potentially significant sources of chemical contaminants in the sanctuary include petroleum releases and atmospheric deposition. Physical evidence, such as tar balls on beaches and oil sheens on water, are occasionally noted in the sanctuary, but persistent and widespread contamination from petroleum has not been documented outside of major oil spills, the most recent of which occurred in 1991. Atmospheric sources of contaminants, however, are a growing regional concern associated with rapid industrialization of Southeast Asia (Wilkening et al. 2000), but the most significant impacts are anticipated in terrestrial systems.

**8. What are the levels of human activities that may influence habitat quality and how are they changing?**

Bottom-tending fishing gear has been employed widely throughout the sanctuary for many decades. Where this has occurred, biologically structured habitat that may have existed is likely to have been degraded. Moreover, diversity of organisms that live in the surface sediment layer, an important element in the seafloor food chain, can be reduced by bottom trawling (Collie et al. 1997; OCNMS unpublished data). Recent fisheries management measures have reduced the potential for further impacts to these habitats by reducing fishing effort and restricting areas where bottom trawling is practiced by non-tribal commercial fishers. Strengthened regulation of land use in watersheds and shoreline areas and management of visitor use in intertidal areas should improve protection of intertidal and nearshore habitats. As a result, it is expected that impacts to sanctuary habitats are decreasing, in general.

The primary activity affecting the deepwater habitats of the sanctuary is bottom-contact fisheries. As noted under Question 5, the bottom trawl effort has significantly declined in comparison to historical levels. Also, the area subject to commercial trawling has been significantly reduced in the sanctuary through designation of permanent closures of groundfish Essential Fish Habitat and the creation of Rockfish Conservation Areas, where trawlers are excluded for the next several decades while key overfished rockfish stocks rebuild, as well as attrition of the fleet resulting in a reduction in bottom trawl effort (Figure 25). Requirements for use of small footrope gear also limits trawling to areas of low “roughness,” which tend to be seafloor substrates, such as sand, mud and gravel, where habitat is less degraded by bottom contact gear. If these area and gear restrictions remain in place over time, biogenic structures may improve, though with their low reproductive rates, slow growth rates and patchy distribution of source material, recovery may take decades (Andrews 2002, Etnoyer and Morgan 2003, Morgan et al. 2005, Whitmire and Clarke 2007).

The sanctuary’s boundaries include intertidal areas of Olympic National Park where habitat quality can be affected by harvesting and trampling by visitors. Park visitation rates have been relatively stable over the past decade, but the shoreline remains a popular destination, with most visits focused near the few access points where roads or trails approach the coast. Shoreline harvesting by non-tribal visitors is not common, yet evidence of destructive harvest practices, such as boulders denuded for fishing bait collection, can be seen, particularly at easily accessible locations. An exception is the popular razor clam harvest at Kalaloch and Mocrocks beaches, an activity that does not damage the high-energy, sandy beaches where razor clams live. Lo-

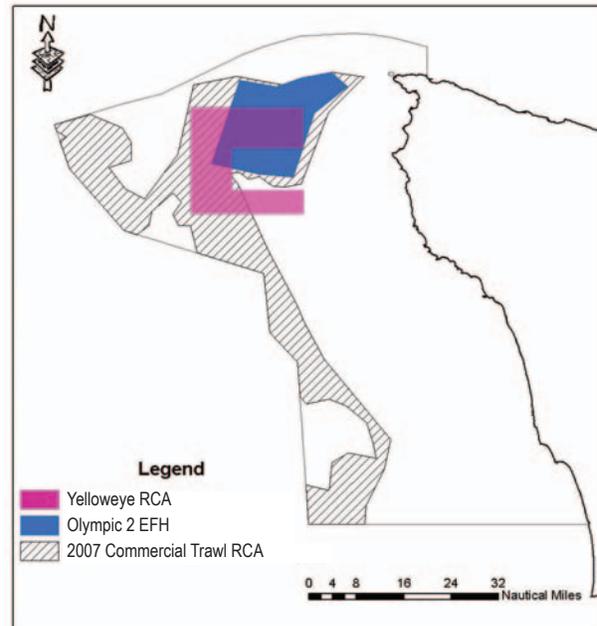


Figure 25. Groundfish Essential Fish Habitat and rockfish conservation areas mapped with OCNMS boundaries. Source: NOAA

calized areas of habitat damage have been caused by fish bait harvesting (Erickson and Wullschleger 1998), but regulations have been implemented to minimize this activity. The park plans to implement harvest closure on approximately 30 percent of the shoreline, which will further reduce the pressure experienced at selected mixed gravel/cobble and rocky intertidal habitats (ONP 2008). Trampling and intertidal exploration may degrade intertidal habitats in some areas, but substantial impacts have not been documented (Erickson 2005).

Marine debris may be an increasing problem for the sanctuary, as has been demonstrated elsewhere. For example, the Ocean Conservancy’s monitoring program documented more than a 5 percent increase in debris per year in the United States from 1999 through 2005 (Ocean Conservancy 2007). Wildlife impacts from floating marine debris, such as entanglement and ingestion, have been documented in other areas and are assumed to occur off the Washington coast. Recent cleanup efforts on the Olympic Coast have removed significant quantities of marine debris from beaches — an estimated 24 tons in 2007 during a two-day clean up event — yet debris is continuously deposited on the shores. The decline in nearshore fishing effort and increasing expense of fishing gear might reduce abandonment of fishing gear in the sanctuary. Surveys in limited portions of the sanctuary have revealed few derelict nets in nearshore ar-

reas near Cape Flattery. Abandoned crab pots remain a problem along the coast, while in deeper areas abandoned longline gear and netting is likely to remain for many years because removal methods are not cost effective.

Land use in upland areas also has the potential to negatively impact nearshore habitats. Chief among these activities has been timber harvest in upland areas, with consequent alteration of water runoff and sediment transport regimes in rivers and nearshore areas. Road building and maintenance, runoff from roads and the development and maintenance of recreational facilities (e.g., campgrounds) and coastal residences all have potential to degrade nearshore habitats and water quality. Coastal development is increasing along the southern shore of the sanctuary. Although stronger regulation of forestry and construction practices is intended to minimize impacts to marine areas, monitoring for relevant parameters in freshwater inputs to sanctuary waters is not conducted routinely.

The U.S. Navy has historically trained and operated off the Washington coast, as described in the sanctuary's original EIS (NOAA 1993). The Navy's research and testing activities involving non-weaponized technologies, as well as their fleet training activities, currently are being evaluated for effects of existing activities and the associated environment in EIS documents. The Navy has proposed significant expansion in the area and extent of research and testing operations in the sanctuary. Although only non-weaponized technologies would be tested, an increase in Navy activity or areas of operation, if not properly controlled, could have potential to disturb the seabed, introduce pollutants associated with test systems, and produce sound energy that could negatively alter the acoustic environment within the sanctuary.

Underwater noise can act as pollution for acoustically oriented organisms, such as some whale and fish species, and can degrade the underwater habitat. The main source of anthropogenic noise within sanctuary waters is vessel traffic, with some contribution from military activities. The establishment of the Area To Be Avoided (ATBA) and high level of compliance by the commercial shipping industry suggests that the risk of pollution and acoustic impacts associated with shipping are reduced in the southern and nearshore portions of the sanctuary where vessel traffic is directed offshore. In northern sanctuary waters, convergence of Pacific Rim shipping routes into the western Strait of Juan de Fuca, vessel traffic lanes and ATBA boundaries all concentrate large vessels (see Figures 20 and 31) in an area where marine mammal density is relatively high (Calambokidis et al. 2004). Stable levels of shipping traffic in the northern sanctuary over the past five years suggest that noise from ships may remain relatively constant in the near future.

### Living Resources Status and Trends

The living resources of the sanctuary are composed of a wide array of species organized into several ecological communities, including intertidal, nearshore, pelagic and benthic. Community structure is shaped by species-species interactions, such as competition and

#### Living Resources Status & Trends

#	Issue	Rating	Basis for Judgment	Description of Findings
9	Biodiversity	?	Ecosystem-level impacts caused by historical depletion of fish, high-order predators, and keystone species.	Selected biodiversity loss may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity.
10	Extracted Species	▲	Overexploitation of some groundfish species has led to wide area closures to rebuild fish stocks.	Extraction may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity.
11	Non-Indigenous Species	▼	Invasive <i>Sargassum</i> and tunicate distributions are expanding.	Non-indigenous species exist, precluding full community development and function, but are unlikely to cause substantial or persistent degradation of ecosystem integrity.
12	Key Species Status	?	Populations of Common Murres, sea otters and numerous rockfish reduced from historic levels, with differing recovery rates.	The reduced abundance of selected keystone species may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity; or selected key species are at reduced levels, but recovery is possible.
13	Key Species Condition	?	Diseases detected in sea otters.	The condition of selected key resources is not optimal, perhaps precluding full ecological function, but substantial or persistent declines are not expected.
14	Human Activities	▲	Commercial and recreational fishing pressure has decreased.	Selected activities have resulted in measurable living resource impacts, but evidence suggests effects are localized, not widespread.

**Status:** Good Good/Fair Fair Fair/Poor Poor Undet.

**Trends:** Improving (▲), Not Changing (—), Getting Worse (▼), Undetermined Trend (?), Question not applicable (N/A)

predation, and physical factors like disturbance, upwelling and temperature. Connections between communities are complex when considering that species can move between habitats at various stages of their life history, or even on a daily basis while foraging or seeking shelter. There are knowledge gaps in the dynamics of ecological communities, and these are areas of active and proposed scientific investigation.

Given the complexity of community types and the diversity within each, not all communities or species are discussed in detail. Rather, there is a greater focus on selected living resources where a better understanding of function and dynamics exists. Also, there is a greater emphasis on those species that serve as proxy for the health of overall community function.

The following information provides an assessment by sanctuary staff and subject area experts of the status and trends of living resources.

**9. What is the status of biodiversity and how is it changing?** Biodiversity is variation of life at all levels of biological organization, and also commonly encompasses diversity within a species (genetic diversity) and among species (species diversity), and comparative diversity among ecosystems (ecosystem diversity). While thorough historic or current inventories are not available to fully measure biodiversity and trends in the sanctuary, there are numerous species in the sanctuary that have experienced population declines in recent decades, which indicates compromised biodiversity in the system. Incremental improvement in our understanding of ecosystem processes and intensified regulatory oversight have led to anticipated reductions in some impacts, and some depleted marine mammal populations have increased in numbers. Nevertheless, the decline of seabird populations and limited information about deep-sea organisms support an undetermined overall trend for biodiversity.

The sanctuary's rocky intertidal community is biologically rich, with at least 300 documented species (Suchanek 1979, Dethier 1988), and new species are continuing to be discovered (deRivera et al. 2005). Long-term monitoring conducted by Olympic National Park in partnership with the sanctuary shows relatively stable trends in biodiversity (Dethier 1995, ONP unpublished data).

Less is known about the historic or current conditions of sub-tidal, open-water and deep-sea communities. A historical perspective suggests that many of the large mammals, high-order predators and keystone species no longer functioned in maintaining community structure when their stocks were depleted by commercial whaling, hunting and fishing (Roman and

Palumbi 2003, Springer et al. 2003, Alter et al. 2007), although this topic remains controversial (Trites et al. 2007, Wade et al. 2007). For example, the loss of sea otters in kelp forest ecosystems, like those in the sanctuary, can cause cascading trophic impacts to the kelp itself and significant changes in biodiversity of that habitat due to the loss of predation pressure on herbivorous invertebrates such as the sea urchin (Estes et al. 1989, Estes and Duggins 1995, Kvitek et al. 1998). More recently, harbor seal numbers were severely reduced during the first half of the 20th century in Washington state by a state-financed population control program (Jeffries et al. 2003). Harbor seal and sea otter populations have rebounded to the point where some people are concerned that the Marine Mammal Protection Act's effective removal of humans as predators on marine mammals is causing an imbalance in the system. Impacts of such dramatic population changes on trophic webs, although not well understood, are likely to have occurred, yet such impacts and recovery from them are difficult to estimate in the absence of historical information.

Although species richness (number of species in a community) may be relatively intact, as evidenced by few documented local vertebrate species extinctions, species evenness (the relative abundance of each species within a community) has undergone documented changes. Severe decreases in abundance of a species can impact ecosystem function. Changes in species evenness are exemplified by declining numbers of several locally breeding seabirds including the Common Murre, Tufted Puffin, Marbled Murrelet, Cassin's Auklet and Brandt's Cormorant. Populations of these species are considered declining in the area, and all are Washington state species of concern. The Marbled Murrelet is also federally threatened, and the Tufted Puffin is a federal species of concern. Four species of rockfish found in the sanctuary have been classified as overfished by the NOAA Fisheries Service (NMFS 2006). Nineteen fish species found within the sanctuary are identified as Washington state species of concern, of which eight also have some degree of federal protected status. Eleven marine mammals, three sea turtles and nine species of marine birds found in the sanctuary are on either federal or state species of concern lists across their range (Washington Department of Fish and Wildlife 2008). These are specific examples of the declining indices of biodiversity within the sanctuary.

Biodiversity within deepwater communities off the Washington coast is poorly understood, given the logistical challenges of conducting research in this habitat. Due to technological advances in undersea research, census and evaluation of ecological integrity of deep-sea habitats has only recently begun

for fish assemblages (Rogers and Pikitch 1992, Jagielo et al. 2003) and coral and sponge communities (Etnoyer and Morgan 2003, Morgan et al. 2006, Brancato et al. 2007, Lumsden et al. 2007). There are indications that deepwater sponge and coral communities in the sanctuary have been impacted before many aspects of their basic biology and ecology could be ascertained (Brancato et al. 2007). Overall, there is much that is not known about the species richness and evenness of several important communities within the sanctuary. The importance of biodiversity of ocean ecosystems cannot be discounted when considering its central role in recovery of systems from perturbations (Worm et al. 2006).

**10. What is the status of environmentally sustainable fishing and how is it changing?** Environmentally sustainable fishing protects the fish and the environment in which they live while allowing responsible use of the species that come from that environment. It is designed to protect the integrity of ecosystem structure, productivity, function and biodiversity, including habitat and associated dependent and ecologically related biological communities.

The major commercial fisheries that operate in the sanctuary target groundfish (bottom trawl and longline), Pacific halibut, Dungeness crab, pink shrimp, sardines and salmon. In addition, there are significant recreational fisheries in the sanctuary that target salmon, groundfish and halibut. In general, professional fisheries managers appear optimistic that sustainable fisheries off the outer coast of Washington are possible under new management regimes following historical stock declines. Because this is the first condition report completed for the Olympic Coast sanctuary, and acknowledging the potentially long lag period between fishery actions and observable ecosystem level repercussions, this report examines this question from a long-term perspective, looking back one or more decades.

For several decades, commercial and recreational fisheries have extracted significant biomass from waters now encompassed by the sanctuary, in part using methods that are known to reduce complexity and damage living structures of seafloor habitats. Management actions, such as reduction of fish stocks to less than 50 percent of the unfished biomass, have the potential to alter ecosystems. Meanwhile, scientists are just beginning to understand fundamental elements of ecosystem function — the distribution and community composition of seafloor habitats, the distribution of and habitat requirements for different life stages of important commercial species, the significance of diverse age structures in sustaining fishery resources, and many other factors that influence community development and function. Recent

fishery management measures implemented to reduce fishing effort, monitor and minimize bycatch, and reduce impacts to habitat appear to have assisted initial recovery of some overfished groundfish stocks and provide evidence for an improving trend.

The complexity of the groundfish stocks makes it difficult to make generalized statements about the sustainability of groundfish fisheries off the Washington coast. More than 90 species of groundfish, including over 60 species of rockfish, are managed under the Pacific Fisheries Management Council's (PFMC) Groundfish Fishery Management Plan. Beginning in the 1970s, improved understanding of life history characteristics led fisheries scientists to conclude that many of these species were incapable of sustaining high-intensity fishing pressure using modern fishing methods (PFMC 2008a). In recent years, West Coast groundfish stocks and fisheries have been in crisis, with steep declines in commercial ex-vessel value, overcapitalization, and several groundfish stocks depleted by a combination of fishing and natural factors (NMFS 2002). There are increasing concerns that our limited ability to forecast groundfish production from single species investigations is missing important natural and fishery-induced changes in the ecosystem and will not be able to forecast truly sustainable harvest policies (NMFS 2002).

Some groundfish species have been depleted in the past and have recovered quickly (e.g., English sole, Pacific whiting, and lingcod), while others are rebuilding more slowly (e.g., Pacific ocean perch) (PFMC 2008a). For depleted species, rebuilding programs are in place, with anticipated stock recovery period from several to over 80 years for different species. All species considered depleted are on track to be rebuilt by their respective schedules, which take into account their different life histories. Most groundfish populations are below 50 percent of their estimated unfished or original biomass (Figure 26). Of the 22 species of groundfish that occur in the sanctuary and are managed at the species level, 13 species have stocks that are considered healthy, three species are in a precautionary status, and five are depleted (canary, yelloweye, widow and darkblotched rockfish, and Pacific ocean perch) (PFMC 2008a). The remaining groundfish species are unassessed or managed in groupings or stock complexes, because individually they comprise a small part of the landed catch or stock assessments have not been completed. For some species, it is likely that insufficient information exists to develop adequate stock assessments.

Olympic Coast National Marine Sanctuary lies within the California Current marine ecosystem, which contains a complex web of pelagic and demersal fish resources, marine mammals, birds, invertebrate resources and elements of the food chain that support these more visible and economically valuable resources.

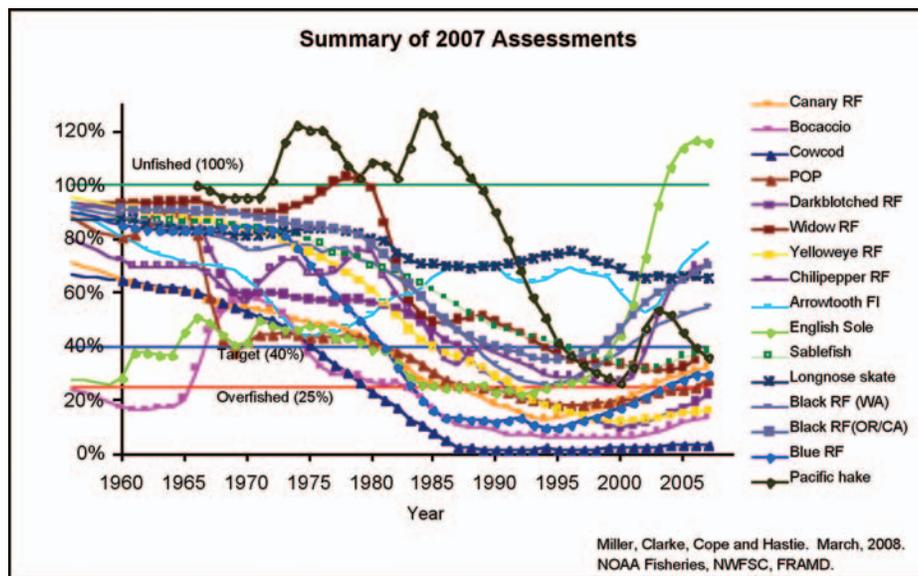


Figure 26. Historic trends in groundfish abundance off the West Coast.

This ecosystem undergoes significant climate fluctuations that last from a couple of years to several decades, and these cycles can both increase and mask the human impacts. For example, computer model simulations of the Northern California Current ecosystem (including the sanctuary) support the general assertion of a significant shift in the mid-1970s from a cold regime with high zooplankton productivity to a warmer regime with lower productivity and declining fish stocks (Field et al. 2001). There are some indications that the biomass off Washington of several rockfish species is high (per unit area) compared to Oregon and California, and this information has been taken into account for the management of some stocks (e.g., black rockfish). Survey data have been collected during NOAA Fisheries trawl surveys, but have not been quantitatively analyzed to determine if other groundfish stocks off Washington or in the sanctuary are more abundant than those off Oregon and California. Additional discussion of groundfish stocks is provided under Question 12.

Fisheries for crab and shrimp off the outer coast of Washington experience catch fluctuations but appear to be sustainable. The commercial Dungeness crab fishery has over 200 Washington coastal commercial Dungeness crab license holders. Dungeness crab landing data back to 1950 shows a large fluctuation in harvest, ranging from a low of 1,130 metric tons (2.5 million pounds) in 1981 to a high of 11,300 metric tons (25 million pounds) in 2004-2005, averaging 4,300 metric tons (9.5 million pounds) per year. This large fluctuation in landings is likely due to varying ocean conditions including water temperature,

food availability and ocean currents (<http://wdfw.wa.gov/fish/shelfish/crabreg/comcrab/coast/index.htm>). A fishery for pink shrimp off Washington peaked in 1988, with landings just over 18 million pounds and about 100 vessels involved. Within a few years, a dramatic decline in local abundance drove many fishers out of the fishery. Since 2000, the Washington coastal fishery has been stable, with landings of seven to eight million pounds annually and about 25 fishers participating. Management of the fishery is passive, with no stock assessment or mandatory logbook program in place. Most shrimp and crab fishing occurs off the central and southern coast of Washington (<http://wdfw.wa.gov/fish/shelfish/shrimp/comm/index.html>).

The Pacific halibut fishery is managed by the United States and Canada in a bilateral commission known as the International Pacific Halibut Commission. Annual catches and bycatch are strictly capped. Female halibut spawning biomass is estimated at three to four times above the historical minimum in the mid-1970s, indicating that the halibut population is in good condition (NMFS 2004). The commission refers to U.S. waters off the states of Washington, Oregon and California collectively as "Area 2A." Because populations in this area are considered healthy, catch limits in Area 2A for commercial, treaty and recreational halibut fishing are approximately double limits imposed in the early 1990s (<http://www.iphc.washington.edu/halcom/default.htm>).

Chinook and coho salmon are the main salmon species managed by PFMC off Washington's outer coast. In odd-numbered years, fisheries are also conducted near the Canadian border for

pink salmon, which are primarily of Fraser River origin. Managing ocean salmon fisheries is an extremely complex task, due in large part to the wide oceanic distribution of the salmon and difficulty in estimating the size of salmon populations. Salmon numbers can vary widely from year to year, and returns can differ significantly from model estimates. In the past decade, landings from the ocean troll fishery off Washington (excluding the area south of Willapa Bay) varied five-fold for chinook and nine-fold for coho between low and high catch years, but no clear trends in landings are evident (PFMC 2008b). Salmon at all life history stages are affected by a wide variety of natural and human-caused factors in the ocean and on land, including ocean and climatic conditions, habitat degradation and loss, and predators (including humans). Other challenges to a sustainable salmon fishery off the Washington coast include judging the effects of different regional fisheries on salmon stocks, recovering salmon under the Endangered Species Act, dividing the harvest fairly, impacts from salmon aquaculture, competition between wild and hatchery salmon, and restoring freshwater habitat (PFMC 2008b).

The past decade has seen a paradigm shift in the management of fisheries from assessments of target stocks to a more holistic consideration of sustaining marine ecosystems, as well as fishing yields (NMFS 1999, Pikitch et al. 2004, Fluharty 2005, Tudela and Short 2005, Babcock et al. 2005). Fishery managers are now beginning to define and employ this practice (Zabel et al. 2003, Marasco et al. 2007, PSMFC 2005). The ecosystem-based fisheries management approach requires managers to consider all biotic interactions of predators, competitors and prey at all life history stages, the effects of physical factors such as climate and weather on fisheries biology and ecology, the complex interactions between fishes and their habitat, and the effects of fishing on fish stocks and their habitat (NMFS 1999).

Ecosystem-based fisheries management is designed to forge a healthy long-term relationship within and between ecosystems, economies, and societies (NMFS 1999, Gaichas 2008). Management of ecologically or environmentally sustainable fisheries includes consideration of measures such as the elimination of overfishing, minimizing habitat damage and loss, and insuring that the total of all biomass removed by all fisheries in an ecosystem does not exceed a total amount of system productivity (Pikitch et al. 2004). Such management goals also include maintaining populations of target species to conserve their natural role in maintaining ecosystem function while enabling sustainable reproduction rates, eliminating the use of fishing gear that creates a high level of bycatch or incidental contact with non-target species, and restricting removals from critical feeding, breeding and spawning grounds to protect marine ecosystems (NMFS 2006).

Fisheries management policies enacted on the West Coast and within the Olympic Coast sanctuary have been progressive steps to incorporate ecosystem-based fishery management concepts and improve trends toward restoring historical population levels. A variety of recent fishery management actions off the Washington coast, such as trawl footrope gear restrictions, low-rise nets that reduce bycatch, monitoring of bycatch, protection of Essential Fish Habitat (NMFS 2006), implementation of stock rebuilding plans, and establishment of temporary area closures (Rockfish Conservation Areas) to promote recovery of species under rebuilding plans, have provided early indications that depleted stocks can recover and these fisheries can be sustainably practiced.

#### 11. *What is the status of non-indigenous species and how is it changing?*

Relatively few exotic or non-indigenous species have been reported in the sanctuary and, of those, only a few are invasive and therefore threatening to community structure and function. Observations by coastal ecologists from Olympic National Park and the Olympic Coast sanctuary of increased amounts of the invasive brown algae *Sargassum muticum*, the documented range expansion of invasive ascidians (tunicates or sea squirts) (deRivera et al. 2005), and the encroachment of the invasive green crab to areas both south and north of the sanctuary all suggest that negative impacts from non-indigenous species are likely to increase in the future.

The sanctuary's rapid assessment intertidal surveys from 2001 and 2002 identified nine non-indigenous invertebrate species (two polychaetes, one amphipod, one bryozoan, four bivalves and one ascidian) and one algal species. A 2005 study of non-indigenous species along the West Coast in marine protected areas using settling plates located on buoys offshore found four non-indigenous species (one crustacean and three ascidians) inhabiting the Olympic Coast sanctuary (deRivera et al. 2005).

Ports and marinas tend to have higher numbers of invasive species due to transport by vessels (deRivera et al. 2005). There are no major ports located within sanctuary waters, and the few marinas that exist are relatively small, which may slow the number and severity of species invasions. However, shipping traffic through the sanctuary may provide a vector for non-indigenous species via transport on hulls and discharge of ballast water. To minimize this risk, Washington state recently strengthened regulations covering ballast water exchange. Ships traveling from outside the U.S. Exclusive Economic Zone must exchange ballast water no closer than 200 nautical miles (374 kilometers) offshore, while ships considered U.S. coastal traffic, including Canadian waters, must exchange ballast water no closer than 50 nautical miles (93 kilometers) offshore ([http://groups.ucanr.org/Ballast\\_Outreach/](http://groups.ucanr.org/Ballast_Outreach/)

Laws\_and\_Regulations/Washington\_State.htm). Even with regulations in place, there is a need for basic understanding of the spatial and temporal patterns of invasions (deRivera et al. 2005).

**12. What is the status of key species and how is it changing?**

Key species (e.g., keystone species, indicator species, sensitive species and those targeted for special protection) within the sanctuary are numerous, and all cannot be covered here. Emphasis is placed on examples from various primary habitats of the sanctuary: seabirds for nearshore and pelagic habitats, sea otters for nearshore habitat, and rockfish for deep seabed habitats. In this response, status refers primarily to population numbers, as opposed to condition or health of the populations as addressed under Question 13. Several species of seabirds that breed and feed in the sanctuary, several species of cetaceans that forage in or visit sanctuary waters, and a few groundfish species that inhabit the sanctuary are reduced in numbers in comparison to historical levels. In many cases, their recovery is uncertain and linked to dynamic and poorly understood ecosystem-level processes.

Seabirds are relatively numerous, conspicuous, and forage across multiple habitat types and trophic levels. For these reasons, they are often considered indicators of ocean conditions, and the status of their populations provide insight into ecosystem health (Parrish and Zador 2003, Piatt et al. 2007). Many feed on forage fish, a critical link in the food chain, but one that is difficult to quantify by direct observation. Five species of marine birds that breed in the sanctuary are on federal or state species of concern lists: Common Murre, Marbled Murrelet, Tufted Puffin, Cassin's Auklet, and Brandt's Cormorant. Trends and common concerns among these seabirds are long-term declines in their population sizes (Wahl and Tweit 2000, Wahl et al. 2005, Raphael 2006); vulnerability to human disturbances such as oil spills, habitat disruption and fisheries bycatch (Piatt et al. 2002, Raphael 2006); and susceptibility to natural disturbances such as ENSO events (Graybill and Hodder 1985, Wilson 1991, Piatt et al. 2002, Wahl et al. 2005). Some population levels do appear to be stabilizing at values lower than historical levels; however, a longer time series is needed to determine a trend (Lance et al. 2008).

A closer examination of the Common Murre population provides insight into some factors affecting the status of all seabirds on the Washington coast. The murre population declined dramatically in 1982 and 1983, coinciding with a severe El Niño-Southern Oscillation (ENSO), and has not recovered to pre-1983 levels since that time (Warheit and Thompson 2003). Aside from other ENSO events, it has been suggested that the population has not recovered due to a combination of oil spills, disturbance at breeding colonies (e.g., historic Naval bombing practices),

and gillnet mortality (Warheit and Thompson 2003). Two oil spill events have occurred in recent times on the Washington coast, one in 1988 (the Nestucca) and the other 1991 (the Tenyo Maru). In both spills, Common Murres were a significant proportion of the bird mortality (74 percent and 73 percent respectively of the birds recovered; Parrish personal communication). There were 9,275 Common Murre mortalities documented from the Nestucca spill (Parrish personal communication), from which total mortality was estimated at 30,000 murres off the outer coast of Washington (Manuwal et al. 2001). During the Tenyo Maru oil spill, 3,157 Common Murre mortalities were documented, suggesting that a potentially sizable proportion of the total Washington state Common Murre population may have been killed by the spill (The Tenyo Maru Oil Spill Natural Resource Trustees 2000). Although the sanctuary's Common Murre population showed signs of recovery through the 1990s, the number of birds has diminished greatly relative to pre-spill numbers, and modest declines have been found in recent years (Manuwal et al. 2001). At the breeding colony on Tatoosh Island, Common Murre populations have also been affected by an influx of avian predators, including Bald Eagles, Peregrine Falcons and nest-depredating Glaucous-winged Gulls (Parrish et al. 2001). The multiple stressors affecting the sluggish recovery of Common Murres may be indicative of the challenges facing the long-term recovery of other seabirds.

The sea otter is often considered a keystone species because of the strong top-down influence they have on the nearshore kelp ecosystem. Sea otters are of high interest because sea otters were extirpated from Washington state by commercial pelt hunters by 1911, then were reintroduced in 1969 and 1970 (Lance et al. 2004). This population has been counted annually since 1989 and has shown increases the past few years, with a peak of 1,121 animals in 2008 (Jameson and Jeffries 2008). However, the sea otter population remains vulnerable to catastrophic events (e.g., oil spills), and the population rate of increase has been slower than expected. The population is still considered to be below the estimated carrying capacity based on historical and regional habitat use, which includes rocky, sandy and mixed substrates (Laidre et al. 2002; Lance et al. 2004). However, habitat loss in estuaries such as Grays Harbor could reduce the actual carrying capacity, and it remains to be seen if the projected rocky habitat density (7.1 otters per kilometer of shoreline) will be attained along the Olympic shoreline. The sea otter remains a federal species of concern and an endangered species within Washington state. The sea otter population remains vulnerable because of its small size, limited genetic diversity, existing exposure to pathogens, and risks from spills (see Question 13).

Indicator species of the deep-sea environs are not clearly defined due to limited information about this remote region of the

ocean. Very little is known about the status of deep-sea coral and sponge communities (Brancato et al. 2007, Whitmire and Clarke 2007). Rockfish assemblages are a key vertebrate guild that could serve as a proxy for the condition of deep-sea communities. Unfortunately, the status of discrete fish stocks relevant to Washington state is not well defined for most rockfish species independently from the West Coast assessment effort. In general, the PFMC has indicated its support for regional management of stocks where appropriate and when there are data to support such a management structure. Stock assessment authors are asked to review and evaluate all available data to determine whether a regional management approach would be recommended for the stock being assessed. In some cases, however, even when adequate data are available to support more discrete management, the PFMC has chosen to continue to manage those stocks on a coast-wide basis. Groundfish fisheries are also discussed under Question 10.

### 13. *What is the condition or health of key species and how is it changing?*

As indicated above in Question 12, the sanctuary selected certain seabirds, sea otters and rockfish as key species or indicators of ecosystem health. The condition or health of each is discussed below. Exposure to pathogens that have killed sea otters in California, bioaccumulation of organic pollutants in high-order predators, modification of natural population structure through harvest, and uncertainty about altered oceanographic conditions associated with climate change all contribute to degradation of ecosystem integrity. Long-term implications of these conditions are uncertain.

Most wildlife populations in the sanctuary are relatively healthy and unburdened by contaminants, pathogens or related maladies. There are, however, notable exceptions. The sea otter population has been shown to carry several potentially lethal pathogens. In a study where tissue samples were collected from 30 live sea otters, 80 percent of the otters tested positive for the distemper viral complex *Morbillivirus* and 60 percent tested positive for the protozoan *Toxoplasma gondii* (Brancato et al. 2006). No direct negative health effects in the Washington population have yet been documented from these pathogens; however, *Toxoplasma* has been a cause of mortality in California sea otters (Miller et al. 2004). In addition, there was a positive correlation between chemical contaminants such as PCBs and pathogen levels, with the latter used as a proxy for immunosuppression (Brancato et al. 2006). Furthermore, PCB levels were correlated with a significant reduction of vitamin A stores in the liver, yet overall, tissue concentrations of assayed contaminants were relatively low in Washington sea otters (Brancato et al. 2006). Fat-soluble contaminants are generally considered to bioaccumulate or increase

in concentration when moving up the food web (Cockcroft et al. 1989). Top predators in the region, such as killer whales, have been shown to carry high contaminant loads (e.g., PCBs and PBDEs) in their blubber (Ross et al. 2000, Ross 2006), though the population effects of such high contaminant loads are unknown.

Sea otter populations were regionally extirpated in the early 1900s, but 59 individuals were reintroduced to the area in 1969 and 1970. Consequently, there is reduced genetic variation in the Washington coast sea otter population when compared with ancient sea otter remains, as determined by analysis of DNA sequences (Larson et al. 2002). Reduced genetic variability is generally considered to impart deleterious effects such as reduced fecundity, higher juvenile mortality and reduced capacity to combat environmental stressors (Ralls et al. 1983, Lance et al. 2004). Sea otter populations should be closely monitored for such adverse effects, and to determine when the population crosses the strait, potentially breeding with the population around Vancouver Island, which could increase genetic variability. At the moment, the condition or health of sea otters is stable, but merits watching.

Age structure, an important measure of population integrity, has been affected by extractive activities. Some rockfish populations have been shown to have reduced numbers of larger, older fish, a factor that could affect their recovery rate (PFMC 2008a). There is a positive relationship between fecundity and age in long-lived Pacific rockfish such as the genus *Sebastes* (Eldridge and Jarvis 1995). Furthermore, larvae of larger, older rockfish are better conditioned in terms of higher growth rates and ability to withstand starvation (Berkeley et al. 2004). Removals of older individuals from long-lived species can also have broader ecological impacts (Heppell et al. 2005). However, in most cases, the status of the larger, older fish within the population is unknown (i.e., it has not been determined whether the older fish are simply missing because they have been removed from the population, or are not available to the data source — e.g., the fishery or survey used as the index of abundance in the assessment).

Age structure and mortality rates are also in question in some bird populations on the coast. Common Murres on Tatoosh Island have experienced documented breeding failures during recent years, partially attributed to oil spills and observed heavy predation by raptors and gulls, but also possibly due to low food supply during critical breeding periods (Parrish et al. 2001, Warheit and Thompson 2003). Because they are long-lived, an occasional year of poor productivity may not impact the population significantly, but multiple years or successive years of breeding failure would likely have future impacts on the population. Baseline mortality rates for Common Murres and other seabirds are currently being examined through the Coastal Observation and Seabird Survey Team

program, a comprehensive coast-wide program initiated in 1999 to document beach-cast bird trends over time (Hass and Parrish 2000). Recent demographic studies of Marbled Murrelets in the region have indicated that they have had low nesting success in recent years (Raphael and Bloxton 2008), which may inhibit their recovery or at least slow the rate of recovery.

**14. What are the levels of human activities that may influence living resource quality and how are they changing?** Fishing has in the past and continues today to affect sanctuary habitats and biota in a number of ways. For several decades, bottom-contact fishing gear used by commercial fishers damaged seafloor habitat widely in the sanctuary and altered benthic communities by removing biogenic structures and disturbing infauna. As discussed above, recent fishery management actions have significantly reduced, but not completely eliminated, the potential for further habitat damage. However, because the distribution of deep-sea coral and sponge communities has never been quantified or sufficiently mapped within the sanctuary, it is difficult to determine the extent of overlap between existing biogenic communities and current fishing activity. From the ecosystem perspective, there remain concerns that industrial fishing targets larger, older fish, which alters age structure and can reduce the breeding potential of long-lived species such as certain rockfish species (NRC 2006). Moreover, past overfishing has caused dramatic reduction in some fish stocks (see Figure 26). Recent closure of large portions of the sanctuary to fishing techniques that target species most vulnerable to overfishing is expected to mitigate past impacts to both seafloor habitats and ecosystem integrity, and indicates the potential for recovery.

Oil spills remain the most serious threat to local populations of marine organisms. Although no major spills have occurred within the sanctuary since the Tenyo Maru spill in 1991, some populations, such as the Common Murre, have not yet recovered from that spill. The establishment of the Area To Be Avoided has helped to keep oil barges, tankers and other large commercial vessels away from the most biologically sensitive areas, and the rescue tug stationed at Neah Bay has averted several hazardous situations. However, because of the heavy shipping traffic using the Strait of Juan de Fuca, combined with the challenging seas of the eastern North Pacific, the sanctuary still remains at risk from a catastrophic spill.

**Maritime Archaeological Resources Status and Trends**

Olympic Coast National Marine Sanctuary has a rich maritime heritage where lives, languages, communities and cultures are constantly shaped by the sea. The Makah, Quileute, Hoh and Quinault peoples traditionally lived at the water’s edge, thriving on the riches of the ocean — plants, fish, shellfish, seabirds and marine

mammals. The waters of the sanctuary were highways that linked native peoples all along the coast as they traveled by canoe while mastering currents, weather and tides. The rugged Olympic Coast can also be treacherous, especially during winter storms when high winds and strong currents can push ships dangerously close to the rocky islands, reefs and shoreline — over 180 ships were wrecked or lost at sea in or near sanctuary waters in the years from 1808 to 1972 (Figure 27). The following discussion addresses issues facing these sanctuary resources with respect to their integrity and condition, potential hazards they pose, and ways in which human activities may impact their integrity.

The following information provides an assessment by sanctuary staff and subject area experts of the status and trends pertaining to the current state of the sanctuary’s maritime archaeological resources.

**Maritime Archaeological Resources Status & Trends**

#	Issue	Rating	Basis for Judgment	Description of Findings
15	Integrity	?	Deepwater wrecks stable; shallow wrecks subject to environmental degradation; lack of monitoring to determine trend.	The diminished condition of selected archaeological resources has reduced, to some extent, their historical, scientific or educational value, and may affect the eligibility of some sites for listing in the National Register of Historic Places.
16	Threat to Environment	—	Historic wrecks did not carry substantial quantities of hazardous cargoes.	Known maritime archaeological resources pose few or no environmental threats.
17	Human Activities	?	Unauthorized salvaging nearshore; fishing activities and cable installations offshore.	Selected activities have resulted in measurable impacts to maritime archaeological resources, but evidence suggests effects are localized, not widespread.

**Status:** Good Good/Fair Fair Fair/Poor Poor Undet.

**Trends:** Improving (▲), Not Changing (—), Getting Worse (▼), Undetermined Trend (?), Question not applicable (N/A)

**15. What is the integrity of maritime archaeological resources and how is it changing?** In general, the sanctuary’s maritime archaeological resources are not being managed in accordance with the National Historic Preservation Act (NHPA) due to limited funding, and efforts to locate and assess maritime archaeological resources have been extremely limited.

While the Olympic Coast has been the focus of human communities for thousands of years and has figured prominently

in Pacific Northwest maritime history, there is no agency-sponsored inventory of submerged maritime archaeological resources in the offshore environment in the sanctuary. The sanctuary's inventory contains information of approximately 180 known vessel losses, and limited efforts to locate specific wrecks have revealed only a few wreck sites..

Due to limited survey effort, few deepwater shipwrecks are known. Of these, only the World War II submarine USS *Bugara* has received any survey attention. Archaeological resources in deep offshore waters are generally in a more stable environment because such environments tend to be calmer and have fewer physical and biological processes accelerating ship degradation compared to nearshore sites. Historical and recent bottom trawling is one probable impact to offshore maritime archaeological resources that has potentially damaged submerged historic resources. Because the majority of wreck locations are unknown, the impacts from historical and recent trawling are unknown. Anecdotal reports have indicated damage from fishing gear or fishing practices, such as entanglement and snagging. The development of underwater technologies now affords the public the opportunity to locate and visit deepwater archaeological resources in the offshore environment. As with divers visiting accessible nearshore archaeological sites, the diving community must be educated on the regulations in place in order to protect these non-renewable resources. In the absence of a robust cultural resources education program, the maritime resources may be subject to vandalism, looting or damage.

Shallow shipwrecks are subject to severe environmental degradation resulting from natural processes such as ocean surge, north Pacific storms, strong currents and sea level rise (Figure 28). The *General Meigs* and the *Austria* are two wrecks that are heavily impacted from natural destruction. However, no monitoring of changing conditions is currently being conducted.

There have already been significant studies of both the late prehistoric and older archaeological sites, but much remains to be learned. To date, most of the efforts have focused upon the more recent sites, but knowledge of the sites associated with mid-Holocene shorelines is relatively limited. Although some collaborative monitoring of prehistoric sites is currently being conducted by Olympic National Park, the sanctuary and Makah Tribal Historic Preservation Officers, it is minimal and informal. However, data from other parts of the northwest coast suggest that there may be several different types of prehistoric archaeological resources in the sanctuary. Features such as late prehistoric fish traps and canoe runs are known to be present near the sanctuary, and examples of both may be present within it. There is also the possibility that ancient archaeological sites could be



Photo: Bob Steenquist, Olympic Coast National Marine Sanctuary

Figure 27. Olympic Coast National Marine Sanctuary is the graveyard for many shipwrecks. Human error, treacherous weather, dangerous reefs and headlands and ships' navigational or operational failures still contribute to this place's hazardous reputation among mariners. This anchor is nearly all that remains of the bark *Austria*, grounded at Cape Alava in 1887.



Photo: U.S. Coast Guard

Figure 28. Wreck of the *Lamut*, a Russian merchant ship lost in 1943 near Quillayute Needles.

present on inundated late Pleistocene and early Holocene shorelines in the sanctuary. Given the absence of direct evidence, it is not possible to address the conditions of such resources (if they are present). Data from other parts of the northwest coast suggest that such resources are likely to be relatively durable; however, like shipwrecks, prehistoric archaeological resources could be adversely affected by wave energy (particularly those resources in the intertidal zone and shorelines), commercial fishing activities and recreational divers. Prehistoric archaeological sites in the intertidal zone and shorelines are also subject to looting and other human disturbance, but little monitoring, education or enforcement takes place.

There is considerable variation in the integrity of the known archaeological resources near the sanctuary. Nearly all of the late prehistoric sites associated with the modern shoreline are actively eroding. Data exist that document the loss of cultural deposits due to shoreline erosion, and it can be anticipated that rising sea levels will accelerate the rate of this loss. Significant loss of cultural deposits has also been caused by development in and around modern shoreline communities. As can be expected, development is less of a factor in the Olympic National Park. Although relatively limited, some additional damage to cultural deposits along the modern shoreline has occurred due to vandalism. While knowledge of the integrity of the older mid-Holocene sites is more limited, these sites are mostly located in nearshore forest settings and are not being impacted by shoreline erosion. Historic impacts on these sites have resulted primarily from activities such as logging and the construction of logging roads. Given that these sites tend to be located in relatively remote places and are difficult to detect, there are no known cases of damage due to vandalism.

**16. Do maritime archaeological resources pose an environmental hazard and how is this threat changing?**

The sanctuary's inventory of known maritime archaeological resources suggests that the potential for shipwrecks in the sanctuary to pose an environmental hazard to sanctuary resources is minimal. Therefore, the situation is considered to be good and not changing.

The historic shipwrecks (at least 50 years old) in the sanctuary include both merchant and military vessels that sank during wartime, as well as older peacetime sinkings and groundings. However, for the purposes of wreck removal, salvage, and pollution response, most of the vessels in question would be from post-1910, when naval and commercial vessels began to shift from coal to oil bunkers (Dahl 2001). It is likely that earlier wrecks are no longer intact and did not carry substantial quantities of hazardous cargoes or fuel oil.

Given the above criteria that constitute "historic wrecks" with potential to pose an environmental hazard, the sanctuary has 12 known vessels in this category (OCNMS Shipwreck Database).

Of these 12 vessels, only one, the General Miegs, has been identified as a source of oil leakage into the environment (Clark et al. 1975). However, no monitoring is currently taking place. There are occasional reports of mystery spills (oil sheen reported on the water from an unknown source). This can indicate a release from a wreck; however, this does not occur frequently or consistently enough to give a strong indication of a release from a submerged wreck. It is more likely that this is the result of an il-

legal discharge of oily ballast or other accidental and unreported release from a vessel (Helton 2003).

**17. What are the levels of human activities that may influence maritime archaeological resource quality and how are they changing?**

Human activities in the sanctuary have impacted maritime archaeological resources, but a general lack of assessment makes the trend undetermined. This is based on unauthorized salvaging that is taking place in the intertidal zone of the sanctuary and fishing activities and cable installations that are occurring in the offshore zone of the sanctuary.

Prehistoric sites in the intertidal zone and shorelines are subject to erosion, and wave action and storm events uncover new materials every year. As resources are unearthed, they are subject to the threat of looting and vandalism. There is little monitoring, enforcement and education taking place to offset this threat.

Historical and recent bottom trawling can potentially impact maritime archaeological resources in the offshore zone of the sanctuary. Incidental damage to resources may occur through impacts from bottom-contact fishing gear (trawl, longlines, etc.), anchoring and derelict fishing gear. However, because the majority of wreck locations are unknown, the impacts from historical and recent trawling are unknown. Recent closures of large areas of the sanctuary to bottom trawling will reduce these threats. The creation of new or larger areas restricting bottom-contact gear may indirectly protect historical resources.

Also threatening resources in the offshore zone is the trenching of submerged communication cables. As has been mentioned, the installation of underwater cables can negatively impact benthic habitat in the immediate vicinity of the cable, but the impacts are localized to within a few meters to either side of the cable route. In advance of cable installations, route surveys are conducted to identify and avoid maritime archaeological resources, yet there is potential for buried remains to be undetected by surveys and subsequently damaged by cable trenching equipment.

Other human activities affecting archaeological resources in the sanctuary include:

- With more sophisticated diving technology becoming available (rebreathers, affordable side-scan sonar, etc.) and the allure of treasure or artifacts, some treasure hunters are moving to deeper waters. Any vessel or site could be considered in danger of damage from scavenging or vandalism, but those known in local histories as carrying valuables, such as the steamer Pacific, should be located and evaluated soon. The threat of looting or vandalism increases as erosion and human use and access rates increase.

- Human use disturbance due to management activities (placement of privies in the wilderness) or lack of mitigating measures (use of informal social trails or campsites) can potentially impact land-based sites that were once coastal. This threat is decreasing due to improved interagency consultation.
- Mineral extraction activities: Intertidal maritime cultural resources could be imperiled by beach mining activities (gravel, sand, gold, etc.) as have been proposed in the past. Significant timber cutting or inland mining has the potential to increase erosion to river and stream mouths, altering or imperiling intertidal and nearshore resources.
- The possibility of installation of offshore power generation or aquaculture facilities.

There is a lack of assessment, monitoring and enforcement for maritime archaeological resources in the sanctuary. However, the situation for archaeological resources on lands immediately adjacent to the sanctuary is somewhat better understood. Sites in these areas are relatively more accessible; therefore, monitoring is accomplished with more ease. These sites represent a variety of different conditions and are influenced by varying combinations of both natural processes and human activities. As such, some are much more threatened than others. The human activities threatening archaeological sites near the sanctuary are mostly related to development and terrestrial resource extraction (principally logging). Presumably, both types of activities will continue in nearshore areas for the foreseeable future. Shoreline erosion is also a serious threat to the survival of many archaeological sites, and this effect will become more severe if sea level rise continues to occur in the coming decades (Pendleton et al. 2004).

## Response to Pressures

The Office of National Marine Sanctuaries has a mandate to maintain biological communities and protect and restore native habitats, populations and ecological processes within its boundaries, while allowing compatible uses. A sanctuary management plan establishes research, monitoring and resource protection priorities and programs to address key threats or pressures. In addition to guidance provided through the management plan, sanctuary regulations specific to each site establish a range of activities that are prohibited or are authorized through a sanctuary permit if it can be demonstrated that the activity supports a sanctuary management objective and it will not substantially injure sanctuary resources. Olympic Coast sanctuary staff have worked with others in the sanctuary system to review concerns and develop consistent policies associated with activities common to multiple sanctuaries, such as submarine cable installation, alternative energy development, and anchoring of research buoys.

In addition to sanctuary authorities, other federal, state and tribal authorities, regulations and policies govern the conduct of specific activities within the sanctuary. The nature of overlapping jurisdictions and authorities requires coordination and collaboration between resource managers to achieve marine conservation objectives. The sanctuary superintendent must balance the diverse interests of citizens, organizations and partner agencies and make informed decisions that protect resources without inappropriately constraining sanctuary users and stakeholders. To better understand those interests and enlist help from those we serve, the sanctuary superintendent meets regularly with an Advisory Council that is comprised of representatives of Indian tribes, state and local governments, other federal agencies, industry, conservation organizations, and citizens. In 2007, the coastal treaty Indian tribes, the state of Washington and the sanctuary established an Intergovernmental Policy Council to provide a forum for the tribal, state and federal governments to coordinate activities within the sanctuary.

This section describes current responses and research and resource protection initiatives addressing selected pressures. Current responses are based on implementation of the 1994 sanctuary management plan and regulations, as well as specific programs to address threats which have emerged since the 1994 management plan. Strategies to address prioritized threats or pressures will be further evaluated and adapted during the management plan review process, scheduled to begin in September 2008.

### Water Quality

#### Water Quality Monitoring

The sanctuary strives to understand, maintain and improve water quality within the sanctuary (Figure 29), and regulations prohibit discharges into sanctuary waters. Since 2000, nearshore oceanographic moorings have been deployed to measure water temperature and, as funding has allowed, the program has been expanded to cover a greater area and include additional sensors to measure salinity, dissolved oxygen, currents, plankton density and other standard environmental parameters (Figure 30). Information from these moorings, as well as data collected from periodic surveys from NOAA vessels, will lead to a better understanding of the links between the physical, chemical, and biological processes in productive nearshore waters and the connections with offshore and deeper waters. In turn, these data are useful to federal, tribal, university and state-sponsored studies of harmful algal blooms, helping to assess potential threats to human health and the health of birds and other marine mammals. These data are also used to correlate with intertidal invertebrate and algae studies, assist in oil spill response and improve our understanding of hypoxic conditions that have been measured off the Washington and Oregon coasts in recent years. In an effort to establish baseline levels of persistent organic pollutants (industrial contaminants that remain for decades and can accumulate in organisms) in the ecosystem, the sanctuary has led and collaborated on several projects to measure contaminant levels in sediments, invertebrates and sea otters, against which future data can be compared.



Photo: Olympic Coast National Marine Sanctuary

Figure 29. Water quality data is collected by lowering equipment into the ocean to sample a water column profile from the bottom to the surface. This rosette is a series of instruments on a metal frame that measures temperature, pressure, salinity, oxygen content, algae content and other factors, and features chambers to collect water samples at pre-determined depths.



Figure 30. Remote sensors on fixed moorings collect information on physical and biological properties of sanctuary waters at 13 locations that were selected to capture variability in nearshore ocean processes. Source: OCNMS

### Vessel Discharges

Sewage and graywater discharges from large vessels (300 gross registered tons or more), including cruise ships and container ships, are a concern in state and sanctuary waters. In 2004, a Memorandum of Understanding between Washington state, the Port of Seattle, and the cruise ship industry included an agreement to avoid dumping of biosolids (sewage sludge or solids from wastewater treatment systems) within 12 nautical miles (22 kilometers) of shore. In 2007, this agreement was expanded to avoid such discharge in all sanctuary waters. According to Port of Seattle statistics, approximately 150 cruise ship trips between Seattle and Alaska occurred in 2007, and each week-long trip generated about 106,000 liters (28,000 gallons) of sewage sludge. Cruise ships transiting the sanctuary are currently not prohibited from discharging minimally treated sewage, graywater and blackwater, in

accordance with state and federal law. Consequently, the rapidly expanding cruise ship industry in the Pacific Northwest may have growing potential to impact sanctuary waters if not properly managed.

### Area To Be Avoided Monitoring and Compliance

A catastrophic discharge of oil from a maritime accident poses the single greatest risk to the sanctuary. Olympic Coast sanctuary staff worked with the U.S. Coast Guard and the International Maritime Organization to establish an Area To Be Avoided as a buffer and provide greater response time for assistance to foundering vessels along this rocky and environmentally sensitive coast (Figure 31). All ships transiting the area and carrying cargoes of oil or hazardous materials and all ships 1,600 gross tons and larger are requested to avoid this area. In addition, sanctuary staff participated in multi-party discussions that led to modifications to the vessel traffic lanes at the western entrance to the Strait of Juan de Fuca in an effort to increase the safety of commercial vessel transits through this busy area.

Since 1998, the sanctuary has been obtaining monthly vessel position files from the Canadian Coast Guard's radar site on Vancouver Island (Galasso 2000). This information is displayed as tracklines on a geographic information system. The data also includes vessel attributes that allow spatial and temporal analysis of behavior and trends, based on vessel characteristics. The Marine Exchange of Seattle has also been providing the sanctuary with data from the Automated Identification System to augment vessel transit monitoring. The sanctuary uses this information to create monthly transit plots of non-complying vessels, which are used as part of an outreach effort to the marine industry. Letters are sent out under signature of the sanctuary superintendent and the Coast Guard Captain of the Port to non-complying vessels observed within the Area To Be Avoided. The response by the maritime industry has been very favorable, with an approximated compliance rate of 98.8 percent in 2007.

### Oil Spill Prevention

The sanctuary works closely with the U.S. Coast Guard, Washington Department of Ecology, Makah Office of Marine Safety and other organizations on oil spill response and preparedness by participating in oil spill drills, supporting a rescue tug stationed in Neah Bay, participating in discussions of alternative response technologies, prioritizing allocation of oil spill restoration funds, and reviewing proposed legislation, regulations and documentation. Since 1999, Washington state has funded a seasonal rescue tug stationed at Neah Bay to quickly respond to vessels that may need assistance. As of February 2008, the tug has escorted, stood by or assisted 40 ships that were disabled or had reduced maneuvering or propulsion

capability while fishing or transporting oil and other cargo through the sanctuary and along the Strait of Juan de Fuca.

The sanctuary also has developed a site-specific Sanctuaries Hazardous Incident Emergency Logistics Database System (SHIELDS), which is designed to aid in spill response by providing a comprehensive reference and resource data tool.

### Habitat Habitat Mapping

The sanctuary does not directly manage fisheries within sanctuary waters; however, sanctuary research informs fisheries management entities, particularly on habitats within sanctuary boundaries. Starting in 2000, the sanctuary embarked on a project to characterize seafloor habitats within the sanctuary, using advanced acoustic and optical technologies to create digital images, and verifying those images using remotely operated vehicles and drop-cameras (Figure 32). The imagery helps to characterize the types, distribution and abundance of seafloor habitats, and groundtruthing helps to verify classification results, as well as to provide new habitat information. Furthering this research was a key recommendation of Washington's Ocean Action Plan (Office of the Governor 2006) and is a priority for the Intergovernmental Policy Council. These efforts can support crucial management issues, such as protecting critical habitats, identifying areas of undisturbed deep-sea coral and sponge communities, or examining fishing regulations to aid in the recovery of declining fish populations.

### Deep Sea Coral Research and Conservation

In 2004 and 2006, sanctuary staff, in partnership with the National Centers of Coastal Ocean Science conducted side-scan and video surveys of offshore habitats. The focus of this initiative was to document the presence of hard-bottom habitats in deepwater areas of the sanctuary and video survey any associated living communities. Hard substrates often harbor diverse assemblages of invertebrates and fish, including corals, sponges and other extremely slow-growing fauna that are particularly sensitive to human disturbances. Several species of corals and sponges were documented at 14 of the 15

sites surveyed in 2006; sites located both inside and outside of the protective Essential Fish Habitat conservation area (Olympic 2). Numerous gorgonians, two stony coral species (*Lophelia pertusa* and *Desmophyllum dianthus*) and small patches of the reef-building sponge (*Farrea occa*) were found (Figure 33). Some anthropogenic disturbance to these seafloor communities was also documented. Future explorations will continue to improve our understanding of deep coral and sponge habitat, its distribution and ecosystem functions, and potential pressures on that system (Brancato et al. 2007). <http://sanctuaries.noaa.gov/science/conservation/bowlby.html>

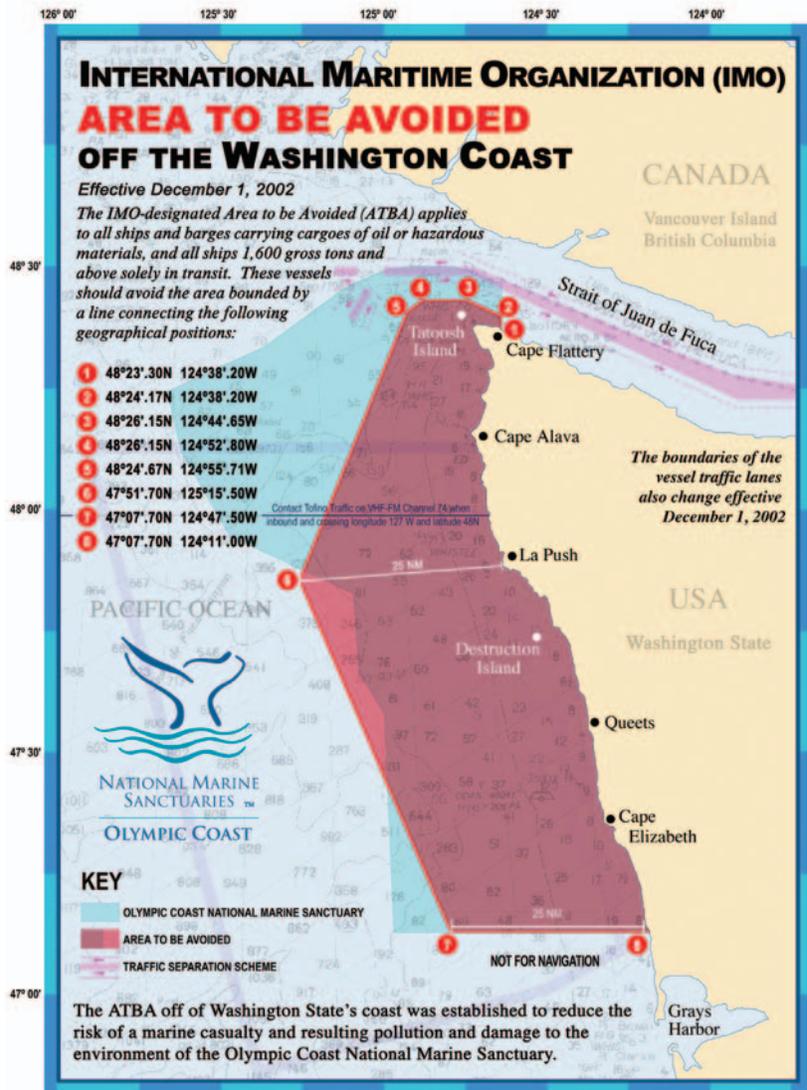


Figure 31. Map of Olympic Coast National Marine Sanctuary (in blue) and the Area To Be Avoided (in red). Flyer: OCNMS

### Derelict Fishing Gear and Marine Debris

In 2005, the sanctuary was awarded funds from NOAA's Marine Debris Program for a pilot project to identify and remove derelict fishing gear in the northern part of the sanctuary, as well as to develop safe operating protocols for gear removal operations while working in the open ocean environment. This pilot project was a partnership with the Makah Tribe with a goal to build capacity in an affected community to conduct future derelict gear removal projects. Fishery managers and fishermen were interviewed and multiple target areas over a few kilometers of nearshore waters near Cape Flattery were surveyed by sonar and divers. Three abandoned fishing nets and several crab pots were located and recovered, along with evidence of ghost fishing (Figure 34). The extent of the problem over many kilometers of the outer coast and deeper waters of the sanctuary remains unclear.

Another grant the sanctuary received from NOAA's Marine Debris program in 2007 supported collaborative development of a long-term strategy to remove accumulated marine debris from the outer coast of Washington state, beaches adjacent to the sanctuary and beyond. State and federal agency representatives joined with Native American tribes and non-government organizations to outline a strategy that addresses both the remote wilderness shores of Olympic National Park and tribal reservations and the more accessible areas where beach driving facilitates removal of marine debris. Partner agencies formed a new organization, Washington Clean Coast Alliance, to coordinate public outreach, volunteer coordination, and event planning, as a successor to the private citizen who was largely responsible for cleanup efforts dating back to 2000. The alliance's first event in April 2008, scheduled to coincide with Earth Day, was a great success. More than 1,100 volunteers joined the effort and enjoyed the beach while removing nearly 23 tons of debris.

### Fiber-Optic Cable Permit Compliance and Monitoring

In 2006, the Pacific Crossing responded to sanctuary and tribal concerns over improper burial of the Pacific Crossing PC-1 fiber-optic submarine telecommunication cables by reinstalling the cable through the sanctuary. The goal of this effort was to minimize risks of interactions with fishing gear, reduce cable damage, and to minimize ongoing impacts to seafloor habitats. Sanctuary regulations generally prohibit seafloor disturbances. Post-installation assessment revealed improved cable burial, yet the cable remained unburied and suspended in limited areas, which confirms the difficulty of cable burial where the seafloor has boulders, compacted subsurface deposits, and bedrock (Tyco 2006). Under conditions in its sanctuary-issued permit, Pacific Crossing will mitigate risks to fisherman utilizing bottom contact gear through directed outreach concerning cable locations and burial states. The sanctuary has also implemented a monitoring program that has provided important information on the rate of seafloor habitat



Figure 32. Using texture analysis algorithms, information from side-scan sonar imagery (top plate) and multi-beam bathymetry (middle plate) are combined to create classified habitat images (bottom plate). Image: OCNMS



Figure 33. Stony coral *Lophelia pertusa*, characteristic of deepwater coral assemblages in the North Atlantic but less documented in the Pacific, was recently found in the sanctuary at several locations.

Photo: Olympic Coast National Marine Sanctuary



Photo: Olympic Coast National Marine Sanctuary

Figure 34. Derelict gear is removed from the ocean floor. This net contained numerous dead animals, including seabirds, fish, harbor seals, harbor porpoise and a California sea lion.

recovery following disturbance associated with cable installation, and which will inform future decision-making on similar proposals.

### Living Resources

#### *Groundfish Protection/Designation of Essential Fish Habitat*

Recent significant conservation actions applied to the sanctuary area include the establishment of conservation areas to protect groundfish habitat and minimize the bycatch of overfished species. In 2000, the state of Washington prohibited bottom trawling in state waters (Figure 35). More recently, the Pacific Fishery Management Commission and NOAA Fisheries Service designated multiple areas along the West Coast as Essential Fish Habitat (EFH) areas with specific fishing restrictions. Five EFH areas were adopted off the coast of Washington that are closed to non-tribal bottom trawl fishing. One unit, the Olympic 2 EFH Conservation Area closure, is located within the boundary of the sanctuary (Figure 35) and is closed to all types of non-tribal bottom trawl fishing gear, but not all types of bottom-contact gear, such as longline gear. Olympic 2 EFH covers 7 percent of the sanctuary area. The EFH measures also included a prohibition of bottom trawl activity deeper than 700 fathoms West Coast-wide. The EFH areas were implemented through amendment 19 to the Pacific Coast Groundfish Fisheries Management Plan and went into effect in 2006. In addition, Trawl Rockfish Conservation Areas (RCA) are temporary, large-scale closed areas that extend along the entire length of the U.S. West Coast that are expected to be in place until key overfished rockfish species recover, potentially for more than 80 years. Commercial trawl RCA boundaries approximate particular depth contours that can change during the year (Figure 35) and are designed to minimize opportunities for vessels to incidentally take overfished rockfish by eliminating fishing in areas where

and when those overfished species are likely to co-occur with more healthy stocks of groundfish. In 2008, this Trawl RCA covers between 40 and 48 percent of the sanctuary. A Non-trawl RCA (i.e., the RCA for gears other than trawl, such as longline and pot gear for fish) is closed from the shore seaward to 100 fathoms year-round (Figure 35). This Non-trawl RCA applies to 81 percent of the sanctuary. In addition, there are specific area closures within the sanctuary that are permanent in nature and pertain to specific fisheries — the North Coast Commercial Yelloweye RCA that applies to fixed gear (e.g., longlines and pots) and recreational groundfish and halibut fisheries, the North Coast Recreational RCA, and a small Salmon Troll RCA that lies within the North Coast Recreational RCA (Figure 35). It will be important to monitor the EFH and RCAs to detect changes in physical habitat and groundfish populations.

#### *Intertidal Habitats*

In response to growing concerns about impacts of increased visitation to the shores, sanctuary and Olympic National Park staff cooperated in an effort to examine the threats and opportunities to protect intertidal resources along the Olympic Coast. Science experts and citizen representatives outlined activities that are potentially degrading to intertidal areas and disturbing to wildlife, and identified a set of ecologically significant habitats and a range of potential management actions, including possible establishment of no-harvest areas, or intertidal reserves. These sites would provide long-term protection of the federally owned shores as human use increases. Intertidal reserves covering roughly 30 percent of the park's shore were incorporated into the park's Final General Management Plan released in March 2008 and will be subject to existing tribal treaty use of such zones.

#### *Monitoring Programs*

A variety of monitoring programs have been established in the sanctuary to assess various aspects of population levels, distribution and health of living resources. Seabirds can be considered sentinel species, or indicators of ocean health, because they depend on forage fish and invertebrates for their food. Seabirds, whales and dolphins are monitored during ship-based observations along established transect lines. The sanctuary supports monitoring of pinniped species (seals and sea lions) by state, federal and tribal biologists. The sea otter population size is assessed annually during coordinated aerial and land-based observations in collaboration with the U.S. Geological Survey, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, and the Seattle Aquarium. Olympic Coast sanctuary staff also partner with the University of Washington on the Coastal Observation and Seabird Survey Team (COASST) to monitor seabird mortality on beaches along the Olympic Coast and the Strait of Juan de Fuca. The kelp canopy is monitored annually in collaboration

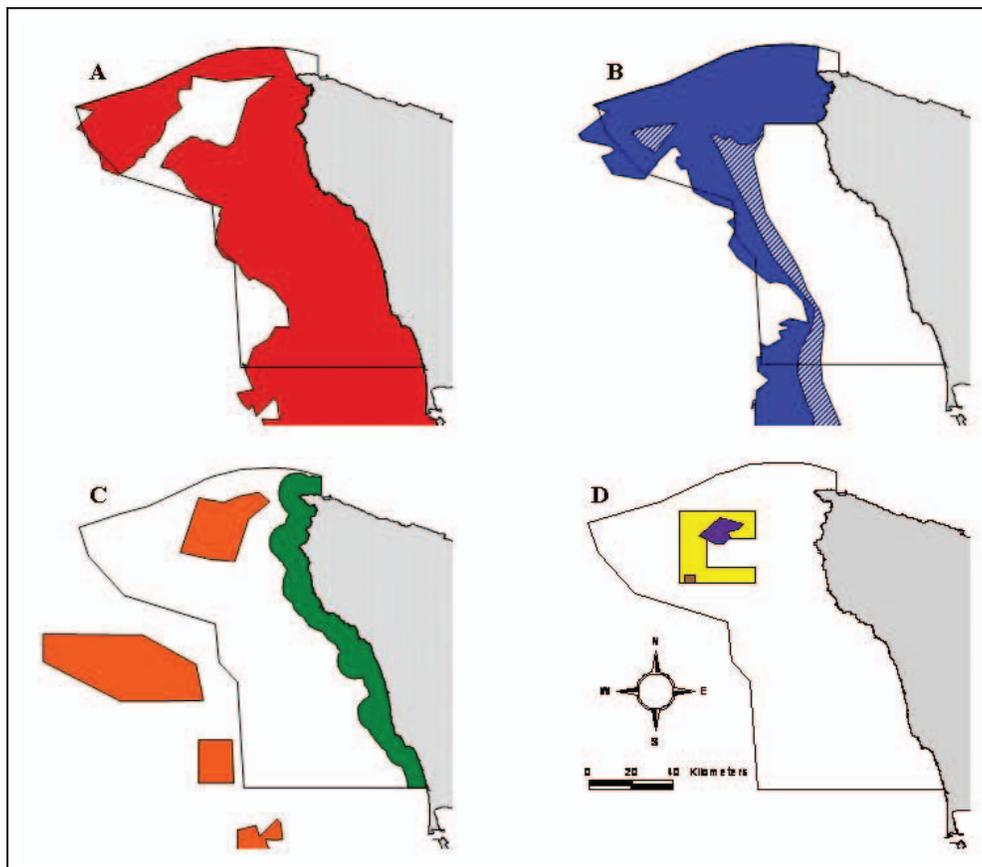


Figure 35. Maps depicting areas offshore from Washington state (gray) and within the Olympic Coast National Marine Sanctuary boundary (black line) subject to fishing closures. (A) Red area is the Non-trawl Rockfish Conservation Area (RCA), which is closed year round to non-tribal commercial longline and fish pot gears. (B) The Trawl RCA is closed to non-tribal commercial trawling with seasonal adjustments to depth contours — solid blue is closed November through February, while both solid and hatch blue approximates areas also closed March through October. (C) Green area is state of Washington waters closed year round to non-tribal commercial trawling, and the orange areas are Essential Fish Habitat conservation areas closed year round to non-tribal commercial trawling. (D) North Coast Yelloweye RCA year-round closures are yellow for recreational groundfish fishing, purple for commercial fixed gear (longline and fish pots) and recreational groundfish, and brown (small box within yellow area) for salmon troll gear. Source: NOAA Fisheries, Northwest Region

with the Washington State Department of Natural Resources. These surveys are conducted with aerial imaging systems to assess total area of kelp coverage. Volunteer organizations also monitor living resources in the sanctuary, such as the Reef Environmental Education Foundation, which conducts visual fish surveys in subtidal habitats.

#### ***Sea Otter Health Study***

In 2001 and 2002, the sanctuary joined with the U.S. Fish and Wildlife Service and U.S. Geological Survey to conduct focused re-

search on the health of sea otters off Washington state (Brancato et al. 2006). This study was a response to suspicions that increased disease susceptibility resulting from contaminant-induced immunosuppression may be responsible for the decline of the California sea otter population, where infectious disease and cardiac disease have been significant mortality factors. With range expansion possible to the south along the Washington coast and east into the Strait of Juan de Fuca, the Washington sea otter population is facing new or additional risks due to increased anthropogenic influences and a different

ecosystem. Unlike other marine mammals that migrate extensively, sea otters provide an unusual opportunity to study a mid- to high-trophic level marine consumer inhabiting highly industrial to extremely remote habitats throughout its occurrence in the Northeast Pacific. Because both the sea otters and their principal prey are relatively sedentary, their contaminant burdens should reflect localized contamination. In 2001 and 2002, 32 sea otters were captured, of which 28 were implanted with transmitters to track their movements, and liver and blood samples were collected to evaluate contaminant and pathogen exposure. The results indicate low levels of contaminants in general, but high levels of exposure to morbillivirus and *Toxoplasma*, the latter of which has been a significant cause of mortality in southern sea otters in California.

### **Wildlife Disturbance**

To protect seabirds, migratory waterfowl, endangered species, and marine mammals from disturbance and harassment, a sanctuary regulation prohibits flights of motorized aircraft at less than 2,000 feet (610 meters) within 1 nautical mile (1.9 kilometers) of national wildlife refuge islands or the shore, with exceptions for tribal timber operations on reservation lands. To improve familiarity and compliance with this regulation in the recreational pilot community, the sanctuary implemented an outreach program that focused on small aircraft at regional air strips. Sanctuary representatives have attended regional air shows to meet local pilots, talk about the sanctuary's resource protection concerns, and distribute fliers and posters that explain the regulation and its purpose.

### **Invasive Species Mitigation and Monitoring**

As mentioned above, Washington state has implemented regulations to minimize the risk of invasive species introductions, which require all vessels 300 gross tons or more travelling from foreign ports to exchange of ballast water in the open ocean or to treat the ballast water before discharging in state waters, and to submit ballast water reports. In addition, ships considered U.S. coastal traffic, including Canadian waters, must exchange ballast water no closer than 50 nautical miles (93 kilometers) offshore. The Marine Exchange of Puget Sound reports very high compliance rates with these requirements. Washington Department of Fish and Wildlife and the Washington State Invasive Species Council foster active management to reduce impacts from invasive species.

The sanctuary has sponsored two seasons of rapid assessment (2001 and 2002) of intertidal areas, bringing together a team of taxonomic experts to survey and identify non-indigenous species, as well as to inventory native species. Those surveys documented 10 non-indigenous invertebrate and algal species and, in a joint study with the Smithsonian Environmental Research Center in 2003, two invasive ascidians and one invasive barnacle were also documented (deRi-

vera et al. 2005). A third rapid assessment to cover additional areas of the coastline will be conducted when funding is available. Rigorous monitoring and early detection of non-indigenous species are important tools in minimizing the harmful effects of non-native invaders.

The Olympic National Park and sanctuary staff also conduct long-term intertidal monitoring of both sandy and rocky habitats in order to inventory invertebrates and identify trends in populations. This monitoring program, though not specifically designed to address non-indigenous species, serves as an early warning detection program for non-native species that may become invasive (rapidly reproducing, aggressive or highly competitive with native species) within the region.

The sanctuary also partners with the Washington State Department of Fish and Wildlife and the Makah Tribe in monitoring for the invasive European green crab at sites in Neah Bay and Makah Bay. This non-native crab competes with native species for habitat and food and has proved quite destructive in other areas of the country. To date, no European green crabs have been detected along the sanctuary coast or in Neah Bay, although green crabs have been found just south of the sanctuary boundary in Willapa Bay and also north of the sanctuary along Vancouver Island, B.C.

### **Military Activities**

The Navy is currently developing two environmental impact assessments for proposed federal actions — one to extend the Quinalt Underwater Tracking Range and another to address current, emerging and future fleet training activities in the Northwest Training Range Complex. These multi-year assessments will include opportunities for public input and comment, and are expected to be completed in 2009. Sanctuary staff will be active participants in the environmental assessment process to evaluate potential impacts to sanctuary resources and develop appropriate protection measures. The proposed extension of the Quinalt Underwater Tracking Range site could involve the continued testing of non-weaponized equipment in and near the sanctuary.

### **Maritime Heritage**

Coastal archaeological resources may be negatively impacted by rising sea levels and environmental forces. Under the National Historic Preservation Act, federal agencies are required to inventory and assess resources to determine what, if any, management actions could be taken in an effort to preserve critical sites and material. While programmatic funding has been limited, the sanctuary has participated in individual projects, using small grant funding and staff time as available. Examples of shipwreck studies include Office of National Marine Sanctuaries nationally funded shipwreck surveys of Destruction Island, Quillayute Needles, La Push and Cape Flattery vicinities and intertidal surveys of the wreck *Austria* conducted with community

members and graduate students. Examples involving prehistoric resources include a surface survey of Tatoosh Island, conducted by the Makah Tribal Historic Preservation Officer with sanctuary staff assistance, test pit excavation led by the Makah on paleoshoreline sites on the Makah Reservation (including one excavation funded by a NOAA Maritime Heritage Program minigrant), and periodic visual assessments of known prehistoric sites undertaken cooperatively with the Makah and archaeologists from Olympic National Park. In addition to these activities, sanctuary staff frequently consults with partner organizations as incidents or specific threats arise.

### **Climate Change**

Changing climatic conditions can not be managed at the level of the sanctuary. However, the sanctuary can assist in documenting the direct effects of climatic changes by recording oceanographic properties such as water temperature and dissolved oxygen levels over time. Using remote moorings, the sanctuary records ocean conditions continuously for the duration of the field season, and — with improved equipment and mooring apparatus — could extend monitor-

ing efforts throughout the year. These data can be shared with other researchers, such as fisheries biologists, to better understand the effects of ocean conditions on these economically important resources. The sanctuary also indirectly assesses responses to climate change in living resources through long-term monitoring of marine birds and mammals, intertidal organisms and invasive species. Associations between ocean conditions, possibly driven by climate change, and the presence of harmful algal blooms or hypoxic conditions are explored through both sanctuary programs and collaborative efforts that include the Olympic Region Harmful Algal Bloom consortium, Ecology and Oceanography of Harmful Algal Blooms, and Partnership for Interdisciplinary Studies of Coastal Oceans.

Coastal archaeological resources may be negatively impacted by rising sea levels. These resources, most on national park and Indian reservation lands, should be inventoried and assessed in order to help managers interpret what, if any, management actions could be taken in an effort to preserve critical sites and material. The sanctuary recognizes this need and will continue to conduct and facilitate these inventories.

## Concluding Remarks

This condition report is the first attempt to describe the relationship between human pressures and the status and trends of natural resources within Olympic Coast National Marine Sanctuary. By doing so, this report helps to identify the pressures and their impacts on marine ecosystems that may warrant monitoring and remediation in the years to come. Overall, the resources protected by the sanctuary appear to be in good to fair condition. Of the 17 resources or questions identified, three appear to be in good condition, six appear to be in good/fair condition, and eight appear to be in fair condition. None of the resources identified was listed in either fair/poor or poor condition.

The Olympic Coast sanctuary has a history of collaborative scientific research among federal, tribal and state agencies, as well as academic and non-government organizations, with studies designed to develop an improved understanding of the ecosystem to inform management and protect the sanctuary's natural resources. In recent years, research conducted in the sanctuary has become focused less on simple characterization and more on oceanographic processes, biogeography, and sources and fates of individual organisms and their contributions to the ecosystem as a whole. It is important to understand the factors that help to structure the resources of the sanctuary, and how uses of its resources may affect their health, viability and longevity. The information presented in this report enables managers to look back and consider past changes in the status of the resources, and provides guidance for continued resource management as future challenges are presented. This is especially important because the sanctuary will soon begin the process of reviewing its management plan, which will enable us to better understand, protect and utilize the nation's marine environment.

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## Additional Resources

American Park Network, History of Olympic National Park: <http://www.americanparknetwork.com/parkinfo/ol/history/>

Big Eddy International Marine Ecosystem Initiative: <http://www.bigeddy.net/>

Channel Islands National Marine Sanctuary, Bridging Our Past Through Shipwrecks: <http://channelislands.noaa.gov/shipwreck/shiphome.html>

Coastal Observation and Seabird Survey Team: <http://www.coasst.org/>

Ecology and Oceanography of Harmful Algal Blooms: <http://www.ecohabpnw.org/>

Intergovernmental Policy Council: [http://sanctuaries.noaa.gov/news/features/0107\\_octribes.html](http://sanctuaries.noaa.gov/news/features/0107_octribes.html)

Makah Cultural and Research Center: <http://www.makah.com/mcrchome.htm>

Makah Tribe: <http://www.makah.com/>

Marine Conservation Biology Institute: <http://www.mcbi.org/>

Marine Protected Areas of the United States: <http://www.mpa.gov/>

NOAA's Climate Program Office: <http://www.climate.noaa.gov/>

NOAA's National Center Centers for Coastal Ocean Science: <http://coastalscience.noaa.gov/>

NOAA's National Marine Fisheries Service: <http://www.nmfs.noaa.gov/>

NOAA's National Marine Fisheries Service Northwest Regional Office: <http://www.nwr.noaa.gov/>

NOAA's National Marine Sanctuary Program: <http://sanctuaries.noaa.gov/>

NOAA's Ocean Explorer: <http://www.oceanexplorer.noaa.gov/>

NOAA's Office of Ocean Exploration and Research: <http://explore.noaa.gov/>

NOAA's Office of Response and Restoration: <http://response.restoration.noaa.gov/>

Northwest Association of Networked Ocean Observing Systems: <http://www.nanoos.org/>

Northwest Indian Fisheries Commission: <http://www.nwifc.wa.gov/>

Northwest Straits Commission: <http://www.nwstraits.org/>

Ocean Futures Society: <http://www.oceanfutures.org/>

Olympic Coast Alliance: <http://www.olympiccoast.org/>

Olympic Coast National Marine Sanctuary: <http://olympiccoast.noaa.gov/>

Olympic National Park: <http://www.nps.gov/olym/>

Olympic Region Harmful Algal Bloom: <http://www.orhab.org/index.html>

Oregon State University: Oceanic and Atmospheric Sciences: <http://www.coas.oregonstate.edu/>

Pacific Fishery Management Council: <http://www.pcouncil.org/>

Pacific Northwest Seismic Network: <http://www.pnsn.org/>

Partnership for Interdisciplinary Studies of Coastal Oceans: <http://www.piscoweb.org/>

Quileute Tribe: <http://www.quileutetribe.org/>

U.S. Fish & Wildlife Service: Pacific Region: <http://www.fws.gov/pacific/>

U.S. Geological Survey, Cascades Volcano Observatory: <http://vulcan.wr.usgs.gov/>

U.S. Geological Survey, Tsunamis and Earthquake Research: <http://walrus.wr.usgs.gov/tsunami/>

U.S. Geological Survey: <http://www.usgs.gov/>

Washington Department of Fish and Wildlife: <http://wdfw.wa.gov/home.htm>

Washington Invasive Species Coalition: <http://www.invasivespeciescoalition.org/>

Washington Maritime National Wildlife Refuge Complex: [http://www.fws.gov/pacific/refuges/field/WA\\_maritime.htm](http://www.fws.gov/pacific/refuges/field/WA_maritime.htm)

Washington Sea Grant Program: <http://www.wsg.washington.edu/>

Washington State Department of Ecology: <http://www.ecy.wa.gov/>

Washington State Department of Natural Resources: <http://www.dnr.wa.gov/>

Washington State Ocean Policy Work Group: <http://courses.washington.edu/oceangov/OPWG.html>

## Appendix A: Rating Scale for System-Wide Monitoring Questions

The purpose of this appendix is to clarify the 17 questions and possible responses used to report the condition of sanctuary resources in “Condition Reports” for all national marine sanctuaries. Individual staff and partners utilized this guidance, as well as their own informed and detailed understanding of the site to make judgments about the status and trends of sanctuary resources.

The questions derive from the Office of National Marine Sanctuaries’ mission, and a system-wide monitoring framework (National Marine Sanctuary Program 2004) developed to ensure the timely flow of data and information to those responsible for managing and protecting resources in the ocean and coastal zone, and to those that use, depend on and study the ecosystems encompassed by the sanctuaries. They are being used to guide staff and partners at each of the 14 sites in the sanctuary system in the development of this first periodic sanctuary condition report. The questions are meant to set the limits of judgments so that responses can be confined to certain reporting categories that will later be compared among all sites and combined. Evaluations of status and trends may be based on interpretation of quantitative and, when necessary, non-quantitative assessments and observations of scientists, managers and users.

Following a brief discussion about each question, statements are presented that were used to judge the status and assign a corresponding color code. These statements are customized for each question. In addition, the following options are available for all questions: “N/A” — the question does not apply; and “Undet.” — resource status is undetermined.

Symbols used to indicate trends are the same for all questions: “▲” — conditions appear to be improving; “|” — conditions do not appear to be changing; “▼” — conditions appear to be declining; and “?” — trend is undetermined.

### Water Stressors

#### 1. Are specific or multiple stressors, including changing oceanographic and atmospheric conditions, affecting water quality and how are they changing?

This is meant to capture shifts in condition arising from certain changing physical processes and anthropogenic inputs. Factors resulting in regionally accelerated rates of change in water temperature, salinity, dissolved oxygen or water clarity could all be judged to reduce water quality. Localized changes in circulation or sedimentation resulting, for example, from coastal construction or dredge spoil disposal, can affect light penetration, salinity regimes, oxygen levels, productivity, waste transport and other factors that influence habitat and living resource quality. Human inputs, generally in the form of contaminants from point or non-point sources, including fertilizers, pesticides, hydrocarbons, heavy metals and sewage, are common causes of environmental degradation, often in combination rather than alone. Certain biotoxins, such as domoic acid, may be of particular interest to specific sanctuaries. When present in the water column, any of these contaminants can affect marine life by direct contact or ingestion, or through bioaccumulation via the food chain.

[Note: Over time, accumulation in sediments can sequester and concentrate contaminants. Their effects may manifest only when the sediments are resuspended during storm or other energetic events. In such cases, reports of status should be made under Question 7 – Habitat contaminants.]

	<b>Good</b>	Conditions do not appear to have the potential to negatively affect living resources or habitat quality.
	<b>Good/Fair</b>	Selected conditions may preclude full development of living resource assemblages and habitats, but are not likely to cause substantial or persistent declines.
	<b>Fair</b>	Selected conditions may inhibit the development of assemblages and may cause measurable but not severe declines in living resources and habitats.
	<b>Fair/Poor</b>	Selected conditions have caused or are likely to cause severe declines in some but not all living resources and habitats.
	<b>Poor</b>	Selected conditions have caused or are likely to cause severe declines in most if not all living resources and habitats.

## Water Eutrophic Condition

### 2. What is the eutrophic condition of sanctuary waters and how is it changing?

Nutrient enrichment often leads to planktonic and/or benthic algae blooms. Some affect benthic communities directly through space competition. Overgrowth and other competitive interactions (e.g., accumulation of algal-sediment mats) often lead to shifts in dominance in the benthic assemblage. Disease incidence and frequency can also be affected by algae competition and the resulting chemistry along competitive boundaries. Blooms can also affect water column conditions, including light penetration and plankton availability, which can alter pelagic food webs. Harmful algal blooms often affect resources, as biotoxins are released into the water and air, and oxygen can be depleted.

- Good** Conditions do not appear to have the potential to negatively affect living resources or habitat quality.
- Good/Fair** Selected conditions may preclude full development of living resource assemblages and habitats, but are not likely to cause substantial or persistent declines.
- Fair** Selected conditions may inhibit the development of assemblages and may cause measurable but not severe declines in living resources and habitats.
- Fair/Poor** Selected conditions have caused or are likely to cause severe declines in some but not all living resources and habitats.
- Poor** Selected conditions have caused or are likely to cause severe declines in most if not all living resources and habitats.

## Water Human Health

### 3. Do sanctuary waters pose risks to human health and how are they changing?

Human health concerns are generally aroused by evidence of contamination (usually bacterial or chemical) in bathing waters or fish intended for consumption. They also emerge when harmful algal blooms are reported or when cases of respiratory distress or other disorders attributable to harmful algal blooms increase dramatically. Any of these conditions should be considered in the course of judging the risk to humans posed by waters in a marine sanctuary.

Some sites may have access to specific information on beach and shellfish conditions. In particular, beaches may be closed when criteria for safe water body contact are exceeded, or shellfish harvesting may be prohibited when contaminant loads or infection rates exceed certain levels. These conditions can be evaluated in the context of the descriptions below.

- Good** Conditions do not appear to have the potential to negatively affect human health.
- Good/Fair** Selected conditions that have the potential to affect human health may exist but human impacts have not been reported.
- Fair** Selected conditions have resulted in isolated human impacts, but evidence does not justify widespread or persistent concern.
- Fair/Poor** Selected conditions have caused or are likely to cause severe impacts, but cases to date have not suggested a pervasive problem.
- Poor** Selected conditions warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts are likely or have occurred.

## Water Human Activities

### 4. What are the levels of human activities that may influence water quality and how are they changing?

Among the human activities in or near sanctuaries that affect water quality are those involving direct discharges (transiting vessels, visiting vessels, onshore and offshore industrial facilities, public wastewater facilities), those that contribute contaminants to stream, river, and water control discharges (agriculture, runoff from impermeable surfaces through storm drains, conversion of land use), and those releasing airborne chemicals that subsequently deposit via particulates at sea (vessels, land-based traffic, power plants, manufacturing facilities, refineries). In addition, dredging and trawling can cause resuspension of contaminants in sediments.

- **Good** Few or no activities occur that are likely to negatively affect water quality.
- **Good/Fair** Some potentially harmful activities exist, but they do not appear to have had a negative effect on water quality.
- **Fair** Selected activities have resulted in measurable resource impacts, but evidence suggests effects are localized, not widespread.
- **Fair/Poor** Selected activities have caused or are likely to cause severe impacts, and cases to date suggest a pervasive problem.
- **Poor** Selected activities warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts have occurred or are likely to occur.

## Habitat Abundance & Distribution

### 5. What are the abundance and distribution of major habitat types and how are they changing?

Habitat loss is of paramount concern when it comes to protecting marine and terrestrial ecosystems. Of greatest concern to sanctuaries are changes caused, either directly or indirectly, by human activities. The loss of shoreline is recognized as a problem indirectly caused by human activities. Habitats with submerged aquatic vegetation are often altered by changes in water conditions in estuaries, bays, and nearshore waters. Intertidal zones can be affected for long periods by spills or by chronic pollutant exposure. Beaches and haul-out areas can be littered with dangerous marine debris, as can the water column or benthic habitats. Sandy subtidal areas and hardbottoms are frequently disturbed or destroyed by trawling. Even rocky areas several hundred meters deep are increasingly affected by certain types of trawls, bottom longlines and fish traps. Groundings, anchors and divers damage submerged reefs. Cables and pipelines disturb corridors across numerous habitat types and can be destructive if they become mobile. Shellfish dredging removes, alters and fragments habitats.

The result of these activities is the gradual reduction of the extent and quality of marine habitats. Losses can often be quantified through visual surveys and to some extent using high-resolution mapping. This question asks about the quality of habitats compared to those that would be expected without human impacts. The status depends on comparison to a baseline that existed in the past - one toward which restoration efforts might aim.

- **Good** Habitats are in pristine or near-pristine condition and are unlikely to preclude full community development.
- **Good/Fair** Selected habitat loss or alteration has taken place, precluding full development of living resource assemblages, but it is unlikely to cause substantial or persistent degradation in living resources or water quality.
- **Fair** Selected habitat loss or alteration may inhibit the development of assemblages, and may cause measurable but not severe declines in living resources or water quality.
- **Fair/Poor** Selected habitat loss or alteration has caused or is likely to cause severe declines in some but not all living resources or water quality.
- **Poor** Selected habitat loss or alteration has caused or is likely to cause severe declines in most if not all living resources or water quality.

## Habitat Structure

### 6. What is the condition of biologically structured habitats and how is it changing?

Many organisms depend on the integrity of their habitats and that integrity is largely determined by the condition of particular living organisms. Coral reefs may be the best known examples of such biologically-structured habitats. Not only is the substrate itself biogenic, but the diverse assemblages residing within and on the reefs depend on and interact with each other in tightly linked food webs. They also depend on each other for the recycling of wastes, hygiene and the maintenance of water quality, among other requirements.

Kelp beds may not be biogenic habitats to the extent of coral reefs, but kelp provides essential habitat for assemblages that would not reside or function together without it. There are other communities of organisms that are also similarly co-dependent, such as hard-bottom communities, which may be structured by bivalves, octocorals, coralline algae or other groups that generate essential habitat for other species. Intertidal assemblages structured by mussels, barnacles and algae are another example, seagrass beds another. This question is intended to address these types of places where organisms form structures (habitats) on which other organisms depend.

- Good** Habitats are in pristine or near-pristine condition and are unlikely to preclude full community development.
- Good/Fair** Selected habitat loss or alteration has taken place, precluding full development of living resources, but it is unlikely to cause substantial or persistent degradation in living resources or water quality.
- Fair** Selected habitat loss or alteration may inhibit the development of living resources and may cause measurable but not severe declines in living resources or water quality.
- Fair/Poor** Selected habitat loss or alteration has caused or is likely to cause severe declines in some but not all living resources or water quality.
- Poor** Selected habitat loss or alteration has caused or is likely to cause severe declines in most if not all living resources or water quality.

## Habitat Contaminants

### 7. What are the contaminant concentrations in sanctuary habitats and how are they changing?

This question addresses the need to understand the risk posed by contaminants within benthic formations, such as soft sediments, hard bottoms, or biogenic organisms. In the first two cases, the contaminants can become available when released via disturbance. They can also pass upwards through the food chain after being ingested by bottom dwelling prey species. The contaminants of concern generally include pesticides, hydrocarbons and heavy metals, but the specific concerns of individual sanctuaries may differ substantially.

- Good** Contaminants do not appear to have the potential to negatively affect living resources or water quality.
- Good/Fair** Selected contaminants may preclude full development of living resource assemblages, but are not likely to cause substantial or persistent degradation.
- Fair** Selected contaminants may inhibit the development of assemblages and may cause measurable but not severe declines in living resources or water quality.
- Fair/Poor** Selected contaminants have caused or are likely to cause severe declines in some but not all living resources or water quality.
- Poor** Selected contaminants have caused or are likely to cause severe declines in most if not all living resources or water quality.

## Habitat Human Activities

### 8. What are the levels of human activities that may influence habitat quality and how are they changing?

Human activities that degrade habitat quality do so by affecting structural (geological), biological, oceanographic, acoustic or chemical characteristics. Structural impacts include removal or mechanical alteration, including various fishing techniques (trawls, traps, dredges, longlines and even hook-and-line in some habitats), dredging channels and harbors and dumping spoil, vessel groundings, anchoring, laying pipelines and cables, installing offshore structures, discharging drill cuttings, dragging tow cables, and placing artificial reefs. Removal or alteration of critical biological components of habitats can occur along with several of the above activities, most notably trawling, groundings and cable drags. Marine debris, particularly in large quantities (e.g., lost gill nets and other types of fishing gear), can affect both biological and structural habitat components. Changes in water circulation often occur when channels are dredged, fill is added, coastal areas are reinforced, or other construction takes place. These activities affect habitat by changing food delivery, waste removal, water quality (e.g., salinity, clarity and sedimentation), recruitment patterns and a host of other factors. Acoustic impacts can occur to water column habitats and organisms from acute and chronic sources of anthropogenic noise (e.g., shipping, boating, construction). Chemical alterations most commonly occur following spills and can have both acute and chronic impacts.

- Good** Few or no activities occur that are likely to negatively affect habitat quality.
- Good/Fair** Some potentially harmful activities exist, but they do not appear to have had a negative effect on habitat quality.
- Fair** Selected activities have resulted in measurable habitat impacts, but evidence suggests effects are localized, not widespread.
- Fair/Poor** Selected activities have caused or are likely to cause severe impacts, and cases to date suggest a pervasive problem.
- Poor** Selected activities warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts have occurred or are likely to occur.

## Living Resources Biodiversity

### 9. What is the status of biodiversity and how is it changing?

This is intended to elicit thought and assessment of the condition of living resources based on expected biodiversity levels and the interactions between species. Intact ecosystems require that all parts not only exist, but that they function together, resulting in natural symbioses, competition and predator-prey relationships. Community integrity, resistance and resilience all depend on these relationships. Abundance, relative abundance, trophic structure, richness, H' diversity, evenness and other measures are often used to assess these attributes.

- Good** Biodiversity appears to reflect pristine or near-pristine conditions and promotes ecosystem integrity (full community development and function).
- Good/Fair** Selected biodiversity loss has taken place, precluding full community development and function, but it is unlikely to cause substantial or persistent degradation of ecosystem integrity.
- Fair** Selected biodiversity loss may inhibit full community development and function and may cause measurable but not severe degradation of ecosystem integrity.
- Fair/Poor** Selected biodiversity loss has caused or is likely to cause severe declines in some but not all ecosystem components and reduce ecosystem integrity.
- Poor** Selected biodiversity loss has caused or is likely to cause severe declines in ecosystem integrity.

**Living Resources**  
**Extracted Species**

**10. What is the status of environmentally sustainable fishing and how is it changing?**

Commercial and recreational harvesting are highly selective activities, for which fishers and collectors target a limited number of species, and often remove high proportions of populations. In addition to removing significant amounts of biomass from the ecosystem, reducing its availability to other consumers, these activities tend to disrupt specific and often critical food web links. When too much extraction occurs (i.e. ecologically unsustainable harvesting), trophic cascades ensue, resulting in changes in the abundance of non-targeted species as well. It also reduces the ability of the targeted species to replenish populations at a rate that supports continued ecosystem integrity.

It is essential to understand whether removals are occurring at ecologically sustainable levels. Knowing extraction levels and determining the impacts of removal are both ways that help gain this understanding. Measures for target species of abundance, catch amounts or rates (e.g., catch per unit effort), trophic structure and changes in non-target species abundance are all generally used to assess these conditions.

Other issues related to this question include whether fishers are using gear that is compatible with the habitats being fished and whether that gear minimizes by-catch and incidental take of marine mammals. For example, bottom-tending gear often destroys or alters both benthic structure and non-targeted animal and plant communities. "Ghost fishing" occurs when lost traps continue to capture organisms. Lost or active nets, as well as lines used to mark and tend traps and other fishing gear, can entangle marine mammals. Any of these could be considered indications of environmentally unsustainable fishing techniques.

- **Good** Extraction does not appear to affect ecosystem integrity (full community development and function).
- **Good/Fair** Extraction takes place, precluding full community development and function, but it is unlikely to cause substantial or persistent degradation of ecosystem integrity.
- **Fair** Extraction may inhibit full community development and function and may cause measurable but not severe degradation of ecosystem integrity.
- **Fair/Poor** Extraction has caused or is likely to cause severe declines in some but not all ecosystem components and reduce ecosystem integrity.
- **Poor** Extraction has caused or is likely to cause severe declines in ecosystem integrity.

**Living Resources**  
**Non-Indigenous Species**

**11. What is the status of non-indigenous species and how is it changing?**

Non-indigenous species are generally considered problematic and candidates for rapid response, if found soon after invasion. For those that become established, their impacts can sometimes be assessed by quantifying changes in the affected native species. This question allows sanctuaries to report on the threat posed by non-indigenous species. In some cases, the presence of a species alone constitutes a significant threat (certain invasive algae). In other cases, impacts have been measured and may or may not significantly affect ecosystem integrity.

- **Good** Non-indigenous species are not suspected or do not appear to affect ecosystem integrity (full community development and function).
- **Good/Fair** Non-indigenous species exist, precluding full community development and function, but are unlikely to cause substantial or persistent degradation of ecosystem integrity.
- **Fair** Non-indigenous species may inhibit full community development and function and may cause measurable but not severe degradation of ecosystem integrity.
- **Fair/Poor** Non-indigenous species have caused or are likely to cause severe declines in some but not all ecosystem components and reduce ecosystem integrity.
- **Poor** Non-indigenous species have caused or are likely to cause severe declines in ecosystem integrity.

## Living Resources Key Species

### 12. What is the status of key species and how is it changing?

Certain species can be defined as “key” within a marine sanctuary. Some might be keystone species, that is, species on which the persistence of a large number of other species in the ecosystem depends - the pillar of community stability. Their functional contribution to ecosystem function is disproportionate to their numerical abundance or biomass and their impact is therefore important at the community or ecosystem level. Their removal initiates changes in ecosystem structure and sometimes the disappearance of or dramatic increase in the abundance of dependent species. Keystone species may include certain habitat modifiers, predators, herbivores and those involved in critical symbiotic relationships (e.g. cleaning or co-habiting species).

Other key species may include those that are indicators of ecosystem condition or change (e.g., particularly sensitive species), those targeted for special protection efforts, or charismatic species that are identified with certain areas or ecosystems. These may or may not meet the definition of keystone, but do require assessments of status and trends.

- **Good** Key and keystone species appear to reflect pristine or near-pristine conditions and may promote ecosystem integrity (full community development and function).
- **Good/Fair** Selected key or keystone species are at reduced levels, perhaps precluding full community development and function, but substantial or persistent declines are not expected.
- **Fair** The reduced abundance of selected keystone species may inhibit full community development and function and may cause measurable but not severe degradation of ecosystem integrity; or selected key species are at reduced levels, but recovery is possible.
- **Fair/Poor** The reduced abundance of selected keystone species has caused or is likely to cause severe declines in some but not all ecosystem components, and reduce ecosystem integrity; or selected key species are at substantially reduced levels, and prospects for recovery are uncertain.
- **Poor** The reduced abundance of selected keystone species has caused or is likely to cause severe declines in ecosystem integrity; or selected key species are at severely reduced levels, and recovery is unlikely.

## Living Resources Health of Key Species

### 13. What is the condition or health of key species and how is it changing?

For those species considered essential to ecosystem integrity, measures of their condition can be important to determining the likelihood that they will persist and continue to provide vital ecosystem functions. Measures of condition may include growth rates, fecundity, recruitment, age-specific survival, tissue contaminant levels, pathologies (disease incidence tumors, deformities), the presence and abundance of critical symbionts, or parasite loads. Similar measures of condition may also be appropriate for other key species (indicator, protected or charismatic species). In contrast to the question about keystone species (#12 above), the impact of changes in the abundance or condition of key species is more likely to be observed at the population or individual level and less likely to result in ecosystem or community effects.

- **Good** The condition of key resources appears to reflect pristine or near-pristine conditions.
- **Good/Fair** The condition of selected key resources is not optimal, perhaps precluding full ecological function, but substantial or persistent declines are not expected.
- **Fair** The diminished condition of selected key resources may cause a measurable but not severe reduction in ecological function, but recovery is possible.
- **Fair/Poor** The comparatively poor condition of selected key resources makes prospects for recovery uncertain.
- **Poor** The poor condition of selected key resources makes recovery unlikely.

## Living Resources Human Activities

### 14. What are the levels of human activities that may influence living resource quality and how are they changing?

Human activities that degrade living resource quality do so by causing a loss or reduction of one or more species, by disrupting critical life stages, by impairing various physiological processes, or by promoting the introduction of non-indigenous species or pathogens. (Note: Activities that impact habitat and water quality may also affect living resources. These activities are dealt with in Questions 4 and 8, and many are repeated here as they also have direct effect on living resources).

Fishing and collecting are the primary means of removing resources. Bottom trawling, seine-fishing and the collection of ornamental species for the aquarium trade are all common examples, some being more selective than others. Chronic mortality can be caused by marine debris derived from commercial or recreational vessel traffic, lost fishing gear and excess visitation, resulting in the gradual loss of some species.

Critical life stages can be affected in various ways. Mortality to adult stages is often caused by trawling and other fishing techniques, cable drags, dumping spoil or drill cuttings, vessel groundings or persistent anchoring. Contamination of areas by acute or chronic spills, discharges by vessels, or municipal and industrial facilities can make them unsuitable for recruitment; the same activities can make nursery habitats unsuitable. Although coastal armoring and construction can increase the availability of surfaces suitable for the recruitment and growth of hard bottom species, the activity may disrupt recruitment patterns for other species (e.g., intertidal soft bottom animals) and habitat may be lost.

Spills, discharges, and contaminants released from sediments (e.g., by dredging and dumping) can all cause physiological impairment and tissue contamination. Such activities can affect all life stages by reducing fecundity, increasing larval, juvenile, and adult mortality, reducing disease resistance, and increasing susceptibility to predation. Bioaccumulation allows some contaminants to move upward through the food chain, disproportionately affecting certain species.

Activities that promote introductions include bilge discharges and ballast water exchange, commercial shipping and vessel transportation. Releases of aquarium fish can also lead to species introductions.

- **Good** Few or no activities occur that are likely to negatively affect living resource quality.
- **Good/Fair** Some potentially harmful activities exist, but they do not appear to have had a negative effect on living resource quality.
- **Fair** Selected activities have resulted in measurable living resource impacts, but evidence suggests effects are localized, not widespread.
- **Fair/Poor** Selected activities have caused or are likely to cause severe impacts, and cases to date suggest a pervasive problem.
- **Poor** Selected activities warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts have occurred or are likely to occur.

## Maritime Archaeological Resources Integrity

### 15. What is the integrity of known maritime archaeological resources and how is it changing?

The condition of archaeological resources in a marine sanctuary significantly affects their value for science and education, as well as the resource's eligibility for listing in the National Register of Historic Places. Assessments of archaeological sites include evaluation of the apparent levels of site integrity, which are based on levels of previous human disturbance and the level of natural deterioration. The historical, scientific and educational values of sites are also evaluated and are substantially determined and affected by site condition.

- **Good** Known archaeological resources appear to reflect little or no unexpected disturbance.
- **Good/Fair** Selected archaeological resources exhibit indications of disturbance, but there appears to have been little or no reduction in historical, scientific or educational value.
- **Fair** The diminished condition of selected archaeological resources has reduced, to some extent, their historical, scientific or educational value, and may affect the eligibility of some sites for listing in the National Register of Historic Places.
- **Fair/Poor** The diminished condition of selected archaeological resources has substantially reduced their historical, scientific or educational value, and is likely to affect their eligibility for listing in the National Register of Historic Places.
- **Poor** The degraded condition of known archaeological resources in general makes them ineffective in terms of historical, scientific or educational value, and precludes their listing in the National Register of Historic Places.

## Maritime Archaeological Resources Threat to Environment

### 16. Do known maritime archaeological resources pose an environmental hazard and how is this threat changing?

The sinking of a ship potentially introduces hazardous materials into the marine environment. This danger is true for historic shipwrecks as well. The issue is complicated by the fact that shipwrecks older than 50 years may be considered historical resources and must, by federal mandate, be protected. Many historic shipwrecks, particularly early to mid-20th century, still have the potential to retain oil and fuel in tanks and bunkers. As shipwrecks age and deteriorate, the potential for release of these materials into the environment increases.

- **Good** Known maritime archaeological resources pose few or no environmental threats.
- **Good/Fair** Selected maritime archaeological resources may pose isolated or limited environmental threats, but substantial or persistent impacts are not expected.
- **Fair** Selected maritime archaeological resources may cause measurable, but not severe, impacts to certain sanctuary resources or areas, but recovery is possible.
- **Fair/Poor** Selected maritime archaeological resources pose substantial threats to certain sanctuary resources or areas, and prospects for recovery are uncertain.
- **Poor** Selected maritime archaeological resources pose serious threats to sanctuary resources, and recovery is unlikely.

**Maritime  
Archaeological Resources**  
**Human Activities**

**17. What are the levels of human activities that may influence maritime archaeological resource quality and how are they changing?**

Some human maritime activities threaten the physical integrity of submerged archaeological resources. Archaeological site integrity is compromised when elements are moved, removed or otherwise damaged. Threats come from looting by divers, inadvertent damage by scuba diving visitors, improperly conducted archaeology that does not fully document site disturbance, anchoring, groundings, and commercial and recreational fishing activities, among others.

- Good** Few or no activities occur that are likely to negatively affect maritime archaeological resource integrity.
- Good/Fair** Some potentially relevant activities exist, but they do not appear to have had a negative effect on maritime archaeological resource integrity.
- Fair** Selected activities have resulted in measurable impacts to maritime archaeological resources, but evidence suggests effects are localized, not widespread.
- Fair/Poor** Selected activities have caused or are likely to cause severe impacts, and cases to date suggest a pervasive problem.
- Poor** Selected activities warrant widespread concern and action, as large-scale, persistent, and/or repeated severe impacts have occurred or are likely to occur.

## Appendix B: Consultation with Experts and Document Review

The process for preparing condition reports involves a combination of accepted techniques for collecting and interpreting information gathered from subject matter experts. The approach varies somewhat from sanctuary to sanctuary, in order to accommodate differing styles for working with partners. The Olympic Coast National Marine Sanctuary approach was closely related to the Delphi Method, a technique designed to organize group communication among a panel of geographically dispersed experts by using questionnaires, ultimately facilitating the formation of a group judgment (Linstone and Turoff 1975). This method can be applied when it is necessary for decision-makers to combine the testimony of a group of experts, whether in the form of facts or informed opinion, or both, into a single useful statement.

The Delphi Method relies on repeated interactions with experts who respond to questions with a limited number of choices to arrive at the best supported answers. Feedback to the experts allows them to refine their views, gradually moving the group toward the most agreeable judgment. For condition reports, the Office of National Marine Sanctuaries uses 17 questions related to the status and trends of sanctuary resources, with accompanying descriptions and five possible choices that describe resource condition.

In order to address the 17 questions, sanctuary staff selected and consulted outside experts familiar with water quality, living resources, habitat, and maritime archaeological resources. Some experts were recommended by key partners, including the Intergovernmental Policy Council (IPC), the University of Washington, the Washington Dept. of Fish and Wildlife, and the U.S. Geological Survey. Experts represented various affiliations including the Washington State Departments of Archaeology and Historic Preservation, Ecology, Fish and Wildlife, and Natural Resources; Quinault Indian Nation; Hoh Tribe; Quileute Tribe; Makah Tribe; Coastal Maritime Archaeology Resources; Natural Resource Consultants Inc.; Wessen & Associates Inc.; NOAA (Fisheries and Office of National Marine Sanctuaries); Northwest Indian Fisheries Commission; Olympic National Park; University of Chicago Department of Ecology and Evolution; U.S. Fish and Wildlife Service; and University of Washington (School of Oceanography and Applied Physics Laboratory).

Expert opinion was solicited electronically and through one-on-one contact via phone calls and/or e-mails. Background material was provided to the experts in order to develop a consistent understanding of the project and the questions. Experts were asked to utilize Appendix A, which accompanies every Sanctuary's report, to guide their responses. Appendix A clarifies the set of questions and presents standardized statements that are used to describe the status and assign a corresponding color code on a scale from "good" to "poor." These statements are customized for each question.

During the initial request for response to questions, a total of 80 experts were contacted and 28 responded. They were asked to rate resource status and trends, based on guidance provided, and submit supplemental comments, data, graphics, literature citations, Web site links and other relevant information.

The combined input of all experts was considered by a writing team composed of individuals from the sanctuary and the national office. They tallied and discussed ratings and accompanying com-

ments, and summarized the input in a written draft that included a proposed status rating and a proposed trend for each question. The initial ratings represented agreement by the writing team, based on interpretation of quantitative and, when necessary, non-quantitative expert input, as well as other available information, such as assessments and observations of scientists, managers and users. In some cases, certain input was not used because it was either not relevant to the question it accompanied, or too narrowly focused to address the question. Nevertheless, the ratings and text are intended to summarize the opinions and uncertainty expressed by experts, who based their input on knowledge and perceptions of local conditions. Comments and citations received from the experts were included, as appropriate, in text supporting the ratings.

This draft document was sent back to the subject experts for what was called an "initial review," a 21-day period that allows them to ensure that the report accurately reflected their input, identify information gaps, provide comments or suggest revisions to the ratings and text. Upon receiving those comments, the writing team revised the text and ratings as they deemed appropriate. The final interpretation, ratings and text in the draft condition report were the responsibility of sanctuary staff, with final approval by the sanctuary superintendent. To emphasize this important point, authorship of the report is attributed to the sanctuary alone. Subject experts were not authors, though their efforts and affiliations are acknowledged in the report.

The second phase of review, called invited review, involved particularly important partners in research and resource management, including state natural resource managers, regional fisheries science centers, NOAA's National Marine Fisheries Service, and the Pacific Fisheries Management Council advisory committees (Scientific and Statistical Committee, Habitat Committee, and Groundfish Advisory Panel). Review was also requested from stakeholder representatives on the Olympic Coast Sanctuary Advisory Council and from the sanctuary system's West Coast Regional Office. These bodies

were asked to review the technical merits of resource ratings and accompanying text, as well as to point out any omissions or factual errors. The comments and recommendations of invited reviewers were received, considered by sanctuary staff and incorporated, as appropriate, into a final draft document.

A draft final report was then sent to James Delgado, Institute of Nautical Archaeology; Sarah Dzinbal, Washington Department of Natural Resources; Dave Fluharty, University of Washington, School of Marine Affairs; and Rikk Kvitek, California State University, Monterey Bay, who served as external peer reviewers. This external peer review is a requirement that started in December 2004, when the White House Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review (OMB bulletin) establishing peer review standards that would enhance the quality and credibility of the federal government's scientific information. Along with other information, these standards apply to Influential Scientific

Information, which is information that can reasonably be determined to have a "clear and substantial impact on important public policies or private sector decisions." The condition reports are considered Influential Scientific Information. For this reason, these reports are subject to the review requirements of both the Information Quality Act and the OMB bulletin guidelines. Therefore, following the completion of every condition report, they are reviewed by a minimum of three individuals who are considered to be experts in their field, were not involved in the development of the report, and are not Office of National Marine Sanctuaries employees. Comments from these peer reviews were incorporated into the final text of the report. Furthermore, OMB bulletin guidelines require that reviewer comments, names and affiliations be posted on the agency's Web site: [http://www.osec.doc.gov/cio/oipr/pr\\_plans.htm](http://www.osec.doc.gov/cio/oipr/pr_plans.htm). Reviewer comments, however, are not attributed to specific individuals. Reviewer comments are posted at the same time as with the formatted final document.

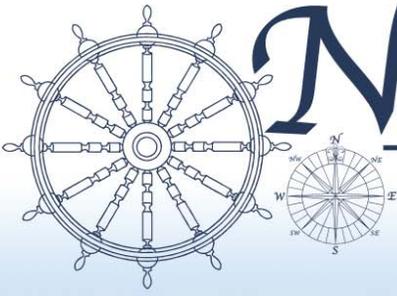




# Olympic Coast

National Marine Sanctuary





OLYMPIC COAST NATIONAL MARINE SANCTUARY

# *Navigating the Future*

*Management Plan Review*



Agenda Item E.1.b  
Attachment 2  
April 2009

## **PUBLIC SCOPING & ISSUES ANALYSIS**

### **PART I: SCOPING SUMMARY**



**DECEMBER 2008**

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### **PUBLIC SCOPING & ISSUES ANALYSIS**

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## I. INTRODUCTION

This document was created to assist Olympic Coast National Marine Sanctuary (OCNMS) staff, sanctuary Advisory Council (AC) members, Olympic Coast Intergovernmental Policy Council (IPC) representatives, and Office of National Marine Sanctuaries (ONMS) staff in understanding and interpreting the comments received during the Public Scoping & Issues Analysis (scoping) phase of management plan review (*Navigating the Future*). The goal of the scoping phase is to create an early and open process for determining the significant issues to be addressed in the sanctuary's revised management plan.

The scoping phase began on September 15, 2008 and continues on through the issue prioritization process, which is not scheduled to conclude until April 2009. Sanctuary stakeholders, partners and the public are welcome to provide comments and input at any point during this time. However, to encourage comment submissions the sanctuary held a formal 60-day public comment period from September 15 to November 14, 2008.

The Scoping Summary explains the *Navigating the Future* scoping process and summarizes the comments received during the formal public comment period. All scoping comments received through December 1, 2008 are summarized by grouping the comments under 37 topics (Table 2). A bulleted list of all the comments related to each topic is also provided (Appendix A).

A series of documents are being produced as part of the scoping phase, the Scoping Summary report being the first in the series. The second document in the series, the Topics Analysis Report, is being published concurrently with the Scoping Summary. The Topics Analysis Report provides an initial analysis of each topic identified in the Scoping Summary, including a description of the topic as interpreted by OCNMS staff, a synopsis of public comments related to the topic, a summary of findings from the OCNMS 2008 Condition Report and a description of OCNMS work related to the topic.

The Scoping Summary and Topics Analysis Report are closely related and together serve several functions. The Scoping Summary serves as a public reference document, presenting comments in an organized way such that the reader can easily locate and review all comments related to a particular topic. Moreover, by allowing the reader to see how each comment was grouped, the Scoping Summary adds transparency to the process by which staff interpreted the comments. The Topics Analysis Report, by providing analysis of each of the 37 topics, serves both as a source of additional information and as a tool for prioritizing issues for the revised management plan.

## II. SUMMARY OF SCOPING PROCESS

### **Notice of Intent for the Review of Management Plan/Regulations**

On September 15, 2008, the National Oceanic and Atmospheric Administration (NOAA) formally initiated the *Navigating the Future* scoping phase by publishing a notice of intent in the federal register (73 FR 53161) (Appendix B). This notice of intent 1)

initiated review of OCNMS' management plan and regulations; 2) served as the start of a 60-day public comment period; 3) provided information about the public scoping meetings held during the comment period; and 4) provided public notice of NOAA's intent to prepare an environmental impact statement pursuant to the National Environmental Policy Act.

Additionally, OCNMS published in the notice of intent six preliminary priority topics, which were developed in consultation with the IPC. This list represents the IPC and OCNMS' best professional judgment of the most important issues NOAA should consider in preparation of a new OCNMS management plan. OCNMS staff noted that the list was not meant to preclude or in any way limit the consideration of additional topics raised through public comment, government-to-government consultations, and discussions with partner agencies.

The IPC consists of the State of Washington and the Coastal Treaty Tribes who have jurisdiction over resources within the Sanctuary. OCNMS and the IPC have signed a Memorandum of Agreement (MOA) that provides for the formation of the IPC as a forum for communication and exchange of information and policy recommendations regarding the management of marine resources and activities within the boundaries of OCNMS. The stated goals of the MOA are to:

- Enhance intergovernmental relationships between the parties through the creation of a Policy Council.
- Improve communication among the parties towards identifying common goals and reaching consensus on management priorities within the boundaries of the OCNMS for the protection and management of natural resources and the promotion of educational opportunities and scientific research

### **Meeting with Partners**

Throughout the scoping phase (and in some cases prior to), OCNMS staff met and discussed the management plan review process with the IPC, Olympic National Park, the Washington Maritime National Wildlife Refuge Complex, the Environmental Protection Agency, the Olympic Coast Alliance and a variety of other agencies and interested parties. OCNMS staff requested, for the sake of transparency, that all agencies, organizations and governments with suggestions for the management plan review process submit them in writing during the public comment period. OCNMS staff offered to hold government-to-government consultations with each of the four coastal treaty tribes, but these meetings have not yet occurred.

### **AC Scoping Workgroup Recommendations**

In September 2007, the OCNMS Advisory Council (AC) established a work group to develop recommendations for the scoping phase. The work group was comprised of Bob Bohlman, Doug Fricke, Jennifer Hagen, Al Hightower, Ellen Matheny, Roy Morris, Fan Tsao, and Gene Woodwick. Based upon the outcome of the working group's five meetings, the Advisory Council adopted several recommendations, which were

forwarded to the Sanctuary Superintendent. Staff used these recommendations as a guide for planning the public scoping period. The recommendations included the following:

- Suggested locations and venues for the seven public scoping meetings
- A detailed format for the meetings focused on small group discussion
- Suggestions for questions to ask those who attend public scoping meetings
- A list of key governments, agencies, key constituents and media outlets that the sanctuary should inform about the management plan review and the scoping period
- A list of outreach products that sanctuary staff should produce for the scoping period and specifically to be provided at the public scoping meetings

### **Raising Public Awareness about *Navigating the Future***

Staff adhered closely to the list of outreach products recommended by the AC, which included a save-the-date postcard, a four-page mailer, an eight-page tabloid newsletter, a series of one-page handouts on sanctuary program areas, a CD with key documents, large displays to serve as the focus for the public meeting open houses, and a *Navigating the Future* website. The postcard and mailer were sent to a list of approximately 2,300 people. The other materials were distributed at the public scoping meetings. Following the AC's recommendation, the OCNMS 2008 Condition Report was finalized and publicly available by the start of the public comment period. Staff sent scoping notification letters to approximately 70 key agencies, non-governmental organizations, tribes, businesses and elected officials, and notified 58 papers, 23 television stations and dozens of local and regional radio stations. At least nine articles related to *Navigating the Future* appeared in local/regional newspapers during the comment period. The sanctuary also sent regular e-mails about the scoping phase to its listserv (approximately 1,500 e-mail addresses).

OCNMS staff also encouraged comment submissions by distributing public comment forms at the Dungeness Crab Festival, the COASST volunteer dinner and other events. Additionally, staff contacted by phone or e-mail upwards of 60 Advisory Council members, IPC members, non-governmental organizations, government agencies, tribes and industry representatives to remind them about the public comment period. The eight-page tabloid newsletter was distributed at the Seattle Aquarium, Feiro Marine Life Center, Port Angeles Visitor Center, and included in the Port Angeles Regional Chamber of Commerce November newsletter mailing, which was sent to over 570 people.

### **Scoping Meetings**

Public scoping meetings were held in seven Western Washington communities starting in Port Angeles on September 29<sup>th</sup> and ending in Seattle on October 5<sup>th</sup>. All meetings followed a similar format. They began with an informal open house to give participants an opportunity to ask staff questions. The open house was followed by a brief introduction to the *Navigating the Future* process from the Sanctuary Superintendent and welcoming remarks from a representative of the IPC. The largest portion of the meetings (one to two hours) was dedicated to facilitated small group discussions. Participants were

put in small groups (usually four to eight people); each group was staffed with a sanctuary facilitator and note taker. The facilitator took comments from each person, continuing until all comments had been received. The note taker took notes on a laptop computer that was projected on a screen so that the group could see what was written. The note taker confirmed with each commenter that his/her comments had been adequately characterized. The notes from these meetings were published on the *Navigating the Future* website the following week.

### **III. METHODOLOGY FOR SUMMARIZING COMMENTS**

When summarizing the public comments, OCNMS staff started with no pre-conceived list of topics or categories. To ensure consistency in the process, at least two (often three) staff were present during all comment review and categorizing.

As a first step, prior to the close of the public comment period, OCNMS staff reviewed comments from the public scoping meetings. For each comment, staff assessed the issue being discussed and either created a topic heading to describe that issue or binned the comment under a topic heading that had already been created based upon an earlier comment. When possible, language directly from the comments was used to create the topic headings. Comments could be placed under several topic headings (note: there was no limit to the number of topics under which a comment was binned, but no comment ended up under more than six topic headings).

It is important to note that while some comments were simple statements clearly associated with one specific topic, other comments were more complex. In some cases, this complexity was due to the comment referencing multiple topics, in which case the comment was duplicated under multiple topic headings. In other cases, this complexity was due to the ambiguous nature of the comment. Staff wanted to make sure that every comment was binned under at least one topic heading, so in these situations staff had to use their best judgment in categorizing the comment.

During this first iteration, a list of 57 topics was generated - some general in nature, others quite specific. Staff then sorted all the comments by topic and reviewed the topic headings in relation to the comments. Based upon this review, some topics were lumped or split. Staff then conducted a second iteration of the comment-by-comment analysis, using the initial list of topics to guide the process, resulting in a revised, more concise list of 37 topics. A brief description of each topic was drafted and together, the 37 topics and topic descriptions formed the first draft of what are now the Scoping Summary and Topics Analysis Report. This draft was provided electronically to the IPC the AC for review on November 19, 2008.

After the public comment period closed on November 14, 2008, OCNMS staff began analyzing the written comments received by mail, e-mail and fax to determine whether they fit within the context of the 37 topics. While none of the written comments warranted the addition of new topics, the comments did require staff to revise the way in which many of the topics were characterized. Often the written comments shed new light

on or added depth and dimension to a topic. Staff used the written comments as a basis for expanding and refining the draft topic descriptions into more in-depth topic analyses. Additionally, staff incorporated suggestions from sanctuary program leads and AC members into the analyses.

#### IV. SUMMARY OF COMMENTS

A total of 166 people attended the seven public scoping meetings and provided 516 comments. An additional 688 letters, e-mails and public comment forms were received (Table 1), of which approximately 600 were form e-mails containing the same five comments.

**TABLE 1. Sources of written comments received as of December 1, 2008.**

	<i>Individuals</i>	<i>Tribes</i>	<i>Agencies</i>	<i>NGOs*</i>	<i>Total</i>
Formal Letters	5	1	5	15	<b>26</b>
Public Comment Forms	8				<b>8</b>
E-mails	649			5	<b>654</b>
<b>Total</b>	<b>662</b>	<b>1</b>	<b>5</b>	<b>20</b>	<b>688</b>

\* *Non-governmental organizations*

Many of the letters and e-mails contained multiple comments, each of which was analyzed separately. Thus, the total number of individual comments analyzed and binned by OCNMS staff was 1,009 (516 from the public meetings and 493 from written comments). Staff summarized these comments by grouping them under 37 topics (Table 2). These topics themselves serve as a brief summary of the major issues raised in the comments. A more extensive summary, which includes a bulleted list of all the comments related to each of the 37 topics, is also provided (Appendix A).

**TABLE 2. Summary of 37 topics raised during scoping (in alphabetical order)**

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1	Administration - Flexibility to Respond to Emerging Issues
2	Administration – Infrastructure
3	Administration - Sanctuary Goals & Objectives
4	Boundary Adjustment
5	Climate Change
6	Collaborative and Coordinated Management
7	Community Outreach
8	Ecosystem Impacts of Fishing
9	Fisheries Stock Assessment
10	Habitat Characterization
11	Habitat Protection
12	Invasive Species
13	Living Resource Conservation
14	Living Resources Monitoring
15	Local and Customary Knowledge
16	Marine Debris – Abandoned Submerged Equipment
17	Marine Debris – Shoreline Clean-Up
18	Maritime and Environmental Safety - Harbors of Refuge
19	Maritime and Environmental Safety – Navigation
20	Maritime and Environmental Safety - Vessel Management
21	Maritime and Environmental Safety - Weather Forecasting
22	Maritime Heritage - Cultural Resource Management
23	Maritime Heritage - Living Cultures
24	Military Activities
25	Non-point Source Pollution
26	Ocean Literacy
27	Public and Private Resource Use - Commercial Development
28	Public and Private Resource Use - Compatibility Analysis
29	Public and Private Resource Use - Recreational Opportunities
30	Public and Private Resource Use - Socioeconomic Values & Human Use
31	Regulations, Permitting & Enforcement
32	Research to Support Ecosystem Management
33	Spill Prevention, Contingency Planning and Response
34	Treaty Trust Responsibility
35	Visitor Services
36	Water Quality Monitoring
37	Water Quality Protection

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## V. CONCLUSION

### **Value of Public Comments**

The comments received during the public comment period are a critical element of the *Navigating the Future* process. Many agencies, governments, organizations, and individuals invested substantial time and effort to provide OCNMS with thoughtful guidance that staff has spent many hours reviewing. The comments were so thorough in fact, that staff found it unnecessary to add any additional topics to the list of 37 generated from the public comments. These comments, as represented through the 37 topics, now serve as the foundation for the issue prioritization process.

In many cases, comments recommended specific actions for the sanctuary to take on particular issues. Staff tried to mention briefly some of these specific suggestions in the Topic Analysis Report. However, the primary goal of the scoping phase is to discuss, identify and prioritize the significant issues to be addressed in the management plan. OCNMS is not at the point of deciding what actions will be taken on particular issues. Once the priority issues are identified, staff will begin developing action plans to address each issue. During action plan development, all of the suggested actions provided in the public comments will be compiled and provided to relevant workgroups to be reviewed and discussed.

### **Issue Prioritization Process**

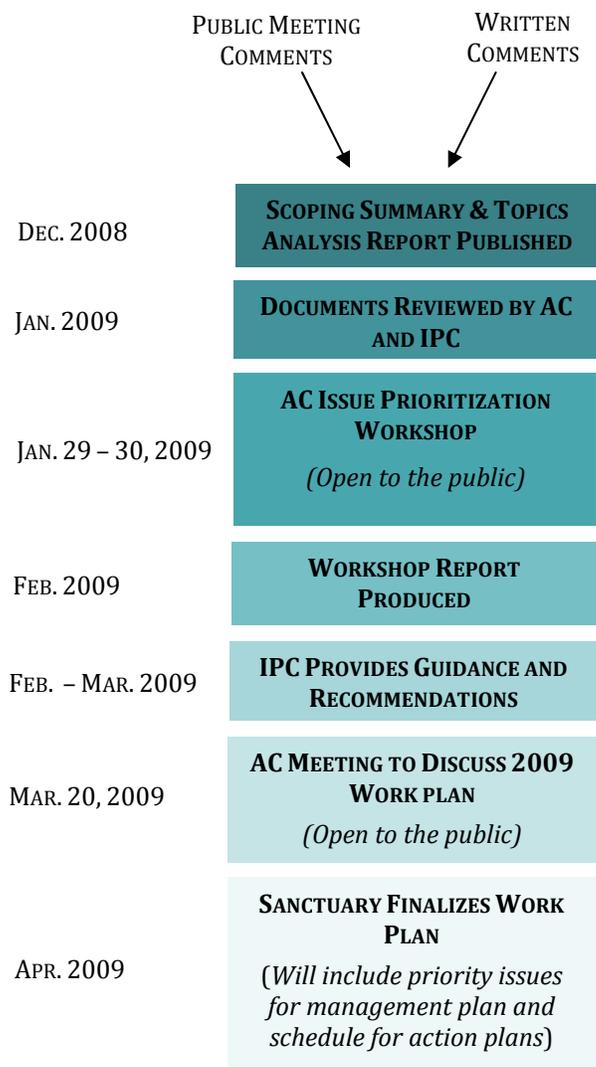
The next step in the scoping phase is to identify a subset of topics from public scoping that will be the priority issues addressed in the revised OCNMS management plan. In addition to being available to the public, the Scoping Summary and Topic Analysis Report will be provided specifically to the AC and IPC as a primer for the issue prioritization process. The 37 topics will serve as a platform from which to launch the Advisory Council's Issue Prioritization workshop, January 29 – 30, 2009 at the Olympic Natural Resources Center in Forks, WA. The workshop, as well as future Advisory Council meetings, will be open to the public, and public comment periods will be included in the agenda.

The goal of the workshop is for the AC to provide the Sanctuary Superintendent with recommendations on the priority issues it would like to see addressed in the revised management plan. The results of the workshop will be written up as the third in the series of public documents being produced as part of the scoping phase (Table 3). The IPC then will consider the public comments, the Scoping Summary, the Topics Analysis Report and the AC workshop report, in order to provide its recommendations to the Sanctuary Superintendent on the priority issues it recommends be addressed in the revised management plan.

The Sanctuary Superintendent, through ongoing dialogue with the IPC and AC, will work with sanctuary staff to review these recommendations, decide on a final list of priority issues for the management plan, and develop a Work Plan for the next phase of *Navigating the Future* - action plan development. The Work Plan will be the fourth and final public document produced for the scoping phase of *Navigating the Future*.

TABLE 3. List of public documents being produced as part of the *Navigating the Future* scoping phase

	<i>Title of Document</i>	<i>Estimated Publication Date</i>
1	SCOPING SUMMARY	DECEMBER 2008
2	TOPICS ANALYSIS REPORT	DECEMBER 2008
3	ADVISORY COUNCIL ISSUE PRIORITIZATION WORKSHOP REPORT	FEBRUARY 2009
4	WORK PLAN FOR ACTION PLAN DEVELOPMENT	APRIL 2009



**FIGURE 1. Diagram showing activities for remainder of the *Navigating the Future* Public Scoping & Issues Analysis phase at OCNMS.**

## **APPENDIX A EXPANDED SCOPING SUMMARY**

*The following is a bulleted list of all written and verbal comments received during the scoping public comment period, grouped under 37 topics. The comments have been not been edited; only typos and small grammatical errors have been corrected for ease of reading. If a comment is relevant to more than one topic, it is duplicated under multiple topic headings.*

### **1. ADMINISTRATION - FLEXIBILITY TO RESPOND TO EMERGING ISSUES**

- Part of the management plan review should be the development of a process to intake, prioritize and act on new issues that occur between now and the next plan.
- The sanctuary should be the place for using new technologies. The sanctuary should be looking into: Fishing technology development, fuels and lubricants for vessels that are not harmful to the ocean, and similar technologies.
- Sanctuary is a good place for this research (new technologies) because it does not have conflicting impacts. It is a good control area. We can get background reading of hydrocarbons and other chemicals.
- Incorporate language into the management plan that allows flexibility to address emerging issues.
- Threats to resources should be assessed, including current and potential future ones.
- There should be an annual discussion about issues that may have come up during that year instead of waiting 14 years for a management plan review. This might alleviate some of the perceived conflict between the Sanctuary and the tribes because of better communication. Not something as big as a full management plan review, but a way to gauge interest in issues on a more frequent basis.
- Management plan review every 14 years is not adequate to address changing conditions. There should be a built-in mechanism for community members to address developing issues before they become too big to fix. There should be direct internet availability for members of the public to make the sanctuary aware of new issues and/or changing conditions.
- Adaptive management to change policy and management practices.
- Energize and enable Sanctuary management, regulation, and administration to respond to emerging needs.
- Consider more frequent management plan and regulatory updates to increase responsiveness to changing ocean conditions, species and marine resource protection and recovery needs, and Sanctuary protection and damage prevention.
- The life span of a management plan is five to 10 years. Within that timeframe, the sanctuary will most likely see new activities and emerging issues that are not currently anticipated. The management plan should outline a process for evaluating and managing such activities if they occur between management plan review timelines, making sure the process supports the primary goal of resource protection.
- Incorporate adaptive mechanisms that allow periodic review, updates, and response to new opportunities and unanticipated challenges or progress.
- The Management Plan is for five to ten years, during which time new threats to Sanctuary resources may emerge along with new information. The Management Plan needs to account for unforeseeable changes and be flexible enough to adapt.

### **2. ADMINISTRATION - INFRASTRUCTURE**

- Sanctuary should take lead in establishing coastal marine research station along northern coast (modeled after Mote, Bamfield, Moss Landing labs). These stations focus research on local resources, and provide economic benefits and educational opportunities to communities.

- Minimum expenditure of federal money (underline 12x)
- Sanctuary should have a hot line for reporting ocean issues, concerns, observations.
- The sanctuary office should be adjacent to the sanctuary instead of the current, relatively remote location. Other resource management agencies are located near their activities. Ideal areas would be Forks or La Push.
- We need land facilities, bathrooms on trails, signs, to assist with people who are visiting / viewing the Sanctuary: permits needed; sustain use of coast with appropriate infrastructure; maintenance
- The sanctuary needs to replace the RV Tatoosh with a better small research platform. Bigger, more deck space, flying bridge, newer instrumentation. More use for education trips into the sanctuary.
- It's important for the sanctuary to increase interactions with other users. Staff should be out on the coast closer to the sanctuary.
- Creative ways to continue your efforts with all the budget cutbacks and economic problems
- Instead of the center at Port Angeles provide 3 research/marine Center for the public that are located along the coast. These centers will support research, education and naturalist tours. . . This will provide education and awareness for the public more data for research and employment for 1st nation people, help with research and marine center for the public that are located along the coast.
- The management plan should acknowledge the possibility that variable funding may affect the scope and scale of sanctuary programs and that funding priorities will be reviewed and adjusted annually to reflect evolving conditions. It should also provide guidance concerning where funding allocations are expended by emphasizing fundamental resource protection activities as priority over supporting ones, such as visitor information centers.

### **3. ADMINISTRATION - SANCTUARY GOALS & OBJECTIVES**

- The sanctuary should summarize better what the original management plan was set out to do for the public, and summarize better where the sanctuary is in accomplishing those original goals.
- The main priority should be to conserve biodiversity.
- Regard the current management plan as a valuable operational tool.
- Biodiversity conservation should be main focus of sanctuary and management plan. Primary purpose of sanctuary is to protect resources in area.
- A priority should be to maintain existing resources (living and non-living) – with focus on biodiversity, water quality, habitats. Research, education, partnerships, and preparing for change are ways to approach this.
- The sanctuary should be more specific in defining what sanctuary resources are and their status, and establishing measurable goals and metrics relative to sanctuary resources in the new management plan. Benchmarks for measurement of change are important for effective management.
- Sanctuary should conduct retrospective analysis of its accomplishments since designation.
- Sanctuary should retain policy of not being involved with fisheries management.
- There is adequate fisheries regulation currently, so there is no need for additional regulations or another entity to add to what is currently working.
- Concerned that the sanctuary area will grow and fishing will not be allowed in the future.
- Honor original agreement from time of designation of sanctuary to stay out of fisheries management.
- The sanctuary should remain neutral on fishery management regulatory actions and leave the management to the co-managers of the fisheries.
- We should jointly identify what we think the threats to those resources are. We should jointly identify strategies for management and uses in the sanctuary. The emphasis needs to be on joint understanding, joint management.

- The sanctuary knows its strengths and weaknesses. The sanctuary should reflect on these strengths and weaknesses and communicate them to its partners. This would add value to the sanctuary.
- The condition report is a qualitative document. There is not enough quantitative information. It does not contain an analysis of the goals and objectives of the initial sanctuary designation document and management plan. The management plan review (MPR) process should produce a quantitative evaluation of the state of the sanctuary resources and evaluate the degrees of success in attaining the original goals and objectives of the sanctuary.
- There needs to be a better understanding of what the sanctuary's roles, functions and authorities are.
- In the new management plan, the regulation of fisheries should not be authorized. Continue the same management plan action as the one in 1994 with regards to fishing.
- Ecosystem protection in and of itself as a priority in terms of sanctuary management. Should be underlined concept in research, education and all activities of the sanctuary.
- Problem with the effectiveness of existing management plan of the sanctuary with protecting natural resources, such as the use of bottom contact gear and the effects on corals or wave energy with impact to marine mammals with noise, movement, entanglement. How does the management plan protect the sanctuary from the expansion of U.S. Navy activities?
- Sanctuary-wide assessment and analysis of key topics, oceanography, biological function, fisheries function, economies and values. What is the most important and why? Process should be inclusive of all governments and interests. Multiple minds to get common idea.
- The sanctuary needs to be more transparent about its goals. It is hard to get information from the sanctuary (in regards to data and decision-making). The sanctuary needs to be more transparent about how decisions are made.
- The sanctuary needs to be forward-looking (instead of looking back).
- I support the sanctuary's original management goals and objectives (from the 1994 plan): resource protection, research, education and visitor use). Under the goal of resource protection, objective 1 should be strengthened to support objective 9. Co-management is a complicated function. Nevertheless, I believe the authority provided sanctuary managers should be asserted to meet their mandate and particularly objective 9
- Continue to oppose OCS oil drilling
- Most people I speak to about the sanctuary share a common dream: that our precious coast could be a true refuge, where all who live below the surface could have a chance to thrive in a water wilderness. No trawlers; no buoys; no mining; no drilling; no Navy war games.
- Protection of our oceans is very important for our and future generations
- It's not clear to me how the National Marine Sanctuary system addresses trade-offs among your many worthy goals. Do you take a multiple-use approach in which all legitimate uses must be balanced against one another? Or do you take a more hierarchical approach to goals, as the National Wildlife Refuge System has taken since 1997? I would like to see an explicitly hierarchical approach to the goals in your planning process. In this approach, ecosystem management goals would take priority, and would have to be met before other goals could be pursued.
- Sustainable harvest of fish and other marine resources should certainly be part of OCNMS goals, with priority to tribal treaty rights.
- Other goals should receive lower priority than ecosystem management and sustainable harvest goals. This may mean that the OCNMS needs to restrict or prohibit some economic uses of the Sanctuary if these pose a damage to its living resources.
- I think it is important that the PFMC along with WDFW be the governing bodies in all fishing related decisions.
- We support having the sanctuary and an ecosystem approach to its management
- Support processes that maintain that ecosystem

- One of the most important issues today is saving the environment for future use. And it must begin with saving the oceans and all of its resources and inhabitants. Please continue to expand the research for the Olympic Coast Sanctuary so it can be enjoyed by future generations.
- I would support this project as long as traditional fishing is preserved. We have gone to Neah Bay for over twenty years and the underwater life is unique among the dive sites on the Oregon and Washington Coast and Inland waters.
- The protection of marine biological diversity should be recognized as the primary goal of the management plan. The sanctuary was created with the primary mandate of resource conservation, and the management plan should put conservation front and center and provide a roadmap for meeting said mandate.
- My major concern for the sanctuary is to restore and protect natural ecosystems by treating the sanctuary as a true wilderness area.
- Five to ten year planning is prudent, I would suggest that five years be the first choice with perhaps 1 year reviews to "spot check" areas of concern raised during comment periods.
- OPA endorses the Olympic Coast Alliance's (OCA) position that advocates strongly for scientifically-based and conservation oriented management of the Sanctuary.
- OCNMS is also a place that needs to expand to provide needed protection of precious ocean ecosystems that will benefit current and future needed resources.
- The management plan should support development of a shared or joint understanding of sanctuary goals that are consistent with the national sanctuary program mandates, but also respect treaty rights and reflect local stakeholder needs and interests.
- [Determine] what the local communities think the conditions of the sanctuary ought to be (what are the goals and desired ranges for ocean resources in terms of persistence and abundance in perpetuity?)
- Biodiversity conservation should be recognized as the primary goal of the management plan. The Sanctuary was created with the primary mandate of resource conservation, and the management plan should place this front and center, and provide a roadmap for meeting this mandate.
- The Sanctuary should take advantage of its management authority over multiple activities, to manage them in a coordinated fashion to conserve the entire ecosystem . . . The management plan should adhere to principles of Ecosystem-based Management such as the precautionary approach, adaptive management, and preserving ecosystem functions holistically across multiple species and sectors.
- Continue learning, inventory, and research within the Sanctuary.
- Address known and potential threats to the Sanctuary, emphasizing prevention in addition to mitigation and remediation.
- Help to identify information gaps and research needs.
- In closing, it is hoped that the Sanctuary could spend less time going through a full environmental impact statement and focus on meeting the objectives of the original management plan.
- The Sanctuary's primary focus should be to support, engage and foster collaboration among the various federal, state and tribal entities with jurisdiction over the natural resources within the sanctuary.
- Address how the Sanctuary has implemented the goals and direction of the original management plan, including what impediments the Sanctuary encountered in achieving those goals and how the Sanctuary proposes to address unmet goals and objectives.
- Biodiversity conservation should be recognized as the primary goal of the management plan. The sanctuary was created with the primary mandate of resource conservation, and the management plan should place this front and center, and provide a roadmap for meeting said mandate.
- The sanctuary should take advantage of its management authority over multiple activities, manage them in a coordinated fashion to conserve the ecosystem, and be an EBM role model for other marine ecosystems. The management plan should adhere to EBM principles of precautionary approach, adaptive management, and preserving ecosystem functions holistically across multiple species and sectors.

- OCA advocates strongly for scientifically-based and conservation oriented management of the Sanctuary.
- [We] are very concerned at how long it has taken to develop and finalize new sanctuary management plans and we urge OCNMS to avoid excessive delay in public release of management plan documents. Such delays have the unfortunate result of undermining public interest and confidence in the Sanctuary System.
- Improved Protection of Biodiversity and Habitats [should be a priority topic].
- The OCNMS draft management plan should identify the full range of tools available to improve biodiversity and habitat conservation.
- *The highest priority management goal for the Sanctuary is the protection of the marine environment, resources and qualities of the Sanctuary.* (OCNMS Management Plan. 1994, at V-3). We agree with this management goal identified in the 1994 OCNMS Management Plan and we believe this should remain the highest priority. Given the demands of an increasing population, global climate change, overfishing, habitat damage, pollution, offshore development and cumulative stresses, this goal will require an ecosystem-based approach to management. An ecosystem plan must include habitat protection measures; identification, control, and elimination of threats to ocean health; research and monitoring programs; and ongoing public education.
- [We recommend that the updated OCNMS Management Plan include] implementation of protective management measures.
- [We recommend that the updated OCNMS Management Plan include] a monitoring and evaluation program and an adaptive management framework for the overall sanctuary and specific habitat areas.
- Protection of the marine environment and resources of the Sanctuary requires an integrated resource assessment and management approach and precaution should be utilized in the face of uncertainty. In particular, the Sanctuary should consider the use of marine protected areas and reserves both as habitat and ecosystem protection tools.
- Natural shoreline physical and biological processes [should be] unimpeded along most of the coastline of Olympic National Park, and where altered by human activities or structures, measures are taken to mitigate effects and restore natural conditions as much as possible.
- [Work with Olympic National Park to] maintain and restore components and processes of naturally evolving park marine ecosystems, recognizing that change caused by extreme natural events (e.g., storms, red tide, and El Nino) is an integral part of natural systems.
- [Work with Olympic National Park and] other agencies and tribal governments to maintain or improve water and air quality affecting marine ecosystems, and maintain natural marine viewsheds.
- Include principles of ecosystem-based management at the broadest level in the Management Plan.
- Under the National Marine Sanctuaries Act, the primary objective of sanctuary management is resource protection. In order to achieve this primary objective, ecosystem protection must be incorporated as a priority focus area in the Olympic Coast Sanctuary management plan. The recently released Stellwagen Bank National Marine Sanctuary draft management plan offers a good model for addressing Ecosystem Protection, referring to the preservation and enhancement of biological and habitat diversity and care for the associated physical environment. We feel this is a good approach. Ecosystem should entail the consideration for biodiversity, the complex relationships between species and habitats, and the associated ecological processes both inside and outside Sanctuary boundaries. Furthermore, humans and human uses should be considered as part of the ecosystem.
- [We] recommend that the Sanctuary adopt goals for coordinating with resource management agencies, tribes and with local governments in improving planning, monitoring and adaptive management.

#### **4. BOUNDARY ADJUSTMENT**

- The sanctuary should consider expanding the boundaries of sanctuary down the Strait to include San Juan Islands.
- Sanctuary management should analyze the spatial scale of ecosystems within and beyond the sanctuary. Do the sanctuary boundaries provide for (or get in the way of) ecosystem-based management? Consider other boundary configurations to fit ecosystem-based management.
- Concerned that the sanctuary area will grow and fishing will not be allowed in the future.
- Would like to investigate the feasibility to determine whether the Sanctuary should be extended to entire Washington coast.
- Increasing the size of the sanctuary and strict enforcement of existing limitations will be the keys to maintaining this area as an educational highlight for the public, divers and non-divers both.
- OPA agrees with OCA that there is a need to expand the OCNMS to provide a more complete natural ecosystem on the Northern part of the Olympic Peninsula. For managing human impacts, on endangered species, and other marine resources it is necessary that the boundaries include the marine biological areas needed to enable successful management.
- Examine Sanctuary boundaries and recommend any additional areas in need of protection/inclusion within the OCNMS.
- The southern boundary of the sanctuary should be extended to the Chehalis River in Grays Harbor, which is a natural river boundary line that would protect birds and wildlife. This would extend to this area protections against commercial and oil & gas development.
- OCA calls for expansion of the OCNMS to include waters to the west and south of the Sanctuary (south a point just north of Grays Harbor) where off-shore oil and/or gas fields are present. This expansion would allow the OCNMS to better manage threats associated with oil and gas exploration and extraction.
- OCA calls for expansion of the OCNMS boundary into the Strait of Juan de Fuca to Observatory Point (OCNMS FEIS option 4c). This would greatly expand kelp forest habitat within the Sanctuary, protect kelp forests in the Strait from harvest, and contribute substantially to sea otter conservation. Since western portion of the Strait of Juan de Fuca lies partly in state waters, this section of the Strait of Juan de Fuca cannot be included without the approval of the Governor of Washington State. The Sanctuary should reopen discussions with Washington State on inclusion in the OCNMS of the portion of the Strait of Juan de Fuca that extends to Observatory Point.
- OCA calls for expansion of OCNMS boundaries to include portions of the Nitnat, Juan de Fuca, and Quinault Canyons. The western boundary of the OCNMS should be extended to include canyon areas where deep-sea coral and sponge communities are found. This expansion would help protect these delicate and threatened deep sea ecosystems.
- OCA calls for expansion of the OCNMS to include the extensive kelp forests within the western portion of the Strait of Juan de Fuca. These kelp forests provide excellent habitat for sea otters and should be protected from harvesting and other threats as part of an OCNMS comprehensive recovery strategy for sea otters.

#### **5. CLIMATE CHANGE**

- Documenting the condition of existing habitats is a prerequisite for, among other things: getting baseline information to gauge the likely looming effects of climate change.
- Though they may not yield useful results in the short term, long-term monitoring projects will be essential for OCNMS to understand how climate change affects its resources.
- Given the current expectations for global climate change, I believe that it would be a very good idea for the sanctuary to support more paleoenvironmental research. It may be possible to model and plan for possible changes. For example, there are several archaeological sites on the Olympic Peninsula that are associated with a relatively higher sea level than at present. The animal remains (and in one case so far, plant remains) in these archaeological sites can shed light on the nature of the marine environment in the area, when sea level is higher. The human/marine environment interaction can be traced through time, which will shed light on management issues (known

archaeological records of more than 4,000 years of interaction). Research in non-archaeological sites (such as lake bottom sediments) can help separate the human and natural factors in the human/environmental interaction.

- In its preparations for climate change, OCNMS should focus primarily on adaptation rather than mitigation efforts. . . OCNMS should concentrate projects and plans on adapting to the changes brought by rising temperatures and more intense weather events. . . Throughout the planning process, OCNMS should utilize many of the resources available through the U.S. Climate Change Science Program (CCSP), NOAA, and U.S. Environmental Protection Agency (US EPA). In addition to reports, OCNMS should try to learn from other areas and programs that have been working to prepare for the uncertainties of climate change. . . In addition to learning from specific areas and other Sanctuaries, OCNMS should utilize information from estuary programs as well.
- In order to begin preparing for the effects of climate change, OCNMS should conduct a vulnerability assessment of as much of the Sanctuary's resources as possible. . . The US EPA recently developed a program to prepare estuaries for the effects of climate change. Their new program Climate Ready Estuaries ([www.epa.gov/cre](http://www.epa.gov/cre)) has developed an extensive coastal toolkit with information on adaptation planning and tools as well as example vulnerability assessments conducted in coastal areas. Information from some of these example assessments may guide OCNMS in completing one of their own. The program is currently working with six pilot estuaries to improve their management of uncertainty. Information and lessons learned from these pilots should be ready and available soon for OCNMS to utilize.
- Monitor conditions and trends, particularly indicators and sensors of climate change, for oceanic conditions, physical and chemical features and processes, and marine biota.
- Develop adaptation needs, strategies, and potential management actions for climate change.
- Sanctuaries should be places where basic long-term natural resource monitoring is done as a consequence of designation. At a minimum NOAA should be archiving their own satellite data to track seasonal changes in temperature and primary productivity in the nation's 13 Sanctuaries, but this is not done. These data will enable the Sanctuary program to provide an archive of the impacts global climate change is having on our nation's marine habitats.
- Increased coordination and cooperation between resource management agencies are required to improve planning, monitoring and adaptive management to address global climate change. The Sanctuary should look to partner with the Makah Tribe, weather and climate experts within NOAA, and the University of Washington to better understand the role of the ocean past, present and future in climate change. We need sustained observational systems and data delivery systems at a coastal scale, including oceanographic, geophysical, hydrological, chemical, biological and geological. Data collection points could be increased through more sophisticated monitoring buoys which could assist in developing models for tsunami source, seafloor stability models, land subsidence, and storm formation.
- Assist Tribes, state and federal agencies in developing strategies to prepare for and respond to climate change.
- Ocean acidification could be detrimental to calcifying organisms and potentially have ecosystem-altering effects, but the extent of ocean acidification is not being monitored in the sanctuary. With monitoring infrastructure already in place for many aspects of the sanctuary's oceanographic conditions, the management plan should look into including the monitoring of pH changes in the sanctuary's ongoing research program.
- Ideally, OCNMS and the nation's 13 other marine sanctuaries should serve as a network of sentinel sites detecting ocean-wide changes caused by global warming, including ocean acidification. This is particularly pertinent for the OCNMS since the calcite and aragonite saturation horizons in the Pacific are historically shallower than other regions.
- OCA recommends that OCNMS place greater emphasis on monitoring climate change and its impacts within the Sanctuary. Changes in ocean temperatures and currents are important factors in assessing the condition and expected trends in Sanctuary health. Monitoring of climate impacts on glaciers in Olympic National Park is ongoing. The Sanctuary should establish sentinel monitoring sites to augment this important research.

- Climate Change Monitoring, Research and Adaptation.[should be a priority topic]
- The OCNMS should include in its new management plan both a research program directed at studying the effects of climate change and resource protection provisions designed to enhance the capacity of sanctuary resources and ecosystems to adapt to climate change.
- A wide variety of human impacts act to reduce resiliency and therefore make ocean ecosystems more susceptible to climate change. Thus, to enhance the capacity of ocean ecosystems to withstand and absorb the impacts of climate change they must be maximally resilient. In most places, this requires removing or minimizing anthropogenic stresses in order to give the ocean a chance to recover fully resilient. We encourage the National Marine Sanctuary System to take a proactive role in climate change research, monitoring and adaptation throughout all of the sanctuaries. Specifically, the OCNMS draft management plan should include a climate change action plan. We encourage the OCNMS to coordinate with efforts and activities already underway in the Channel Islands, Gulf of the Farallones and Cordell Bank sanctuaries on this important issue.
- Incorporate a modeling component to the [kelp] monitoring program to assess how the physical effects of climate change may impact the density and distribution of the kelp canopy.
- How kelp bed distribution and health is impacted by climate change could fundamentally effect the nearshore habitat. Not only might the abundance and distribution of fish and invertebrate species be shifted but any reduction of the protective function kelp forests provide would cause increased exposure of the nearshore to the physical forces of waves and currents. The nearshore would experience changes in sediment transport and that would affect the geomorphology of the bed and change the shape of the beaches and shoreline. Incorporating a modeling component into the kelp monitoring would allow for some predictive capacity and a better understanding of the potential changes that will need to be addressed to best protect the Sanctuary resources.
- Expansion of the kelp monitoring program to: 1) capture the site scale changes that have been reported, 2) include a climate change modeling component, and 3) incorporate monitoring of additional macroalgae would significantly strengthen the Sanctuary's management plan. These changes would address two of the five priority topics to be addressed by the revised management plan *Characterization and Monitoring*, and *Climate Change*. Including an expanded macroalgae monitoring program as described above in the OCNMS Management Plan would allow for improved characterization of the Sanctuary resources, and the ability to more effectively respond to acute and long term environmental stressors.
- [W]e encourage the sanctuary to continue monitoring water quality using mooring stations and to collect data to better understand global climate change induced impacts such as ocean acidification, temperature changes and hypoxic events.
- Climate change will have dramatic effects on the Sanctuary. In order to monitor these changes and understand the dynamics of the area, adequate equipment must be deployed to gauge dissolved oxygen, salinity, temperature, and subsurface current flow. This could be achieved by deploying year-round enhanced mooring buoys equipped with the proper sensors.
- [I]ncorporate research into the effects of climate change. Collectively, national sanctuaries can offer great insight into the impacts of climate change on ocean ecosystems.
- Monitor ocean acidification and other climate related impacts.
- Surfrider Foundation feels that climate change should be highlighted as a separate priority in the Management Plan.
- The sanctuary should do more work on deep-sea corals and deep-sea communities in order to monitor for climate change.
- Specifically what is the role of sanctuary with climate change research?
- We need more geological research specifically focused on paleo-shoreline and sea level history over the past 20,000 years.
- Monitor the effects of ocean acidification and other effects of climate change within the sanctuary.
- Evaluate existing monitoring programs, and determine effectiveness in detecting climate change effects within the sanctuary.

- Make proactive efforts to monitor for climate change effects in the sanctuary. Link to the National Park's efforts, National Oceanic and Atmospheric Administration (NOAA) work (e.g., R. Feely) and others within a network. This could tie into the Ocean Observing Systems.
- Consider prioritizing research on ocean acidification and its potential effects on species within the sanctuary.
- A program to monitor the interspecies dynamics of increased abundance warm water species such as tuna and pelican. How are these changes affecting the ecosystem and what are these species eating (stomach contents analysis)?
- Sanctuary should maintain regular data to investigate carbon sequestering and ocean acidification. Need baseline data. Monitor key species that may be affected by acidification. Coccolithophores
- The sanctuary should focus research programs to conduct monitoring on decadal scale. The program needs to be sufficient to conduct continuous long-term monitoring. The current research programs are not focused enough (i.e. detect changes cause by climate changes).
- Resource management needs to identify resources at risk and address potential impacts of climate change.
- Oceanographic long-term monitoring should be undertaken to document what is happening with climate change (chemistry, water temperature, etc). Short-term monitoring is not enough.
- Low oxygen problem. Need continued focus, improved understanding of oceanographic and climate change linkages.
- Understand impacts of climate change
- The sanctuary needs to find a way to fund "spiders" on existing buoys that monitor ocean acidification. The degree of ocean acidification is extremely important to monitor.
- The sanctuary should research how global warming will affect resources in the sanctuary.

## 6. COLLABORATIVE AND COORDINATED MANAGEMENT

- The Surfrider Foundation actively supports the creation of Marine Resource Committees in coastal counties, like Grays Harbor. We believe it will significantly enhance communication.
- In looking through the list of sanctuary staff, I don't see many faces who look like members of the peninsula tribes -- is there an opportunity to involve Native people on a professional level to develop and implement some of the planning documents that are going to guide the future of their traditional territories?
- I think it is important that the PFMC along with WDFW be the governing bodies in all fishing related decisions.
- We appreciate more "PARTNERSHIPS to Help Puget Sound Marine Life, endangered salmon, etc. /CONSERVATION".
- The sanctuary should initiate a shared stakeholder process to identify and evaluate the condition of ocean species and habitats, and jointly develop strategies to wisely manage them. It is critical to leverage partnerships and identify and fill data gaps that can lead to improved long term management of the sanctuary.
- Data collected by the sanctuary needs to be available to concerned parties in an electronic format -- especially Geographic Information System (GIS) data - so that it can be used and additive to projects within and beyond the sanctuary.
- Data also needs to be processed and analyzed in a timely manner (much data just sits on the shelf never analyzed).
- Data needs to be consistent with other entities (tribes, state and local agencies, NGOs) that are collecting data along the coast.
- Data collected and analyzed by sanctuary should be conducted with standardized methods.
- Improved shared understanding of the sanctuary's roles, functions, and authorities among sanctuary neighbors, other stakeholders and the treaty tribes in the region would be helpful.
- It would be helpful if the sanctuary could clarify on its website how all of the entities with jurisdiction within the sanctuary boundaries interact and share operating agreements or authorities.

- Better communication between the agencies and organizations that have overlapping jurisdiction in the sanctuary would be beneficial (more interagency communication).
- The Sanctuary should take advantage of its management authority over multiple activities, to manage them in a coordinated fashion to conserve the entire ecosystem . . . The management plan should adhere to principles of Ecosystem-based Management such as the precautionary approach, adaptive management, and preserving ecosystem functions holistically across multiple species and sectors.
- Develop strong partnerships to improve management plan implementation.
- Provide knowledge, awareness, and leadership in identifying the need for additional marine protected areas and reserves.
- Continue consultation and collaboration with tribes. Establish and emphasize pursuit of mutual goals.
- Increase communication and collaboration with the National Park Service, Washington Department of Fish and Wildlife, Department of Defense operations, and other pertinent government and non-governmental entities.
- The SAC itself needs to review its charter. Rather than just responding to questions posed by the Superintendent, the SAC should be bringing issues to the attention of the Sanctuary and encouraging them to engage in the discussion. When the SAC does write the Superintendent with a requested action, the Sanctuary needs to do more than just pass on the SAC's letter with a disclaimer that it does not reflect the views of the Sanctuary. Instead, the Sanctuary should apply its technical and political prowess to the issue the SAC brings to its attention. Otherwise, the SAC offers members of the public little sense of meaningful contribution to the management of Sanctuary resources.
- The Sanctuary should aim to be more transparent, cooperative, and coordinated with the four coastal treaty tribes and the State of Washington as envisioned in the original Management Plan.
- The Sanctuary should work within existing forums to increase effectiveness, achieve efficiencies, and promote improved integration of resource management efforts. We have stressed these points repeatedly over the years, yet we feel our voices have not been heard to our satisfaction.
- Formally incorporate the IPC into the Sanctuary Management Plan Administrative framework to provide formal guidance and direction on policy initiatives, research and other programs to the Sanctuary Superintendent to ensure that all management proposals and actions begin with meaningful coordination, collaboration and transparency.
- Create a formal mechanism to coordinate Sanctuary program planning with the Tribes and IPC.
- Establish a mechanism for improved information and data sharing between the Sanctuary, Tribes and IPC, and design transferable data protocols to facilitate information sharing.
- Facilitate cooperative and mutually beneficial research among the Tribes, IPC and other Sanctuary partnering agencies.
- Develop a media clearing house process between the IPC and the Sanctuary for information disseminated to the general public.
- In addition, we believe that the Sanctuary needs to more effectively communicate research results to marine resource managers and the public. The Sanctuary should integrate knowledge of ecological interrelationships with societal values.
- Establish a science review framework.
- Develop policies that ensure the availability of translatable data.
- Develop protocols for data sharing among agencies and researchers and publish on Sanctuary website to keep the public informed.
- Coordinate grant applications for research with Tribes, state and federal agencies.
- Public engagement through citizen science, volunteer activities, partnering with schools and universities, and participation in Marine Resource Committees and Lead Entities will foster healthy civic involvement in marine protection and restoration work.

- OCA recommends that the OCNMS seek increased funding and commitments for research and monitoring – including regular ship time- which is critical for gathering data on stock structure, for assessing permit activities, and is the first step to identify sensitive species and habitats.
- OCA recommends that OCNMS work to identify impediments to rapid data analysis and ways that this component can be streamlined, resulting in more completed reports that will assist stakeholders in Sanctuary management, planning, and development of conservation and harvest strategies. OCA calls for passage of the National Ocean Protection Act, while at the same time preserving the protections afforded to the OCNMS. OCA believes that the coastal waters of the United States would benefit from management by a unified, federal agency.
- OCA calls for federal protection, as set forth in the National Ocean Protection Act, for the entire Washington coast from the entrance to the Columbia River into the Strait of Juan de Fuca to Observatory Point. The challenges of habitat preservation, energy development, and global warming are too vast to be accomplished through the staff and funding resources available to the Sanctuary. This added layer of protection is needed regardless of whether the current boundaries of the Sanctuary remain the same or are expanded.
- Where possible integrate NOAA data with NMFS data. Both data sets are directly related and should be summarized together to gain the greatest understanding of the Sanctuary system dynamics.
- Incorporate a broad emphasis on data management and information synthesis as integral part of the Management Plan. Continued training of information managers in metadata technologies and data processing techniques should be a focal point of the data management plan in order to promote interoperability between partner organizations.
- We feel that there is an opportunity to formalize the relationship between PISCO and OCNMS in order to build on the strong collaborations of the last 10 years. We hope that this formalization, especially in regards to data sharing, will be considered in the Management Plan review.
- Coordinate research and management objectives with federal, tribal, state and local resource managers.
- Share information with academic institutions, federal, tribal, state and local resource managers.
- In order to manage an ecosystem effectively, decision makers, managers, user groups, resident communities, scientists and/or experts and other interested parties must work collaboratively. From fishing regulations to the land used practices of the individual living in the watershed, decisions driving the conditions of the Sanctuary happen at multiple levels. Taking an ecosystem approach means looking up into the watershed and working with adjacent managers, communities and interest groups.
- Surfrider Foundation appreciates your commitment to “provide a more transparent, cooperative and coordinated management structure of Olympic Coast marine resources within tribal, state and federal jurisdictions.” To achieve this objective, we stress that the Sanctuary invest time and resources into the following recommendations. In addition, we request that you include local governments in this effort.
- Conduct research and resource status assessments in an open forum that allows for participation and input from resource agencies, tribes, academic institutions, and interest groups.
- Create additional opportunities to engage partners, including collaborative research projects, joint science and educational workshops, and community outreach events.
- Include language specific to supporting and coordinating with coastal Marine Resources Committees.
- Land use decisions, especially in the southern portion of the Sanctuary are managed by local jurisdictions. Decisions made at the local level can and should be informed by Sanctuary research and other programs.
- Engage new partners in activities that support Sanctuary goals and enhance site visibility.
- Assess and incorporate appropriate Action Agenda items from the ongoing efforts regarding the West Coast Governors' Agreement on Ocean Health that might contribute to the improved health of Sanctuary habitat and resources.

- There is a major effort in the state to clean up Puget Sound and the Sound is connected to the Outer Coast. The different parts of NOAA should collaborate more/work together better to improve scientific research efforts. There needs to be better coordination throughout NOAA.
- There needs to be better coordination in the region. The sanctuary should look for opportunities to collaborate with other groups on putting in core infrastructure in support of hard science. These partnerships should be leveraged to create awareness.
- The National Ocean Service and National Marine Fisheries need to work together better to avoid conflicting management authorities.
- The sanctuary should be really really good at something and if the thing about this sanctuary that is unique is its relationship with the coastal tribes, then the sanctuary should be world class at that relationship. The sanctuary should then share this experience within the sanctuary program and worldwide.
- Along these lines, the sanctuary should consider having a conference (5 or 6 years out) on the model it would develop on best practices for working with indigenous peoples.
- The other stakeholders should acknowledge what the sanctuary does well. The sanctuary should continue its strong relationship with the Makah Cultural and Research Center (especially in identifying culturally-sensitive sites in the sanctuary and in continuing archeological projects).
- The sanctuary needs to concentrate its efforts on forming partnerships with the four coastal tribes.
- The sanctuary should be a nexus for the research; a research monitoring facility. Including:
- There is an identity crisis with two National Oceanic and Atmospheric Administration (NOAA) agencies: the National Ocean Service, and National Marine Fisheries Service. What is the specific role of sanctuary? It is a great research mechanism.
- Sanctuary should research the perceptions of the coastal tribes to see if they are in line with the priorities of the sanctuary.
- Enhance public understanding and use ecosystem management approach; interfaced with policy of Canadian government as well as with tribal policy. Get different sovereign governments on the same page for resource management.
- The sanctuary staff and volunteers should have training on the overlapping responsibilities and roles of the individual governments; tribes, state agencies, and federal agencies that have roles within the boundaries of the sanctuary.
- To continue and develop multiple and effective partnerships for the goals of resource protection, research and education.
- Leverage the partnership with volunteers to improve many types of research. Create a stronger volunteer base with training and rewards. Consider underwater archeology models such as Coastal Maritime Archeology Resources, the Underwater Archeology Society of British Columbia, and National Archeology Society of the United Kingdom. Seek the critical mass.
- To play the coordinating role for research in the sanctuary with an emphasis on long-term studies and use of common formats for data collecting analysis and reporting.
- Tribal council and tribal community involvement and full partnership are important. The sanctuary should work with tribal communities to address and educate each other on progress, opportunities, and priorities.
- Partnerships should be expanded and deepened (tribes, Pacific Fishery Management Council, state and federal agencies, environmental organizations, education institutions) to improve overall resource management of the sanctuary.
- Expand upon current physical and biological parameter monitoring using remote ocean sensing devices (buoys) to provide baseline data and early warnings (e.g., harmful algal blooms). Integrate current deployments into Coastal Ocean Observing Systems, and partner with them.
- Develop personal relationships with partners such that they can be spokespersons for the sanctuary.
- The sanctuary should have a cooperative agreement on the state/tribes ecosystem initiative. This initiative will look at rockfish stocks on a regional basis and look at rockfish stocks in relation to

mapped habitat. There is a need to help improve the objectivity of scientific research produced by all resource managers.

- Data collected by the sanctuary needs to be available to concerned parties in an electronic format – especially Geographic Information System (GIS) data. Data also needs to be processed and analyzed in a timely manner. Cooperative agreements could help insure the analysis gets done.
- Data needs to be consistent with other entities that are collecting data along the coast (to include California, Oregon, Washington and Vancouver Island). Data collected and analyzed by sanctuary should be conducted with standardized methods.
- The sanctuary should initiate a stakeholder process to develop a shared set of species and habitats to be evaluated. Determine the conditions of those species and habitats and jointly develop strategies to protect them. Leverage partnerships and identify gaps.
- Find ways to engage local high school and college students to be active with the sanctuary and staff conducting research.
- The sanctuary should outreach to other groups to coordinate opportunities for ship time on research vessels.
- Marine Resource Committees on outer coast – need scientists and experts to be involved to advise county governments. The sanctuary staff can provide support and information, and encourage community involvement.
- How much do we know about resources (species and habitats); what are important resources to local communities? The sanctuary should fill in data gaps and find ways to work collaboratively to manage, protect, and sustain uses on shared priorities.
- Coordination among agencies is import role for sanctuary with regards to long-term monitoring and eradication of invasive species.
- The sanctuary should facilitate communications with Canada to coordinate management of resources in international border area. Fishing, vessel traffic, etc. in Canadian waters can influence condition of sanctuary resources.
- Important for the sanctuary to educate, engage, and involve members of coastal communities, especially on projects that focus on issues that effect local communities. Stakeholder involvement is important because their input is important to success of sanctuary’s efforts. Transparency on the part of the sanctuary is important.
- Sanctuary should work with local communities to use local knowledge of resources.
- Sanctuary should look across spectrum of agencies and organizations to identify resource data gaps.
- Research on fish biomass should be provided to regulators.
- Combine some groups to eliminate duplication of efforts.
- Collaborate with universities for research. Especially ships and ship time.
- The sanctuary should partner and collaborate with Marine Resource Committees (e.g., Grays Harbor MRC).
- Local knowledge from fishermen should be used to help develop sanctuary research.
- Monitoring oxygen levels is important, as well as early notification of low levels. Work with local fishermen to enhance early reporting.
- Dead zones: O2 levels effect crab, fish, and other habitat. Work with fishermen to improve knowledge, map affected areas, get information to/from fishermen.
- Recent marine debris cleanup efforts recently have not shown any debris from the commercial crab fishing. The sanctuary should give recognition to the voluntary efforts of the fishermen to reduce marine debris.
- The sanctuary should coordinate research and management efforts and share information with tribes, state agencies, local resource managers and other entities.
- The sanctuary should utilize a bank of volunteers.
- Develop meaningful partnership with Olympic Coast Intergovernmental Policy Council.
- Sanctuary should provide information and data to the Pacific Fisheries Management Council (PFMC) and in doing so respect the Council’s process and knowledge base and expertise.

- The sanctuary is in unique position to review pitfalls and problems of marine reserve initiatives at California sanctuaries to avoid repeating mistakes. Sanctuary needs to work with all entities involved to develop common goals and objectives, work with PFMC, state, and tribes more effectively.
- The sanctuary should work together with the state, counties, port authorities, and the tribes to expand knowledge of habitat characterization. Collecting the data would help other initiatives such as siting of wave energy structures, ecosystem assessments, protection of essential fish habitat, etc...
- Recommendations are contained within the state ocean policy document and West Coast Governor's agreement. For example, marine debris and derelict fishing gear. The sanctuary should look at those recommendations and find the ways in which it can partner with other entities to further those objectives.
- For example, help other agencies/groups (WA Dept of Fish and Wildlife) in putting together and pursuing grant proposals (the National Ocean and Atmospheric Administration marine debris program).
- The Pacific Fisheries Management Council (PFMC) and National Marine Fisheries Service (NMFS) northwest fishery science center have long-term research plans. These plans should be reviewed by sanctuary to potentially form partnerships for research. In the past they focused on single species and stock assessment. In the new research plans, they must ask whether there are regional differences in the stocks (where the fish lives, migrates, etc) when doing stock assessment. Now they need to ask "Is there a reason to manage stock differently in different regions?" The sanctuary should make sure that there is communication with fisheries researchers and that resources and data can be pooled together to help further our goals. What makes the sanctuary special may create various habitats for different stocks of fish. The sanctuary can help fisheries managers with refining regional differences within stocks.
- Need monitoring using remote sensing. More work with partnerships; agencies, tribes, non government organizations, and research institutions. To monitor physical changes and biological changes in the water of the sanctuary (e.g., harmful algal blooms - HABs).
- To create more opportunities for coastal communities and recreational users to become stewards of the ocean environment (e.g., beach clean ups, water quality monitoring, education and awareness, etc.). Ocean literacy; education.
- Improving partnerships to meet the goals of the peoples of the sanctuary: those who use; those who live near; Anyone who has an interest
- Sanctuary should stay involved with recently formed action groups: Marine Resource Committees; Governor's Ocean Action Plan; Ocean caucus; stay involved in state coordinating
- Build partnerships and better relationships with the Intergovernmental Policy Council (IPC) and local communities through integrated activities that are relevant to local concerns. We can do better than we are currently doing.
- I support the management plan goals that are currently in place. Specific to resource protection to require rather than merely encourage coordination on research studies, be it tribes or other agencies.
- The sanctuary should be a centralized data gathering body for all research related to the sanctuary. Permits should require researchers to bring their data back to the sanctuary.
- Conduct ecosystem inventory and assessment and analysis by the Intergovernmental Policy Council (IPC) and the sanctuary. There is currently a lack of data and data integration.
- The sanctuary should be as transparent as possible so that the community feels it understands what is going on. If an issue comes up, the general public has a voice in the decision-making.
- The sanctuary advisory council needs to be more publicized and emphasized as a means of communication between the sanctuary and the public.
- Coordination: we all need to have an understanding of how to develop processes. For example, better coordination can lead to more effective involvement.

- Collaboration: we need to put more emphasis on collaboration and bringing all of the entities together so that everyone has an equal voice.
- We should determine what the local communities think the conditions of the sanctuary ought to be (what the goals for those resources should be in perpetuity).
- Preservation, conservation and stewardship of the environment. These priorities are shared between the tribes and NOAA and should be sanctuary priorities.
- The sanctuary needs to acknowledge and recognize the Intergovernmental Policy Council members as co-managers.
- Right now, there is friction between the sanctuary and certain groups; and the more dialogue that can occur, the better. Continual, repeated dialogue is key to the successful resolution of these frictions.
- The sanctuary is living in an overlay of jurisdictional authorities. The sanctuary is not autonomous and should improve how it works with these other authorities.
- It would be helpful if the sanctuary could clarify on its website how all of the entities with jurisdiction within the sanctuary boundaries interact and/or have operating agreements.
- More communication between the agencies/organizations that have overlapping jurisdiction in the sanctuary would be beneficial (more interagency communication).
- The Nature Conservancy has a strong interest in sharing information/data about the Olympic Coast ecoregion and working with partners on the Olympic Coast.
- We need to improve communication between the entities within the sanctuary boundaries in order to develop mutual respect.
- An issue is not only coordination between the sanctuary and the tribes, but also coordination from the national level to the local sanctuary and from the sanctuary to the tribes. Don't assume there is a trickle-down effect from the national level to the local level (reauthorization, etc), for example if there is a shift on how certain actions will be taken (fishing, etc) after reauthorization. The tribes and the treaty rights should be considered in those national level decisions. Both the national and local sanctuary offices should work in a truly open, transparent process with the tribes.
- The Advisory Council (AC) and the Intergovernmental Policy Council (IPC) should understand their respective roles with the sanctuary; they currently do not. Their paths don't currently cross, and it is a problem.
- The federal government has not worked very closely with the tribes. There doesn't seem to have been much work with the tribes at the time of designation. The tribes weren't presented in the documentation as crucial players in this situation.
- The Sanctuary Advisory Council (AC) should make a more proactive effort to invite members of the community to come participate at AC meetings. Often few people attend the public comment part of the AC meetings. The AC should make it more accessible for the public to participate.
- The sanctuary should reach out to citizens to do citizen activist activities such as the clean coast alliance. Programs designed to engage people in some activity in the sanctuary so they can see human impacts in the sanctuary. This will help people take these lessons learned back to their communities.
- Better coordination with stakeholders especially with tribes. Tribes have been here for thousands of years and live in balance with the ecosystem.
- Due to remoteness the park, the people who live locally are hearty and best suited to work with the Olympic Coast National Marine Sanctuary. Use people who are already acclimatized to do the work that needs to be done.
- Use locals for information – they are out here and know what is going on with the resources: green crabs are at Koitlah Point and Warmhouse Beach; develop relationship with fishermen to gather information; fishermen could help assist locating derelict crab pots; we do not have enough information and we are not using the best sources for that information.
- Should use tribes as co managers for resources.
- Focus on research – What's been done, how it serves us, and where is it going? Build collaboration with other agencies.

- Develop meaningful and long-term relationships with the communities around the sanctuary.
- Local community relationship building. Expectations of what the sanctuary was going to do. Place-oriented that is unique and provides excellent resource for what the sanctuary does. Communication, knowledge base, problem-solving that has support and act
- Build better partnership with Olympic Coast Intergovernmental Policy Council to facilitate inventory and issues identification and to better access adequate resources for implementation phase. What issues are realistic for us to pursue.
- Coordination with Canadians with marine vessel safety, vessel sewage, ballast water, air deposition. Both coordination with activities, and costs to do that.
- System-wide – Develop better coordination and appreciation with Sanctuary family and Fisheries family. Fishing is not necessarily bad. Tribal fisheries are doing well. There is a great wealth that comes from the ocean. That is the tribe's existence. Incorporating this traditional knowledge is vehicle for getting to this cooperation issue.
- Federal jurisdiction over a large area has taken community and state processes out of the loop: The sanctuary should work to overcome this disconnect and partner with the state right now in the Outer Coast Marine Resources Committee process
- The Advisory Council should interact better with its representative groups. The Advisory Council should be able to report on what its representative groups are concerned about.
- Synthesizing and integrating data from fish and wildlife, tribes and the National Marine Fisheries Service. The sanctuary or someone needs to be the integrator.
- Coordination with other agencies to get a better understanding of roles and responsibilities. Comprehensive understanding of research trends. Analysis of trends that have changed since the sanctuary designation. What improvements have occurred since designation?
- Need a baseline for future monitoring. Sanctuary to help facilitate with agencies, academic, tribes and act as a clearing house. Coordinate a bi-annual symposium of knowledge of the sanctuaries, i.e., recent research results.
- Ecosystem research objectives and data collected should be coordinated with other federal and state agencies such as Olympic National Park and the tribes.
- Stop U.S. Navy exclusion of bathometric data and the sharing of that data, also the restriction of civilian collection of bathometric data.
- The sanctuary needs to create a better working relationship with the tribes. The tribes have been stewards of the resources for 1000s of years.
- The sanctuary needs to involve tribes in research/planning/surveys early on and throughout the entire process.
- The sanctuary should be more forthcoming with data.
- The sanctuary needs genuinely to open the lines of communication with industries (tribal and non-tribal, fishing, shipping, wave energy companies, etc.), and work with the fishing industry on a continuous basis to resolve problems.
- The sanctuary should explore opportunities to work across the international border with Canada. We should look more at working with them on research and protection. The sanctuary should look at improving regional approaches to management.
- The sanctuary needs to increase the power of the Intergovernmental Policy Council (IPC) so that it has a greater voice as co-managers of resources within the sanctuary. The IPC has a co-management role. Right now, the IPC doesn't have enough of a role.
- Once there are significantly more meetings between the IPC voting members and the sanctuary, the groups can develop more mutual respect and function better as partners. The IPC and sanctuary can then develop a history and a trust relationship.
- The sanctuary needs proactively to identify barriers and explore opportunities to improve government to government relations, possibly using a third party.
- The sanctuary needs to work to heal wounds that occurred in the past.
- There needs to be more mutual respect between the sanctuary and the IPC.
- The sanctuary needs to make the public more aware of the IPC and their roles.

- Improve data acquisition, data management, and data sharing. Implement the Sanctuary Integrated Monitoring Network (SIMoN) at Olympic Coast National Marine Sanctuary.
- Data collected by the sanctuary needs to be available to concerned parties in an electronic format – especially Geographic Information System (GIS) data. Data also needs to be processed and analyzed in a timely manner. Cooperative agreements could help insure the analysis gets done.
- The sanctuary needs an on-line database where the public can access data and information. This would better educate people about what the sanctuary is doing. It is difficult to access sanctuary data. If data was accessible on-line, it would lead to more transparency.

## 7. COMMUNITY OUTREACH

- Along these lines, the sanctuary should consider having a conference (5 or 6 years out) on the model it would develop on best practices for working with indigenous peoples.
- Sanctuary should do more than educate school children. They should do more to reach people who do not attend meetings, try to educate people who are harder to reach.
- Continue and expand efforts toward use in youth and adult education in ocean literacy with emphasis on practical work based learning and long-term volunteerism, and this is an area for collaboration.
- Expand website and other ways for the public to understand management strategies, and participate and support management plan more fully. Increase understanding of the sanctuary by the general public so as to be more informed on action plans.
- Develop and expand education and outreach through partnerships with universities and other institutions (e.g., Monterey Bay Aquarium).
- Leverage internal and partner resources to improve educational outreach outside of the Olympic Peninsula. Host trainings (e.g., REEF). For example, the sanctuary could host trainings at Sand Point in Seattle.
- The sanctuary should study who is the target audience for education programs, i.e., is it K-12 relative to the specific objective? Be strategic in determining the target audience considering funding is limited.
- The sanctuary needs to increase attention from the sanctuary foundation to increase funding for projects in the sanctuary. We need galas and other fundraising events.
- Develop education collaborations with other environmental education organizations, such as the Audubon Institute.
- Sanctuary should continue its primary role in annual coastal cleanup – benefits include community outreach and removal of marine debris.
- The sanctuary should increase the educational outreach, not only with the website, but have people on the ground to interact face to face with communities. Schools are important, but there is a need to reach out to a wider population as well.
- Outreach programs should encompass Westport and Ilwaco; children and adults.
- The sanctuary should support an education program that starts with students and follows up all the way to seniors. Some visitors and residents have no background on marine life – lifelong learning is important. Don't take just the kids on field trips – also take newcomers and seniors on field trips to the beach, tide pools, rainforest, whale watching, etc...
- Continue education, not just in the schools but within surrounding communities. Using web, posting information, updates online; Alternative to print media.
- Develop education programs that reach those communities: Neah Bay, Forks, La push, Taholah.
- The sanctuary should partner more with the Feiro Marine Science Center to collaborate with the educational service districts on programs aimed at creating programs that are transportable to the field.
- The sanctuary should be as transparent as possible so that the community feels it understands what is going on. If an issue comes up, the general public has a voice in the decision-making.
- The sanctuary advisory council needs to be more publicized and emphasized as a means of communication between the sanctuary and the public.

- Communication: we need to communicate what our goals and objectives are.
- The sanctuary needs to flesh out the way it represents the tribes to the public. The sanctuary needs to update the representation of the tribes; the tribes are more than just their heritage. The tribes are involved in modern technology and current management processes. The tribes are only portrayed in an 1855 cast, and that leads to misunderstandings among the public.
- AC meetings should be better publicized in the target communities, like flyers at the grocery store, etc... Just having it on the website and the Port Angeles paper may not be enough for the community to really find out about it.
- Communities are remote here on the peninsula. Newsletters could be distributed through the Makah Access Portal in order to reach local communities. A quarterly e-newsletter would be useful (for example like the one at Channel Islands).
- The sanctuary should reach out to citizens to do citizen activist activities such as the clean coast alliance. Programs designed to engage people in some activity in the sanctuary so they can see human impacts in the sanctuary. This will help people take these lessons learned back to their communities.
- The sanctuary should work collaboratively and partner with other groups such as schools or private groups on education programs.
- Economy is not doing very well. Make the peninsula a center for marine oceanography. Need for tourism, kid camps, etc that are focused on marine resources. Promote peninsula for marine research and a center for marine study. If National Oceanic and Atmospheric Administration (NOAA) based in Port Angeles, it would be a great opportunity to promote entire peninsula for marine resources. Need for integrated effort to promote marine research and tourism.
- Increase public ocean literacy programs for community and K-12 (action item). Help people to be stewards of the ecosystem (underlying priority).
- Education. The local population needs to know more about the sanctuary and its function. Foster stewardship. Interpretive signage to help educate populous. Education programs with local communities.
- Disappointing at this is the first newsletter from the sanctuary since it was designated. Should have had (or have) better flow of information. Many web-based opportunities. Sanctuary appears to be a stealth operation. Need to let public know the resource exists, what the sanctuary is doing. Present early results. What are the trends, baselines, etc? Must be communicated.
- The sanctuary needs to make the public more aware of the IPC and their roles.
- Surfrider urges increased partnerships between local, state and federal agencies, as well as grass roots volunteer organizations like Surfrider in supporting outreach activities with schools, recreational users of the marine environment, commercial interests like fishers, crabbers, oyster growers, etc., and tribal interests.
- An important element of a successful management plan will be to bring people together at the local level, to exchange views, expand knowledge and engage people in activities like beach cleanups, water quality testing and other "hands on" opportunities.
- More educational outreach to local citizens.
- Leveraging existing NOAA resources - NOAA had a facility at Sandpoint - The Western Regional Center - yet it is not a component of the Sanctuary's outreach. I understand it is a different arm of the same organization but leveraging existing INTERNAL resources would benefit both arms.
- Outreach needs to be both PUSH and PULL. Outreach PUSH is-that the OCNMS need to make its information available at suitable venues even without going to the work of the having a booth.
- Outreach needs to be both PUSH and PULL. Outreach PULL is that the OCNMS should be a suitable magnet to allow individuals or groups to take advantage of web and physical resources to expand the OCNMS' mission.
- In reality outreach is constant and I would think if it were part of a structured education effort at all levels then OCNMS would benefit. I understand outreach costs but if the costs were shared with Partners and self-supporting then everyone wins.

- The ability to build community outside the "science/research" community would be to the OCNMS benefit. . . SHIPWRECKS and the human drama of coming to the Pacific Northwest prior to all our navigational improvements is a story that needs attention.
- Engagement comes from a sense of ownership. To get ownership you need to participate in the Sanctuary processes. Your status report highlights a wide collection of opportunities for involvement and I suspect the general public does not have the advantage of the report to understand the breath of the Sanctuary process.
- Improve outreach, communication, and collaboration with the public, tribes, and other stakeholder groups.
- The Sanctuary needs to prioritize a public outreach strategy that includes at minimum a quarterly electronic newsletter that is sent to the public as well as to the press, a regularly updated website with information about the latest Sanctuary research findings and education opportunities.
- In addition, the Sanctuary Advisory Council (SAC) needs to find ways to be more relevant to their coastal constituents by making their meetings more accessible to the public and to invite members of the public to make presentations to inform them of their interests and concerns.
- Create more opportunities in coastal communities for idea and information exchange, and develop new curricula for learning for children, teens and adults.
- OPAS would like to see NOAA expand its role in the education of the public on the uniqueness and importance of the Sanctuary. This initiative could include an annual or biennial public symposium sponsored by Federal Agencies, the Tribes and other users of the Sanctuary. It should focus on describing the physical oceanic processes off the Olympic Coast and how they relate to the health of the biological populations.
- Outreach offers an excellent opportunity to engage coastal users, organizations and coastal communities, including schools in partnership building efforts while increasing ocean literacy and appreciation for the Sanctuary.
- Create opportunities for coastal residents and seasonal visitors to become stewards through activities such as monitoring and beach clean ups.
- Promote and support local coastal community programs to better manage waste and to recycle.
- Support plastics and Styrofoam bans by distributing educational information on the harmful impacts of these products. Consider purchasing and distributing reusable bags.

## **8. ECOSYSTEM IMPACTS OF FISHING**

- Archeological sites contain information that can be used to understand the ecology of present systems which could help us with resource management (e.g., look at things in the past before management issues such as overfishing were occurring).
- The sanctuary should pursue a policy of ecosystem-based management, which should focus on interaction of all elements of ecosystems, including humans as element of the system.
- The sanctuary should keep the draggers out of the sanctuary. Draggers (bottom trawling) are tearing the bottom up.
- Sanctuary should undertake more coral biomass research – not just taking pictures of the resources but estimating the biomass of the coral resources, for example in areas not accessible to fishing gear as well as fished areas.
- Analysis of fisheries impacts or levels of impacts, what impacts have been sustained.
- Create areas to be avoided by trawlers and identify rocky areas that could be utilized by corals and sponges.
- The apparent ineffectiveness of the existing management plan in protecting the sanctuary resources from 1) the likely expansion of the Navy's test range into the sanctuary, 2) the unknown effects of the experimental wave-energy project, 3) destructive fisheries
- While it may not want to get involved in helping to determine catches, the Sanctuary should prohibit damaging fishing techniques within its boundaries, such as bottom trawling.

- The OCNMS should also establish some marine reserves that are protected from fishing, even if these reserves are small. These can serve as important refugia that restock adjacent damaged or overfished areas.
- I would like to offer a comment in support of the strongest possible protections for the rockfish (particularly Tiger, China, and Canary) in danger of extirpation off of our state's coast. Survey data indicate that these populations are far too low to allow further harvesting or incidental take.
- Continued work with tribes to minimize impacts from their fishing and harvesting including closures when needed
- No fishing areas to let populations recover and expand
- Please close the rockfish fishery for the foreseeable future. Populations of China Rockfish, Tiger Rockfish and Canary Rockfish in the portion of the Marine Sanctuary encompassing Tatoosh Island, the entrance to the Strait of Juan de Fuca, and Neah Bay are reported to have declined greatly, and are currently under heavy fishing pressure by recreational fishers.
- I support stronger fishing and harvesting restrictions within the Marine Sanctuary along with continued awareness and action regarding invasive species.
- Protection of benthic infrastructure is of critical importance to the maintenance of healthy ecosystems, particularly where fisheries species associated with fragile benthic communities are targeted by destructive fishing practices (e.g., trawling for some species of Rockfish). Cold water and deep water benthic communities are known to be slow growing, with unknown recruitment/recovery rates, therefore management practices should be pro-active and conservative.
- I am greatly concerned to learn that numbers of fish, particularly rockfish, has declined significantly in recent years. Encourage you to place stringent limits on the exploitation of these resources.
- I would like to ask that you please consider managing the OCNMS rockfish population with an eye to preserving one of the few places in Washington where divers can see these long lived but elsewhere critically depleted species. The populations of rockfish in the sanctuary are presently suffering as a result of fishing regulations which are not sufficient to maintain sustainable breeding populations of these fish. . . .I suspect that as we try to rebuild rockfish populations throughout Puget Sound and the San Juans we will rely on seeding from places like the OCNMS - we need a sustainable population from which to base the recovery.
- No trawling should be allowed, nor any other type of fishing. Areas where fishing is outlawed experience major rebounds of species. The sanctuary should be a no-fishing zone, otherwise we will never have a natural ecosystem.
- Compatible use and close monitoring of fisheries can assure limited activities in some areas while other areas are "off line" and recovering, serving as nurseries for outside harvest areas.
- Help to prevent overfishing and contribute to recovery of depleted fisheries. For example, consider designating marine reserves and refugia.
- Prohibit or adequately restrict fishing techniques that damage the sea floor, such as, bottom trawling and long lining.
- We remain concerned by the effects of bottom trawling on seafloor habitats within sanctuary waters. In 2002, the National Research Council published the report, *Effects of Trawling and Dredging on Seafloor Habitat*, which provides an independent, objective and critical review of scientific literature and reports on bottom trawling impacts. The National Research Council (NRC 2002) concluded that bottom trawling alters the seabed and marine life by: reducing habitat complexity; altering seafloor communities; and reducing habitat productivity. Bottom trawl gear, consisting of expansive nets plus steel doors, chains and footrope gear, is dragged across the seafloor, knocking over living, habitat-forming invertebrates, suspending sediments into the water column, compressing the seafloor, displacing boulders and digging into sandy habitats. We encourage the Sanctuary to protect sensitive habitats and resources from the destructive impacts caused by this fishing practice.
- The National Marine Sanctuaries Act and the Magnuson Stevens Fishery Conservation and Management Act are both important pieces of legislation administered by NOAA. While they

- should be administered in a compatible manner, they have different purposes and mandates that are not always complementary. Each year NMFS authorizes industrial fisheries that remove thousands of metric tons of living marine resources like whiting, rockfishes and salmon from sanctuary waters. It is becoming increasingly clear that fishing affects more than just targeted species--it affects the entire ecological community. Through the direct removal of targeted fish species, indirect competition with ocean wildlife, bycatch of non-target species and habitat damage induced by destructive fishing gear, commercial fisheries affect the marine environment and resources of the sanctuary. It is important that the Sanctuary work closely with the National Marine Fisheries Service and tribes to ensure that ocean fisheries are managed in an ecologically sustainable manner. We recommend that the OCNMS management plan include direction to work closely with NMFS in the development of an ecosystem-based fishery management plan that consider ocean fishery management in the context of a vibrant and healthy ocean ecosystem, rather than in the context of single species managed for maximum yield objectives.
- With regard to habitat protection within the Sanctuary, we first urge NOAA to work with trawl vessel owners and operators to ensure that the impacts of their gear - known to be damaging to sensitive benthic habitats - is minimized. This may be done through area-based restrictions around known sensitive habitats such as corals and sponges. In addition, considerable investment should be made in cooperative research that offers opportunities for fishermen to design and participate in studies that demonstrate effective use of selective fishing gears and methods. From an economic stand point, restoration of the marine environment is exponentially more expensive than precautionary efforts to preserve sensitive areas. Furthermore, precautionary management measures within the Sanctuary are in keeping with your mission statement to “preserve the area’s ecological integrity.”
  - The discovery of deep-water corals and sponges in the Sanctuary indicates the importance of this area of the coast. Unfortunately, these organisms are extremely susceptible to damage associated with human activities, including some types of fishing and geological exploration. It is therefore imperative that these organisms receive full protection. Please note that under the reauthorization of the Magnuson Act, protection of organisms other than fish in our waters is now authorized.

## 9. FISHERIES STOCK ASSESSMENT

- I would like to see OCNMS work with government entities in doing stock assessments of fish.
- The OCNMS is home to a vast array of fishes including salmon, lingcod, cabezon, kelp greenling, halibut and many species of rockfish. Some, such as lingcod, have high site fidelity to individual reefs, while others such as Pacific whiting (hake) traverse waters along the West Coast. We believe that some of the most pressing problems in our fisheries – bycatch and overfishing for example -- have occurred because management actions have inadequately accounted for spatial variability of the resource. While west coast salmon and groundfish fisheries face crisis after crisis, fishing effort in the usual and accustomed fishing grounds of Washington’s coastal Treaty Tribes - and therefore in the OCNMS - is increasing. We feel strongly that NOAA, state agencies, and tribal councils should do everything possible to manage and steward this area with caution and foresight, using the best available science. With regard to biophysical processes in the region, nearshore demersal habitats tend to be vastly different from deeper offshore areas of the continental shelf and slope. Nearshore regions are typified by “sticky water” with very low alongshore movement. Offshore regions are generally colder, lower oxygen, and stable ocean environments with much stronger alongshore advective processes coming into play in the pelagic region (Francis et al. 2008). PMCC believes that the Sanctuary could be a leader in the move toward finer scale spatial management of the region’s fisheries. We recognize that, from an ecosystem perspective, the nearshore coastal environment presents a challenge to manage on fine spatial scales not encountered with offshore fisheries. The OCNMS management plan should include provisions for spatial management, including specific actions to be taken based on the latest fisheries science.

- There is an identity crisis with two National Oceanic and Atmospheric Administration (NOAA) agencies: the National Ocean Service, and National Marine Fisheries Service. What is the specific role of sanctuary? It is a great research mechanism.
- The sanctuary should stay back from the regulatory role of fisheries. It should conduct/coordinate research that contributes to the regulatory policies.
- The sanctuary should have a cooperative agreement on the state/tribes ecosystem initiative. This initiative will look at rockfish stocks on a regional basis and look at rockfish stocks in relation to mapped habitat. There is a need to help improve the objectivity of scientific research produced by all resource managers.
- Information available to the Pacific Fisheries Management Council (PFMC) could be augmented. Sanctuary could help with data-poor stock assessments to fill in data gaps.
- Ocean fisheries are being depleted – more research and regulation on fish stocks. More current stock data. Sanctuary should be an area of more intense study.
- Research on fish biomass should be provided to regulators.
- Would like the sanctuary to assist with rockfish stock assessments. Current efforts are insufficient.
- Work with the Washington Department of Fish and Wildlife (WDFW) to develop stock assessment of fish, especially yelloweye and canary rockfish. Coast-wide biomass assessment (Mexico to WA) not representative of regional abundance.
- Sanctuary should contribute, can take a lead with regional stock assessment to refine groundfish management.
- National Marine Fisheries Service (NMFS) science centers need help. Stock assessments are data poor. Sanctuary could have access to more resources to expand stock assessment efforts.
- Diversity of data sources would help to ground truth differences in results gained from different methods. Need to make sure data input into stock assessment models is reliable.
- Remotely-operated vehicles (ROVs) and other modern technologies should be used to improve stock assessment methods in conjunction with conventional techniques.
- For example, the sanctuary could facilitate stock assessment research by giving boat time or other means to help fisheries researchers to do their job.
- Rockfish assessment research should be expanded to areas that current methods have not captured (randomized transects within variable bottom contours): current methods are unable to access certain areas that some species tend to prefer or require
- There need to be regionally-based assessments of rockfish and not a coast-wide management.
- Where possible, provide data and information to fisheries management entities to improve stock assessments -- but in so doing, characterize the full life cycle of organisms and their habitat associations - to support sustainable fisheries.
- In addition to banning cruise ship discharges in the Management Plan the Sanctuary needs to rededicate itself to informing the public about the natural wealth that lies off the coast, enhance our region's ability to prevent and respond to oil spills and conduct research that helps to inform fisheries management rather than including fishing within the scope of regulations as you told the public when the Sanctuary was first designated.

## 10. HABITAT CHARACTERIZATION

- The sanctuary should do more work on deep-sea corals and deep-sea communities in order to monitor for climate change.
- Seafloor mapping should be 100% complete and assessment of benthic habitat which are important, especially deep coral.
- We need more geological research specifically focused on paleo-shoreline and sea level history over the past 20,000 years.
- Seafloor mapping and habitat characterization need to be high priorities.
- The sanctuary should continue habitat mapping in the sanctuary. This habitat mapping data also needs to be ground-truthed.

- The sanctuary should consider that habitat mapping data should support other ecosystem objectives, and not just support sanctuary or rockfish needs.
- The sanctuary should pursue an Intergovernmental agreement to declassify U.S. Navy maps and bathymetric data.
- Corals and living organisms that form seafloor habitats should be protected as best we can. These habitats regenerate very slowly after damage.
- A priority should be continuation of seafloor mapping and habitat classification programs. Mapping efforts should be completed.
- Would like public access to sanctuary's maps (e.g., bottom habitats). Would like improved charting for navigation safety. Suggest using sanctuary data to improve National Oceanic and Atmospheric Administration (NOAA) charts.
- Sanctuary should continue habitat mapping efforts. Get 'er done.
- Conduct and/or support those conducting analyses of existing data and identify data needs.
- The sanctuary should work together with the state, counties, port authorities, and the tribes to expand knowledge of habitat characterization. Collecting the data would help other initiatives such as siting of wave energy structures, ecosystem assessments, protection of essential fish habitat, etc...
- Sanctuary should conduct more mapping and habitat characterization within its boundaries.
- Need additional research on deep sea corals. Where they are, what they do, how they interact within the ecosystem.
- The sanctuary should develop data standards that provide for data and interpretation of the data to be translatable and available to resource managers in a timely fashion.
- We should survey the habitats and species to understand better what lives in the sanctuary and where. Habitat mapping is key.
- The sanctuary should make its data/research more accessible to the public and others.
- Further deep sea coral research – lack of data, need of more complete picture.
- Habitat mapping, developing response plan, continue and accelerate work
- Develop and adhere to a standard to making existing data translatable and available in a reasonable time period to inform resource management.
- Sanctuary should expand monitoring and characterization of all habitats within the sanctuary. We need to understand the habitat needs of all lifecycle stages.
- Sanctuary should undertake more coral biomass research – not just taking pictures of the resources but estimating the biomass of the coral resources, for example in areas not accessible to fishing gear as well as fished areas.
- Sanctuary should expand random transect video monitoring rather than site-specific video monitoring, in order to have a more representative picture of habitat, species composition, abundance, etc...
- Analysis of fisheries impacts or levels of impacts, what impacts have been sustained.
- Need a baseline for future monitoring. Sanctuary to help facilitate with agencies, academic, tribes and act as a clearing house. Coordinate a bi-annual symposium of knowledge of the sanctuaries, i.e., recent research results.
- Species research that captures trends and status of different types in the sanctuary. Research should focus on habitat conditions and habitat types, i.e., deep corals.
- Sanctuary needs to be doing more mapping of the seafloor habitat.
- The protection of newly found deep-sea coral is very important. The coral needs to be identified and protected. We also need to increase the area of sanctuary that is mapped, so that we know what we've got. There needs to be stewardship among all the users.
- The sanctuary should assist/support fisheries managers by doing research that helps managers (rather than managing fisheries itself). For example, seafloor mapping research could help fisheries managers.

- The need to continue mapping the sanctuary seafloor. Documenting the condition of existing habitats is a prerequisite for, among other things: minimizing the damage to deep-sea corals and sponges.
- Documenting the condition of existing habitats is a prerequisite for, among other things: getting baseline information to gauge the likely looming effects of climate change.
- Continuation of mapping and ground-truthing efforts should be given high priority, and the use of predictive models for extrapolation of data into unknown areas should be employed where possible.
- [Identify]to the best of our ability the current condition of habitats and resources – comprehensive habitat mapping will be key
- The sanctuary should pursue inner-governmental agreements or MOAs to declassify appropriate U.S. Navy maps and bathometric data.
- The sanctuary should consider that habitat mapping data support other ecosystem objectives, and not only support sanctuary or rockfish needs.
- Biodiversity conservation should include the following [issue]: The management plan should include continued undersea explorations to map the distribution of habitat-forming structures, such as deep-sea corals and sponges. . .
- The management plan should describe the Sanctuary’s planned effort for seafloor mapping and habitat classification to cover the entire Sanctuary at high enough resolution to inform habitat-conservation decisions.
- Continue habitat mapping and baseline inventory of biota.
- Shoreline characterizations need to be completed for the development of an environmental sensitivity atlas that would be helpful in Natural Resource Damages Assessments as well.
- It seems unfortunate that NOAA has to spend its limited resources in mapping the bottom of the Sanctuary when the Navy already possesses these data but will not make them available and then prohibits NOAA from making their results public as well. NOAA needs to seek from the Navy an analysis of their bottom mapping that enables the Navy to protect classified information while allowing NOAA to better define the nature of the benthic habitat.
- We believe that there are several goals and objectives that the Sanctuary, together with its partnering agencies and the Tribes, should work toward. We. . .need to gather baseline data sufficient to measure change in marine resources within the boundary of the Sanctuary. From this, the Sanctuary can begin to develop an understanding of the distribution and quality of habitats and the role in which they function in the marine ecosystem.
- The Sanctuary should initiate work to characterize benthic habitats. The Sanctuary should determine to what extent the navy would be willing to share its data while protecting classified information.
- The management plan should include continued undersea explorations to map the distribution of habitat-forming structures, such as deep-sea corals and sponges. OCNMS researchers have surveyed only a small portion of the sanctuary, and there might be many undiscovered corals and other living structures in sanctuary waters that warrant protection.
- Only a quarter of the sanctuary’s seafloor habitat has been mapped. . . The management plan should describe the sanctuary’s planned effort for seafloor mapping and habitat classification to cover the entire sanctuary at high enough resolution to inform habitat conservation decisions.
- OCA calls for research on and implementation of the best methods for restoration of kelp forests in the OCNMS. Research should be conducted to identify the appropriate sites for restoration within the Sanctuary. Successful restoration methods used in California should be adapted for use in the OCNMS.
- Specifically, the draft management plan should include a plan to complete seafloor mapping and habitat classification throughout the sanctuary at high enough resolution to inform management decisions.
- Continue underwater explorations for habitat-forming structures, such as corals and sponges.

- Complete Seafloor mapping and habitat classification for the entire sanctuary at a high enough resolution to inform management decisions.

## **11. HABITAT PROTECTION**

- Sanctuary should continue the protection of habitats for marine mammals and seabirds.
- The sanctuary should identify certain areas along the coast that are key for larval dispersal for a prioritized oil spill response to reduce impacts to critical habitats. Primarily identifying critical intertidal habitats.
- A priority should be to maintain existing resources (living and non-living) – with focus on biodiversity, water quality, habitats. Research, education, partnerships, and preparing for change are ways to approach this.
- Corals and living organisms that form seafloor habitats should be protected as best we can. These habitats regenerate very slowly after damage.
- Continue to promote a healthy ecosystem in the sanctuary, using the best science to promote a healthy habitat for sea life, good water quality.
- The sanctuary should work with Olympic National Park to establish protected zones where harvesting is not permitted by non-indigenous people. There has been damage to some intertidal resources.
- The sanctuary should keep the draggers out of the sanctuary. Draggers (bottom trawling) are tearing the bottom up.
- The need to continue mapping the sanctuary seafloor. Documenting the condition of existing habitats is a prerequisite for, among other things: minimizing the damage to deep-sea corals and sponges.
- Create areas to be avoided by trawlers and identify rocky areas that could be utilized by corals and sponges.
- Closures to protect marine life when needed
- Protection of benthic infrastructure is of critical importance to the maintenance of healthy ecosystems, particularly where fisheries species associated with fragile benthic communities are targeted by destructive fishing practices (e.g., trawling for some species of Rockfish). Cold water and deep water benthic communities are known to be slow growing, with unknown recruitment/recovery rates, therefore management practices should be pro-active and conservative.
- I think all the programs the Sanctuary works on are important. If we don't have programs to protect and watch over our habitat, it could become like so many other parts of the world that have not managed their natural resources well.
- Deep-sea corals provide habitat to fish and invertebrates, are vulnerable to disturbance, and need centuries to recover from damage, if at all. The vulnerability of these living habitats merits particular conservation attention. The management plan should outline the sanctuary's coral protection efforts over the next five to 10 years.
- The Sanctuary . . . should provide necessary areas for natural estuary habitat – the cradle of many marine species.
- Biodiversity conservation should include the following [issue]: protecting the benthic communities; protecting the benthic communities will help maintain healthy fisheries stocks, because they are the most fundamental elements of the whole aquatic ecosystem. The vulnerability of these living habitats merits particular conservation attention. The management plan should outline the Sanctuary's commitments to protecting these communities, including the corals over the next five to 10 years.
- The management plan should outline the sanctuary's coral protection efforts over the next five to 10 years. . . Deep-sea corals and sponges provide habitat to fish and invertebrates, are vulnerable to disturbance, and are very slow to recover from damage, if at all. It has been shown that changes in benthic infrastructure cause changes in mobile coral associated communities, including commercially valuable fisheries species. Protecting the benthic communities will therefore help

maintain healthy fisheries stocks. The vulnerability of these living habitats merits particular conservation attention.

- The management plan should incorporate the use of spatial planning as a tool to allow human activities to take place in zones where marine life can withstand the resulting human impacts. Zoning prevents user conflicts by separating activities that are incompatible with each other, and protects biodiversity by prohibiting disturbance in vulnerable habitat. The sanctuary should review the experiences of existing zoning efforts, such as Australia's Great Barrier Reef Marine Park, and integrate applicable lessons into the management plan.
- OCA calls for research on and implementation of the best methods for restoration of kelp forests in the OCNMS. Research should be conducted to identify the appropriate sites for restoration within the Sanctuary. Successful restoration methods used in California should be adapted for use in the OCNMS.
- OCA calls for regulations that prohibit harvesting of kelp forests within the OCNMS. Additional regulations are also needed to prevent degradation of existing kelp forests from other current and future Sanctuary uses such as fishing, military testing, wave energy generation, and sea floor disturbance.
- Improved Protection of Biodiversity and Habitats [should be a priority topic].
- The management plan should address ocean zoning, marine protected areas and ecosystem based management as potential methods of improving protection of sanctuary resources.
- [We recommend that the updated OCNMS Management Plan include] identification of immediate, potential, and long-term anthropogenic impacts and threats to each habitat area.
- We encourage the Sanctuary to take specific actions to protect sensitive habitats such as the coral and sponge habitats and other Important Ecological Areas within the Sanctuary, . . . such habitats are of value, are important Sanctuary resources, and the Sanctuary thus has the responsibility to protect these important habitats.
- Removal of habitat structure in relatively low-structure soft-sediment systems significantly decreases biodiversity, and consequently that of the wider marine ecosystem. Therefore, protecting known areas of coral and sponge habitat inherently protects areas of high benthic diversity and a host of benthic organisms that provide habitat for fish in the form of food and shelter.
- [S]ubmarine canyons provide habitat for larger sized rockfish that seem to prefer structures of high relief such as boulders, vertical walls, and ridges. . . .Because submarine canyons on the U.S. West Coast are typically upwelling zones, they often contain higher abundances of filter feeding invertebrates, such as corals, sponges, tunicates, and bryozoans, which contribute to the structural complexity of the seafloor. Thus, the submarine canyons within the OCNMS are Important Ecological Areas. These areas should be identified in the management plan as well as immediate, potential and long-term impacts and appropriate management measures.
- One of [the Olympic National Park's] protective strategies identified within the GMP selected alternative is to establish intertidal reserve zones on approximately 38% of the coastal portion of the park. Given our overlapping jurisdiction in this area, a similar proposal in your management plan would be consistent. In implementing our GMP, we would like to work with you to set up the zoning guidelines and draft appropriate regulations to help us manage these areas.
- [Work with Olympic National Park to] regulate and mitigate nontribal human activities to minimize adverse impacts along the park's coastal strip.
- With regard to habitat protection within the Sanctuary, we first urge NOAA to work with trawl vessel owners and operators to ensure that the impacts of their gear - known to be damaging to sensitive benthic habitats - is minimized. This may be done through area-based restrictions around known sensitive habitats such as corals and sponges. In addition, considerable investment should be made in cooperative research that offers opportunities for fishermen to design and participate in studies that demonstrate effective use of selective fishing gears and methods. From an economic stand point, restoration of the marine environment is exponentially more expensive than precautionary efforts to preserve sensitive areas. Furthermore, precautionary management

measures within the Sanctuary are in keeping with your mission statement to “preserve the area’s ecological integrity.”

- The discovery of deep-water corals and sponges in the Sanctuary indicates the importance of this area of the coast. Unfortunately, these organisms are extremely susceptible to damage associated with human activities, including some types of fishing and geological exploration. It is therefore imperative that these organisms receive full protection. Please note that under the reauthorization of the Magnuson Act, protection of organisms other than fish in our waters is now authorized.
- Assess and identify areas that may need to be protected from development and other human activities in order to maintain their habitat functions and values.

## 12. INVASIVE SPECIES

- Sanctuary should do more baseline monitoring especially in regards to invasive species and upland activities (examples: mineral extraction, logging, coastline development)
- Sanctuary should proactively address invasive species. For example, intertidal surveys should be conducted frequently enough to not let invasive species become established.
- Coordination among agencies is import role for sanctuary with regards to long-term monitoring and eradication of invasive species.
- Invasive species
- Invasive species – Are there any thoughts of a response plan for invasive species?
- Continue efforts to protect area from invasives
- I am concerned about the influx of invasive species, whether through ballast water or carried on currents. We now have 2 invasive *Spartina* species in Grays Harbor, and anticipate more pressure from seed carried north from Humbolt and San Francisco Bays. I would like to know if there are any plans to set aside funding for detecting and controlling invasive species?
- I support stronger fishing and harvesting restrictions within the Marine Sanctuary along with continued awareness and action regarding invasive species.
- Invasive Species monitoring needs to be conducted in a tiered response for early detection. Having a broad constant look and then a more focused approached routinely so that nothing slips in is important.
- You have a note about it but from having dealt with invasive *Didemnum* at the Underwater Park at Edmonds it is not something that can be handled hit or miss. I would encourage an intensive survey even if the density were one data point per square mile to understand the existing status.
- Identify, prevent, and remove invasive species.

## 13. LIVING RESOURCE CONSERVATION

- Biodiversity conservation should be main focus of sanctuary and management plan. Primary purpose of sanctuary is to protect resources in area.
- A priority should be to maintain existing resources (living and non-living) – with focus on biodiversity, water quality, habitats. Research, education, partnerships, and preparing for change are ways to approach this.
- Human interaction – How do the fishermen impact the wildlife? Is there illegal shooting of wildlife? The sanctuary needs more education for the fishermen.
- Wildlife Conservation
- Protection of the pristine; keep the diversity and purity of all creatures - from plankton to the top of the food chain. Help the ocean survive.
- Many observers of coastal issues would like to see more research directed to the use of the OCNMS by gray whales. It is especially important to understand the timing of the arrival of mothers and calves to the nearshore areas of La Push and the Makah . . . More information could shed light on how best to minimize disturbance to them by human activities.

- The Olympic Coast National Marine Sanctuary should be expanded and have increased protections. It should be a true sanctuary that bans all hunting and fishing. The Makah whale hunt should not be allowed!
- I am sorry to report that you continue to fail control of the low flying aircraft in the OCNMS. Airplanes and the occasional helicopter regularly turn off the beach environs to the east flying just over our subdivision. It is commonplace to see aircraft fly below the 80' elevation of our home when the flight floor is 3000'. Why do you not set up a monitoring station in the area cliffs? This could be temporary or automated. Does the OCNMS issue regular warnings to airports in Western Washington, Oregon and British Columbia? Why do you not close the Copalis airport that is on the beach, in the OCNMS and has been there since WWII? Low flying aircraft do touch downs right over the spit that is a nesting and habitat area. Why will the Navy not give you access to its radar?
- Closures to protect marine life when needed
- Continue efforts on protecting and expanding sea otters
- Future OCNMS management plans should have a strong conservation and protection focus. The numbers of rockfish throughout Washington's waters are declining rapidly and need to be protected and better managed.
- As one who has done diving in the vicinity of Neah Bay on the mouth of the Strait of Juan de Fuca, there is a concern about the amount of rockfish being taken from those waters. . . Now from recent counts by other divers working with REEF as fish surveyors, the fish count has gotten to a point where these particular fish now need protection. . . This whole marine area is special, as a dive site and as a continuation of our own natural marine heritage. It needs more recognition and respect as being important rockfish habitat. It should be guarded from any mass depletion of fish, whether the fish are being taken by sport divers or by commercial fishing or by sports fishermen.
- The sanctuary is one of the few remaining areas where certain species of marine life still thrive, in large part due to sanctuary status. Continued intense monitoring and limitations on runoff of waste water, boating and shipping impacts and catch limits for sport and commercial fisheries are the key to maintaining the continued wildlife growth we see in the area.
- Whales should not be hunted. They are important species -- more so in the past -- whose sediment-moving feeding habits are important for other species.
- Hatchery fish should not be allowed in streams that enter the sanctuary. Hatchery operations devastate wild runs, and wild runs cannot recover in the face of hatchery competition.
- As a working fisheries biologist and member of the American Fisheries Society I would urge the continued protection of the sanctuary areas for rockfish in particular.
- The death of 7 of the L pod Orcas is further proof that their habitat and our ecosystem is in danger. . . Please . . . provide the strongest protection possible for the Olympic Coast National Marine Sanctuary.
- We agree with OCA when it says, "The OCNMS, like other Sanctuaries, should serve as a "seed bank" for the future. Management policy should focus primarily on preserving the ecological integrity of the Sanctuary by minimizing invasive species and disruptive human activities.
- I am writing to urgently ask the Olympic Coast National Marine Sanctuary to enact all available measures in the Sanctuary Management Plan to protect the valuable environment of the Sanctuary from harm. The Sanctuary provides a home and feeding grounds to a significant number of marine mammals including sea otters, chinook salmon, and the endangered Southern Resident orca.
- Biodiversity conservation should include the following [issue]: protecting the benthic communities; protecting the benthic communities will help maintain healthy fisheries stocks, because they are the most fundamental elements of the whole aquatic ecosystem. The vulnerability of these living habitats merits particular conservation attention. The management plan should outline the Sanctuary's commitments to protecting these communities, including the corals over the next five to 10 years.
- Advance marine vessel safety, underwater noise control, and oil spill preparedness.

- Improper use of the Copalis Beach aircraft landing area (beyond designated area) is a safety hazard for beach pedestrians and causes disturbance to wildlife. The sanctuary should work with the FAA, WDOT, and WSPRC to regulate the area and restrict beach use by aircraft to the area within 4,500 feet north of the Copalis River. Consider limiting its use to emergency situations.
- If a complete ban is not adopted, OCA calls for a ban on seismic and sonar testing associated with any energy project in or adjacent to the OCNMS. OCA encourages potential energy producers and the federal government to use best available technologies that do not cause harm to mammals or other marine life.
- OCA calls for the OCNMS to work with other federal and state agencies to augment the OCNMS sea otter population if it does not begin increasing substantially within the next five years.
- OCA requests that the OCNMS Management Plan provide authority to halt sources of noise that exceed an established baseline, set at a level that will have negligible effect on biological communities in the Sanctuary.
- OCA requests that Sanctuary staff revise the Management Plan to include baseline and ongoing monitoring of all sound levels using passive acoustic recording buoys within the Sanctuary.
- OCA requests that the OCNMS establish sound benchmarks for the Sanctuary and scientifically evaluate the impacts of human-produced sounds on marine animals in the Sanctuary.
- OCA requests that there be better monitoring and enforcement of current policies that mandate negligible impact of sound on marine mammals in the OCNMS.
- OCA requests mitigation of potential impacts that includes ceasing use of sonar during sensitive times (such as during marine mammal and fish migrations and breeding seasons) and in sensitive areas of the OCNMS.
- OCA requests the mid and low frequency sonar and seismic air guns be designated non compatible uses in the OCNMS and that these technologies be prohibited within acoustic impact range of the Sanctuary.
- The management plan should also require identification of particularly vulnerable species such as coldwater corals and include management measures to ensure protection of these species.
- One of [the Olympic National Park's] protective strategies identified within the GMP selected alternative is to establish intertidal reserve zones on approximately 38% of the coastal portion of the park. Given our overlapping jurisdiction in this area, a similar proposal in your management plan would be consistent. In implementing our GMP, we would like to work with you to set up the zoning guidelines and draft appropriate regulations to help us manage these areas.
- Areas of high biodiversity within the intertidal areas [should be] protected as "seed banks" for adjacent habitats and communities.
- [Work with Olympic National Park to] protect and restore threatened and endangered species and their critical habitat.
- [Work with Olympic National Park to] regulate and mitigate nontribal human activities to minimize adverse impacts along the park's coastal strip.
- [Work with Olympic National Park to meet sanctuary] goals and requirements for overflight restrictions.

#### **14. LIVING RESOURCES MONITORING**

- The sanctuary's future management plan should pay increased attention to living marine resources. Given their condition, attention to living marine resources should be an increased priority for the sanctuary.
- A priority of the sanctuary should be to establish with confidence what the status of the living marine resources is. Once we know this status, the sanctuary could act with more authority in managing the resources.
- The sanctuary should contribute to the understanding of the winter distribution of the endangered southern resident killer whale population.
- Study morbillivirus and toxoplasma in sea otters to determine its contagiousness.

- Expand upon current physical and biological parameter monitoring using remote ocean sensing devices (buoys) to provide baseline data and early warnings (e.g., harmful algal blooms). Integrate current deployments into Coastal Ocean Observing Systems, and partner with them.
- Increase knowledge on the presence, use and abundance in the sanctuary of threatened and endangered species. For example, study migratory pathways of hatchery and wild salmon.
- Monitoring should occur year-round (not just during good weather seasons), and should capture events that occur during the winter. For example, kelp monitoring in the winter is important in order to know what's coming for the spring.
- Check for parasitic algae on bull kelp, which is occurring in the central Sound.
- NOAA should use all of its observation assets (e.g., satellites) to the benefit of the national marine sanctuaries. Make this part of the management plan.
- The sanctuary should do more research on baseline levels of water column plankton larval fish and forage fish species. This data is needed for oil spill response and natural resource damage assessment.
- The sanctuary should initiate a stakeholder process to develop a shared set of species and habitats to be evaluated. Determine the conditions of those species and habitats and jointly develop strategies to protect them. Leverage partnerships and identify gaps.
- Continue surveying and monitoring efforts for long-term data sets on marine mammals, seabirds, kelp, etc. Existing monitoring programs need to continue and be identified as high priority items and not be terminated.
- A key role of the sanctuary is long term monitoring of living resources. Sites where long-term data is collected are needed. The sanctuary can serve this role by conducting and encouraging research and monitoring, and maintaining data and history.
- Research on predator biomass: seals, sea lions, pelicans.
- Local knowledge from fishermen should be used to help develop sanctuary research.
- Utilize local charter or commercial vessel operators for monitoring of baseline conditions. Create two-way communication process (e.g., email) to inform of changes in environmental conditions.
- There is a strong need to provide sanctuary data in a timelier manner and we need to identify the impediments that inhibit these reports from being produced and made available to other agencies and organizations.
- Conduct and/or support those conducting analyses of existing data and identify data needs.
- Need monitoring using remote sensing. More work with partnerships; agencies, tribes, non government organizations, and research institutions. To monitor physical changes and biological changes in the water of the sanctuary (e.g., harmful algal blooms - HABs).
- The sanctuary should develop data standards that provide for data and interpretation of the data to be translatable and available to resource managers in a timely fashion.
- We should identify to the best of our ability what is the condition of those resources.
- The sanctuary should make its data/research more accessible to the public and others.
- The sanctuary should act as a science based advisory panel and not implement belief based policy. Research that will fill data gaps in the transition to ecosystem based fisheries management. Specifics to include monitoring of apex predators, or sea otter-sea urchin dynamics. Conduct research that is mutually beneficial to tribes and the sanctuary. To be collaborators.
- Base line data – need data to make intelligent decisions for resources and managing resources.
- Marine bird assessment and why in decline.
- Develop a gap analysis about marine resources what we know and what we don't know. To inform management decisions. Example: Increases information for oil spills. Base line data.
- Develop and adhere to a standard to making existing data translatable and available in a reasonable time period to inform resource management.
- The sanctuary should set up a monitoring program to help with oil spill prevention that would monitor larval stages of rockfish and other groundfish species. To date, there is mainly risk assessment info on near shore species but no or little monitoring to assess damage to groundfish species, migratory species, recruitment, etc. Monitoring should be seasonal or even monthly.

- The sanctuary should increase research efforts and investigation on the marine survivability of all salmonid species in the ocean environment, with an emphasis on coastal species and/or ESA-listed species.
- The sanctuary should undertake genetic studies of salmonids passing through the sanctuary. There are species from other places (Columbia River basin, etc) that pass through the sanctuary and the sanctuary should study this occurrence: sanctuary may be critical habitat for certain species passing through, but we don't know that because we don't have the information.
- The sanctuary should support the installation of passive acoustic monitoring of killer whales or other marine mammals, similar to what has been done in Neah Bay.
- Sanctuary should do more in-depth monitoring of the non-native otter population effect on the resident urchin population: current urchin population may not be able to recover due to recent predation by otter population. Need to investigate and assess this issue.
- Sanctuary needs to commit itself to long-term monitoring of important parts of the food web. Should conduct review of protocols that can be conducted year after year so that these programs continue.
- Coordination with other agencies to get a better understanding of roles and responsibilities. Comprehensive understanding of research trends. Analysis of trends that have changed since the sanctuary designation. What improvements have occurred since designation?
- Need a baseline for future monitoring. Sanctuary to help facilitate with agencies, academic, tribes and act as a clearing house. Coordinate a bi-annual symposium of knowledge of the sanctuaries, i.e., recent research results.
- We need to better define the winter distribution of southern killer whales. Acoustic instrumentation on the coast to track the movements needed.
- To better understand the usage by gray whales of feeding areas. Improved characterization of mother-calf pairs during northern migrations.
- Natural Resource Damage Assessment (NRDA) near shore species characterization.
- When to use oil dispersant use matrix for responsible dispersant use
- The sanctuary needs an on-line database where the public can access data and information. This would better educate people about what the sanctuary is doing. It is difficult to access sanctuary data. If data was accessible on-line, it would lead to more transparency.
- Many observers of coastal issues would like to see more research directed to the use of the OCNMS by gray whales. It is especially important to understand the timing of the arrival of mothers and calves to the nearshore areas of La Push and the Makah . . . More information could shed light on how best to minimize disturbance to them by human activities.
- Though they may not yield useful results in the short term, long-term monitoring projects will be essential for OCNMS to understand how climate change affects its resources.
- Over the past 8 years I have had the privilege of working as a COASST volunteer . . . please continue and expand research in the Sanctuary. Track our birds, marine mammals, and sea life. Check our water quality and insure we are not injuring the marine populations . . .
- The Olympic National Marine Sanctuary is a joy to visit both on land and in the water as a diver. With the vast variety of flora and fauna makes this place is haven for both scientists and naturalist. There is a lot of research that needs to be done in this area and it would be very useful if the two would use an equivalent system enabling them both to use each others information for the betterment of the area.
- Provide equal opportunities for people to collect data for research. Provide different skill levels that can be checked and have equivalency with existing programs such as REEF, COASST, National Geographic Dive , Citizen Sciences, and Beach Watchers, However, NOAA, needs set the standard of each skill level that a person can learn with minimal training and then partake in collecting data or assist scientists.
- We must have programs in place that tell us how we are doing in trying to keep our waters clean and the inhabitants healthy so both plants and animals have the ability to live and prosper in a clean environment. There is so much we don't know and having programs like COASST,

- exploring the corals, keeping tabs on whale, otters, seals, birds and other wildlife is vital in helping us to protect these valuable natural resources.
- Continue surveying and monitoring efforts for long-term data sets on marine mammals, seabirds, kelp, etc. Existing monitoring programs need to continue and be identified as high priority items and not be terminated.
  - Marine resource monitoring: although costly, resource monitoring is very important in the protection process . . . Initially this focus should be on baseline studies, species of concern and on indicator species/systems that are key to the overall health of the ecosystem while also measuring global warming.
  - Winter is not a time to ignore the OCNMS. Yes conducting research in the winter is not always pleasant but the returns are important, as there are changes that occur and systems in place during winter that effect the entire year.
  - Continue habitat mapping and baseline inventory of biota.
  - Monitor sanctuary resources, including but not limited to species that are threatened, endangered, in decline, or that have been significantly impacted, and the food chain and physical conditions that support them.
  - NOAA needs to invest in technology that would enable the Sanctuary to efficiently assess the seasonal occurrence of marine organisms in the water column for the development of a dispersant use matrix.
  - Establishing a larval fish assessment monitoring program is also a top priority, as it will provide much needed insight into year-round water column vulnerabilities and can inform an oil spill dispersant decision matrix.
  - Establish a near-shore baseline data monitoring program that includes surveying and quantifying invertebrate, macro-algae and rockfish populations.
  - Design a year-round larval fish assessment protocol that meets the needs of all resource managers by acquiring technology such as In Situ Ichthyoplankton Imaging System (ISIIS) that allows for large coverage area while minimizing analysis time, and that incorporates fishing vessel operator participation where appropriate.
  - Although costly, resource monitoring is very important in the protection process. Understanding the financial constraints of the sanctuary system, monitoring should be streamlined and focused. Initially this focus should be on baseline studies, species of concern and on indicator species/systems that are key to the overall health of the ecosystem while also considering global warming.
  - OCA calls for research on the original natural distribution of kelp forests within OCNMS waters. This research should include documentation of tribal oral histories and examination for evidence of past kelp forests on existing and sediment covered rocky substrates.
  - OCA recommends that the OCNMS increase biodiversity monitoring within the Sanctuary. Our understanding of the diversity of species existing in the biological web of life in the Sanctuary is necessary for an ecosystem management approach, focusing on ecosystem connections. We recommend that OCNMS focus on the lower ratings in the Condition Report.
  - OCA recommends that the OCNMS enhance monitoring of orca and other marine mammals. Sonar buoy monitoring systems would be helpful in establishing marine mammal migration and feeding zones, so that they can be better protected within the Sanctuary.
  - Expand the kelp monitoring program to include sampling designed explicitly to measure and characterize anecdotally observed changes.
  - Begin monitoring the diversity and distribution of the other macroalgae that host the many fish and invertebrate species present in the nearshore.
  - [A]necdotal evidence suggests a reduction in kelp beds near river mouths. The current [kelp] monitoring program does not include a sampling design detailed enough to measure these observed changes. If the kelp forests are indeed beginning to erode in these areas, the Sanctuary should ensure the ability to quantify this change through an adaptation to the monitoring program.

- Currently the only macroalgae that is monitored is kelp. There is an abundance of other macroalgae species including *Gracilariopsis Carcodiotheca* (*Neoagarhiella*), *Botroglossum*, *Prionitis*, *Desmerestia*, *Callophyllis*, *Gelidium*, *Gigartina*, *Nerocystis* and *Laminaria* that provide important habitat functions including substrate for the deposition of herring eggs, food and refugia for fish. The productivity and decomposition of macroalgae is important in nutrient cycling and influences nearshore water quality. A program that includes an initial survey to establish a baseline mapping in the density, distribution and diversity of the macroalgae as well as continued monitoring and analysis of changes from this baseline, could be used to assess the status of habitat and water quality at the Sanctuary.
- Expansion of the kelp monitoring program to: 1) capture the site scale changes that have been reported, 2) include a climate change modeling component, and 3) incorporate monitoring of additional macroalgae would significantly strengthen the Sanctuary's management plan. These changes would address two of the five priority topics to be addressed by the revised management plan *Characterization and Monitoring*, and *Climate Change*. Including an expanded macroalgae monitoring program as described above in the OCNMS Management Plan would allow for improved characterization of the Sanctuary resources, and the ability to more effectively respond to acute and long term environmental stressors.
- [Work with Olympic National Park to] inventory and monitor coastal and marine resources within park boundaries, determine baseline conditions, and detect abnormal changes in time to implement remedial actions.
- Many species of seabirds are in decline Washington Marine Waters. It is important to monitor the distribution and abundance of birds in the Sanctuary. What factors are influencing key bird food resources? Are changes in short term (last 10 years) meteorological conditions influencing nutrient dynamics and near shore productivity?
- The marine mammal and seabird surveys conducted in the Sanctuary are vital to understanding the health and dynamics of the area. Additionally, the citizen science Coastal Observation and Seabird Survey Team (COASST) program provides a unique means of monitoring the health of the sanctuary through the study of seabird mortality.

## 15. LOCAL AND CUSTOMARY KNOWLEDGE

- The sanctuary should preserve personal/oral histories and stories of fishing communities
- Local knowledge from fishermen should be used to help develop sanctuary research.
- The tribes were natural resource managers for thousands of years before, using oral tradition. The tribal knowledge is not an integral part of the scientific process currently used in resource management. Those traditions would greatly inform science if they were included. They are usually remarkably accurate. Example: many tribes have "first salmon" ceremonies where the first salmon is eaten. The whole village has to be clean (public health aspect). All the fish gets to go by and make it all the way to the headwaters to spawn. In current management practices, most fish is taken before they get to the headwaters.
- Honoring and learning the heritage of the people who have lived with the ocean for thousands of years. Traditional ecological knowledge – ways of knowing.
- System-wide – Develop better coordination and appreciation with Sanctuary family and Fisheries family. Fishing is not necessarily bad. Tribal fisheries are doing well. There is a great wealth that comes from the ocean. That is the tribe's existence. Incorporating this traditional knowledge is vehicle for getting to this cooperation issue.
- The tribes and other local communities have a lot of knowledge that the OCNMS should try to use effectively.

## 16. MARINE DEBRIS – ABANDONED SUBMERGED EQUIPMENT

- Assessment and characterization of marine debris within the sanctuary should be a priority. Take steps to remove it if necessary.

- The sanctuary should identify areas with derelict crab/fishing gear to allow for salvage of this derelict gear once the season is over.
- Clean up seafloor: crab pots, vehicles, containers, tires
- Derelict gear is a term that fishermen don't like and lost gear is ultimately is retrieved. Retrieving gear is expensive but much of it can be brought back. The sanctuary should be a partner, along with the state and industry, in creating a program to retrieve this gear.
- Recommendations are contained within the state ocean policy document and West Coast Governor's agreement. For example, marine debris and derelict fishing gear. The sanctuary should look at those recommendations and find the ways in which it can partner with other entities to further those objectives.
- Marine debris: fishing gear; create partnerships to get money for scoping and removal of marine debris, including derelict fishing gear (Investigate scope of problem; Determine if feasible to remove; Create partnerships to remove gear; Get permits to remove crab gear due to disturbance of sea bottom.
- Plastics - Charlie Moore ship traveling in Pacific cut across Northern Pacific Gyre and saw large amount of plastics. Coastal alliance cleans beaches and lots of plastic found; some fishermen are very aware and careful with not allowing plastics to go in the sea, others are not as concerned – need more education; awareness of impacts of plastics on wildlife.
- Derelict fishing gear removal: ghost fishing is brutal; impacts to wildlife; education; fishermen could be great partners – need to educate to promote stewardship
- Ghost crab pots in Ozette area: in past we could go in 30 fathoms to fish, now we cannot even go in 50 fathoms without losing gear; gear lost from storms - need recovery program to assist fishermen.
- Marine debris understanding of sources onshore vs. offshore. Source control. Identification of debris source for improved management strategies.
- Marine debris (and specifically marine plastics) needs to see more emphasis. Perhaps there should be more focus on prevention of marine debris.
- Identify the sources of marine debris, prevent further releases, and clean up existing debris, especially plastics and derelict fishing gear.
- We urge the Sanctuary to continue its partnerships with the Makah Tribe, other co-managers, Olympic Coast Alliance, and other organizations, to coordinate marine debris clean up activities. We believe the Sanctuary should develop outreach programs and materials for resource users to educate them about the consequences of marine debris. We also think better knowledge of nearshore and offshore ocean currents could enhance debris retrieval.
- Continue marine debris pilot programs utilizing Sanctuary resources.
- Develop outreach programs to educate and to encourage participation from resource users in the prevention and cleanup of marine debris.
- Develop a real time reporting and GIS database of gear loss events and marine debris occurrences.
- Marine debris is becoming more problematic and marine sanctuaries are increasingly affected. OCNMS should address this issue and encourage debris removal. The management plan should demonstrate continued commitment to clean-up efforts and promotion of public awareness on the matter.
- Marine debris should remain a focus of sanctuary efforts, including derelict fishing gear, beach cleanup, and plastics.
- Assess and characterize marine debris within the sanctuary.
- Identify sources and location of marine debris, including known pollutants and derelict vessels and gear (e.g., drift nets), and collaborate with federal and Washington state agencies to conduct removal and clean-up.

## **17. MARINE DEBRIS – SHORELINE CLEAN-UP**

- Assessment and characterization of marine debris within the sanctuary should be a priority. Take steps to remove it if necessary.

- Sanctuary should continue its primary role in annual coastal cleanup – benefits include community outreach and removal of marine debris.
- Beach cleanup. Problem is year-round, not just once a year effort. Sanctuary should publicize and help coordinate.
- The sanctuary should have a program to educate people to not throw debris overboard when on the water -- to improve awareness about the disposal of garbage.
- The sanctuary should continue the participation with the annual coastal cleanup to support removing debris from wilderness beaches, perhaps to expand it – more beaches and more often.
- Continue as good stewards of ocean including beach cleanups in partnership with state.
- Recommendations are contained within the state ocean policy document and West Coast Governor’s agreement. For example, marine debris and derelict fishing gear. The sanctuary should look at those recommendations and find the ways in which it can partner with other entities to further those objectives.
- Continue working with Olympic National Park to remove marine debris annually.
- The Washington Clean Coast Alliance (WCCA) work should be continued on marine debris.
- Plastics- world-wide problem covering beaches: baseline data; Cleanups- trash lasts on beach for long time
- Plastics - Charlie Moore ship traveling in Pacific cut across Northern Pacific Gyre and saw large amount of plastics. Coastal alliance cleans beaches and lots of plastic found; some fishermen are very aware and careful with not allowing plastics to go in the sea, others are not as concerned – need more education; awareness of impacts of plastics on wildlife.
- How do we police these areas of debris with such a hostile shoreline? What are the solutions? Should Sanctuary play a more active role with removal of trash? Hire locals.
- Clean beaches – plastics; Education and other preventative measures
- Marine debris understanding of sources onshore vs. offshore. Source control. Identification of debris source for improved management strategies.
- Marine debris (and specifically marine plastics) needs to see more emphasis. Perhaps there should be more focus on prevention of marine debris.
- Continue debris cleanup efforts
- Continued work and education on ocean debris especially plastics
- Identify the sources of marine debris, prevent further releases, and clean up existing debris, especially plastics and derelict fishing gear.
- Please encourage more people to get actively involved to appreciate our local Puget Sound Region and the OCNMS and help reduce marine debris.
- We urge the Sanctuary to continue its partnerships with the Makah Tribe, other co-managers, Olympic Coast Alliance, and other organizations, to coordinate marine debris clean up activities. We believe the Sanctuary should develop outreach programs and materials for resource users to educate them about the consequences of marine debris. We also think better knowledge of nearshore and offshore ocean currents could enhance debris retrieval.
- Continue coordinating beach clean ups with non-profit organizations.
- Continue marine debris pilot programs utilizing Sanctuary resources.
- Develop outreach programs to educate and to encourage participation from resource users in the prevention and cleanup of marine debris.
- Marine debris is becoming more problematic and marine sanctuaries are increasingly affected. OCNMS should address this issue and encourage debris removal. The management plan should demonstrate continued commitment to clean-up efforts and promotion of public awareness on the matter.
- Marine debris should remain a focus of sanctuary efforts, including derelict fishing gear, beach cleanup, and plastics.
- The negative impacts caused by marine debris on marine species and ecosystems are an enormous issue for the health and integrity of the world’s oceans. Working with coastal communities and conservation organizations to clean up beaches and minimize debris coming from onshore should

be a priority for managing the Sanctuary. In addition, Surfrider Foundation hopes that you will demonstrate support for plastics and Styrofoam bans and that you will invest in understanding where marine debris found in the Sanctuary originates.

- Assess and characterize marine debris within the sanctuary.
- Continue participation in the Washington Coast Clean Up. Support efforts to remove debris from Wilderness beaches.

#### **18. MARITIME AND ENVIRONMENTAL SAFETY - HARBORS OF REFUGE**

- Harbors of Refuge: Need two on Washington Coast between Grays Harbor and Neah Bay.
- [We] urge the OCNMS management to consider plans for the use of dispersants in case of a large spill. Dispersants can be one additional response tool when other measures fail. Consideration should also be given to developing formalized agreements for “Harbors or Places of Refuge” for distressed vessels outside vicinity of the OCNMS.

#### **19. MARITIME AND ENVIRONMENTAL SAFETY – NAVIGATION**

- Request NOAA and Coast Guard place an Aid to Navigation on Duntze Rock to assure continued safe waterborne commerce.
- Duntze Rock should be marked with a racon and instrumented for meteorological data and acoustic data.
- Would like public access to sanctuary’s maps (e.g., bottom habitats). Would like improved charting for navigation safety. Suggest using sanctuary data to improve National Oceanic and Atmospheric Administration (NOAA) charts.

#### **20. MARITIME AND ENVIRONMENTAL SAFETY - VESSEL MANAGEMENT**

- Work with Ecology, industry, the Coast Guard, and other stakeholders to review industry's coastal shipping practices.
- Continue the ATBA research
- The OCNMS should continue to support the Coast Guard’s mission and authority to screen, deny entry, require operational measures including tug escort if necessary and/or require higher risk vessels to submit to inspections before arriving at port or upon arrival.
- In addition to the numerous safeguards, the layered safety net including the monitoring of deep draft ocean-going vessels, other vessel types and operations should be evaluated by OCNMS for spill histories and operations of concern to OCNMS stakeholders.
- NOAA has monitoring resources that could be leveraged for all the Sanctuaries as they share some common concerns about boat traffic and use. . . This cooperation comes by design as part of the Management Plan. Monitoring both Day and Night needs to be factored in as part of the management plan.
- Advance marine vessel safety, underwater noise control, and oil spill preparedness.
- Mandatory ATBA status. To further strengthen the precautionary measure of keeping large, oil-laden vessels away from the pristine resources within the Sanctuary, the Sanctuary could consider supporting the work toward making it mandatory that these vessels avoid entering into the Area to Be Avoided.
- Additional protections for vessels carrying “clingage plus.” The Council could consider working with the oil industry to better define what should be considered “carrying cargo” verses carrying mere “oil clingage,” such that some vessels currently transiting within the sanctuary because they are not fully loaded with oil cargo could (voluntarily perhaps) be treated as being “in cargo status” and consequently transiting outside the sanctuary.
- Require that all vessels containing potentially hazardous materials (including tugs and unladen barges) respect the Area to Be Avoided.
- We would welcome the OCNMS staff and administrators spending more time and effort on quantifying actual oil spills and incidents that have occurred in or close to the Area To Be

Avoided (ATBA) and Sanctuary. A recent request for information on this subject was responded to with a woefully inadequate inventory and assessment of incidents and risks. The list provided had numerous inaccuracies, miss-assigned risk, unclear attributions, and references to incidents that were not close to the Sanctuary. Including reporting information on marine incidents that describes fully the sea state, weather variables, location, closest vessels (particularly those tugboats who are monitored through the International Tug of Opportunity System), and other factors, would give responders a better sense of what, if any, imminent danger is likely and how best to respond. Often high-risk incidents may involve more than one vessel needing assistance at the same time and effective triage demands more consistent and detailed reporting to assess the reality of how best to respond. Therefore, the OCNMS management plan should include timely, consistent, relevant, and detailed reporting of incidents for better planning and response measures.

- Despite the rancor concerning the threat of large commercial vessels in our waters, the majority of actual risk and spill incidents tend to be smaller vessels, with fishing vessels being the most frequent offenders. . . Greater attention should be paid by administrators to developing safety and awareness educational programs for those who operate fishing boats and small craft in the OCNMS region.
- Continue to monitor vessel adherence to the voluntary Area-To-Be-Avoided and provide regular updates and recommendations for enhanced compliance to appropriate authorities.
- The sanctuary should encourage the state and Coast Guard to proceed with their study of coastal towing (losing tows, infringing on the ATBA and interactions with nuclear submarines and the recommended routing in the Strait of Juan de Fuca).
- Point-source pollution (oil spills) should remain a priority. Continued vigilance (monitoring and compliance of the Area to be Avoided) is important. Pushing other regulatory agencies toward stronger prevention measures.
- Towed cargos (barge and tug traffic) and small boat traffic/use should be better characterized, tracked, and assessed for risks. Work with the Coast Guard to understand who is out there, and risks posed by different users.
- Area to be Avoided (ATBA) has provided buffer zone where response time is increased – sanctuary should continue to maintain its ATBA program.
- Non-laden tugs with barges could pose threat to sanctuary. ATBA program should address these vessels also.
- Need continued monitoring of Area to Be Avoided to determine violations and gather data.
- Insure that all vessels containing hazardous materials are respecting the areas to be avoided.
- Improve marine vessel safety beyond Neah Bay tug.

## **21. MARITIME AND ENVIRONMENTAL SAFETY - WEATHER FORECASTING**

- Support Doppler radar installation on the outer coast.
- Doppler radar should be put in place for this area. The outer coast is not covered by current Doppler radar. This is important for navigation safety – need ability to do better forecasting. This is on the table with other groups as well (Weather Service, state). Sanctuary could be an advocate within the National Ocean and Atmospheric Administration (NOAA).
- For example, look into new weather forecasting technology with Dr. Cliff Mast at the University of Washington.

## **22. MARITIME HERITAGE - CULTURAL RESOURCE MANAGEMENT**

- Establish remote sensing, surveying and monitoring of underwater archeological sites.
- Expand archeological studies, monitoring, sampling and analysis to include areas near or adjacent to the sanctuaries. Coastlines have changed over paleo-time so these areas are no longer within the boundaries of the sanctuary.
- Continue research and education about archeological work that has been done. That research should have a public education component.

- After habitat mapping and paleo shoreline study, sanctuary should do in-depth geomorphic assessments to identify land forms and prioritize areas for archeological survey.
- Explore funding opportunities for archeological research from private donors to be channeled through the sanctuary foundation.
- Coordinate remote sensing data with the National Oceanic and Atmospheric Administration Office of Maritime Heritage for prioritizing potential underwater archeological targets.
- Sanctuary should look across spectrum of agencies and organizations to identify resource data gaps.
- The sanctuary needs to identify and map cultural/archeological sites, specifically shipwrecks. It is important to preserve the cultural and historical aspects of the sanctuary.
- Diving in here in the northwest is a bit more of a challenge however the activity is quite active. The agency PADI, NAUI, SSI have some very advance dive specialties such as archeology and technical diving. Set the standard and designate project and provide an equal opportunity. NOAA has these dive programs in other National marine sanctuaries but only recently has a elite set of divers been diving in Washington.
- The ability to build community outside the "science/research" community would be to the OCNMS benefit. . . SHIPWRECKS and the human drama of coming to the Pacific Northwest prior to all our navigational improvements is a story that needs attention.

### **23. MARITIME HERITAGE - LIVING CULTURES**

- The sanctuary should preserve personal/oral histories and stories of fishing communities
- Archeological sites contain information that can be used to understand the ecology of present systems which could help us with resource management (e.g., look at things in the past before management issues such as overfishing were occurring).
- People are also interested in shipwrecks, cultural resources and history. Engage the public in these topics.
- Prioritize the research of cultural history from the period when sea level was low to help in the understanding of long-term change (cultural and natural history components).
- The sanctuary should protect sacred places
- Given the current expectations for global climate change, I believe that it would be a very good idea for the sanctuary to support more paleoenvironmental research. It may be possible to model and plan for possible changes. For example, there are several archaeological sites on the Olympic Peninsula that are associated with a relatively higher sea level than at present. The animal remains (and in one case so far, plant remains) in these archaeological sites can shed light on the nature of the marine environment in the area, when sea level is higher. The human/marine environment interaction can be traced through time, which will shed light on management issues (known archaeological records of more than 4,000 years of interaction). Research in non-archaeological sites (such as lake bottom sediments) can help separate the human and natural factors in the human/environmental interaction.
- I would like to see more attention paid to the protection of cultural resources, public education about both tribal and non-tribal heritage, and continuity of traditional cultural practices. I am glad that the region is receiving attention and protection, but I would like to make sure that research and education opportunities don't focus just on plants and animals, to the exclusion of people.
- OCA calls for research on the original natural distribution of kelp forests within OCNMS waters. This research should include documentation of tribal oral histories and examination for evidence of past kelp forests on existing and sediment covered rocky substrates.

### **24. MILITARY ACTIVITIES**

- Sanctuary should explore potential impacts of military activities. Impacts, particularly the impacts to wildlife, should be transparent to the public.
- There should be mitigating measures for the Department of Defense such as the U.S. Navy activities conducted within the sanctuary, which would be negotiated by the Department of

Commerce. Goal for the sanctuary staff should be to request action by the Department of Commerce.

- The sanctuary should play a key role in working with the Navy (i.e. test range within sanctuary) to coordinate with multiple agencies to identify and mitigate threats of Navy activities. Navy activities can pose threats to marine organisms, e.g., marine mammals. Navy has proposed increasing activities and areas of operations in the sanctuary.
- Concerned about low military overflights (have experienced this).
- Concerned about Navy activity within the Sanctuary (air and sea, including sonar).
- The Navy should not be conducting exercises in the sanctuary.
- Investigate the effects of the proposed expansions and the future expansions of the navy testing range both in geography and the activities being proposed.
- The Navy should not be doing target practice in the sanctuary because it has impacts on birds and marine mammals.
- The apparent ineffectiveness of the existing management plan in protecting the sanctuary resources from 1) the likely expansion of the Navy's test range into the sanctuary, 2) the unknown effects of the experimental wave-energy project, 3) destructive fisheries
- Prohibit the U.S. Navy from expanding its training area in the Sanctuary from 48.3 square nautical miles to 1,840 as proposed.
- The Navy should not train in the sanctuary or in areas near it.
- Although we understand the need for military activities, such activities conducted within the designation of a Sanctuary should not interrupt the goal of resource protection. The burden of proof should be on the military to demonstrate that its activities do not harm these areas of extraordinary biological diversity.
- Identify and appropriately restrict or co-manage military activities affecting the Sanctuary, including sonar/sound impacts to biota, and activities or substances that would alter, degrade, or destroy marine resources.
- The Sanctuary should formally support the findings of the SAC to oppose the Navy's expansion of its operations in the Sanctuary and Olympic National Park unless significant enhancements are made to the proposed mitigations.
- Military activities conducted within the sanctuary should not interrupt the goal of resource protection. The management plan should enable the placement of the burden of proof on the military to demonstrate that its activities do not harm OCNMS' extraordinary biological diversity.
- OCA requests that Sanctuary staff actively participate in the Navy's environmental assessment processes to evaluate potential impacts to Sanctuary resources, investigate alternative sites beyond the OCNMS, identify environmentally safe methods to use in the Sanctuary, and develop appropriate monitoring and protection measures. Sanctuary staff should request funding from the Navy to support such participation.
- OCA requests that the Navy continue consultation with the Quinault Nation on all aspects of test range extension that will affect tribal fishing and ceremonial harvesting. The Navy should look for options that do not include access to Quinault beaches to avoid interference with tribal activities.
- OCA requests that the OCNMS conduct further research to assure that Naval sonar activities do not disrupt the ecosystem of the Sanctuary.

## 25. NON-POINT SOURCE POLLUTION

- The sanctuary should work on ways to incorporate or be mindful of activities going on upland of the sanctuary.
- Sanctuary should do more baseline monitoring especially in regards to invasive species and upland activities (examples: mineral extraction, logging, coastline development)
- Sanctuary should track and address stormwater runoff, upland erosion, and non-point source runoff pollutants because of their potential to have adverse impacts on the marine ecosystem.
- Near shore study needed to find out what type of land -use practices are used to impact Sanctuary resources: timber; future development; need baseline data.

- Work on land influences on marine ecosystems - the land connection, kelp etc.
- There is considerable deforestation along the south end of the OCNMS. I do not know of the OCNMS being part of the review process for any of this activity or notifying any property owner or subdivision that their actions have impacted the water runoff or water quality of the OCNMS - even in the cases where the trees have been completely removed from an adjacent mountain top or removed from the cliffs directly above the OCNMS.
- We would also like to see OCNMS have the ability to comment on land-based activities that affect the success of the Sanctuary in meeting its goals of ocean stewardship.
- OCA calls for increased research on the impact of Olympic Peninsula logging on sediment accumulation within the OCNMS and how this has affected kelp forests in the past and will affect restoration of kelp forests in the future.
- OCA recommends that the OCNMS increase research on bio-accumulative toxins in the Sanctuary. The deposition of toxins by air, water, and land into the west coast marine environment likely has significant long-term and cumulative impacts to the Sanctuary's biota and on the human populations that harvest Sanctuary resources for food. OCA encourages OCNMS to collaborate with other agencies to increase our knowledge of the build-up of these toxins in the Sanctuary's water and biota.
- OCA recommends that the OCNMS increase research on sediment from terrestrial sources. As outlined in the Kelp and Sea Otter section, monitoring of sediment pollution from terrestrial sources is an important under-researched topic potentially impacting Sanctuary biota and habitats.
- Coordinate with upland managers to assess and minimize impacts from upland activities, including the disruption of natural shoreline processes and stormwater run off.
- Coordinate with upland managers to assess and minimize runoff from roads and coastal development.

## 26. OCEAN LITERACY

- The sanctuary should develop a program or partner with existing programs/organizations for middle school kids to become involved with some element of the sanctuary (e.g., maritime heritage). This would help to connect the sanctuary to the state (and vice versa).
- The sanctuary should conduct more baseline monitoring within the sanctuary, including more public engagement through citizen science programs.
- Continue research and education about archeological work that has been done. That research should have a public education component.
- Outreach needs to be active and interactive to get kids interested. Take advantage of modern technologies to reach younger audiences, and to help translate science into something that is interesting and publicly digestible.
- The sanctuary should conduct HAZWOPER (Hazardous Waste and Emergency Response) training for its staff and Coastal Observation and Seabird Survey Team (COASST) volunteers.
- Develop programs for taking kids out on to the ocean.
- Human interaction – How do the fishermen impact the wildlife? Is there illegal shooting of wildlife? The sanctuary needs more education for the fishermen.
- Develop relationships and programs utilizing experiential learning with coastal school districts. This includes the Cape Flattery, Quileute, Taholah and Queets/Clearwater school districts. There is currently no interaction between the sanctuary and these school districts.
- The sanctuary should create hands-on activities with teens empowering them to learn more about the marine environment within the coastal school districts.
- The sanctuary should provide ocean science educational programs to the children on the Makah reservation and other schools like Clallam Bay.
- Help kids be more enthusiastic about education on areas such as sailing and fishing, and also visiting the sanctuary. To have practical experiences that can be built upon in back in the classroom.
- To have a good science mentoring program for the children.

- Ocean literacy- Build the future generation of protectors and stewards of our ocean.
- Increase public ocean literacy programs for community and K-12 (action item). Help people to be stewards of the ecosystem (underlying priority).
- Water's value and the connectedness to the ocean, one ocean that connects all of us.
- Water's value and the connectedness to the ocean, one ocean that connects all of us.
- The sanctuary should show that education efforts have had impacts on people's knowledge of the sanctuary. We need to define the metrics/benchmark/performance measures in order to measure effectiveness of education program.
- Use multiple jurisdictions in sanctuary as an opportunity to educate students about ocean governance and policy-making (in addition to science)
- A personal wish is that there was a way to access the stream of research that must be flowing and accumulating continually from the various projects undertaken by sanctuary staff and others. I can visualize the public perusing binders of reports at the public library. It would be a great resource for the high school, the college and the public.
- Please support Feiro Marine Life Center in their work to outreach to K-12.
- Improved education for our area school systems on the values of these areas and how to protect them
- I would also urge, as a part of education and outreach, best management practices for visitors and coastal residents on reducing the spread of invasives, as well as illustrating the impact of potential invasive species.
- I think you should enlist at least one school in each greater Puget Sound and Strait of Juan de Fuca school district, asking them to adopt a beach within their district and a beach within the sanctuary. Have each school set up an ongoing research project aiming to get to know the natural history and ecology of the somewhat pristine environments within the sanctuary and the somewhat altered beaches outside the protection of the sanctuary. A goal of such a plan would be to encourage schools to take actions at a beach within their area, hoping to set aside more public beaches with help from groups such as the Trust for Public Lands, People for Puget Sound, and the Nature Conservancy. You could use their Mudup project as a model for this.
- Another goal would be to help kids learn that even the pristine waters within the Sanctuary are under serious threats due to global climate changes and possible increase in acidity of all ocean waters. If they began monitoring water quality, they might help in this scientific monitoring and find ways of correcting problems at home while encouraging others to take action to save our oceans.
- My main encouragement is to do all you can to enlist the help of kids, not in any distance learning, but in real, hands on experiences within the Sanctuary. A good start would be within the poorest schools in places like Bremerton but also within schools with a high enrollment of Northwest Coast Tribal members so that you could also include First People perspectives in the projects they get involved with.
- As you go through your planning process, I would like to see a special group of coastal educators (local teachers, administrators and students) brought together to assist in this dimension of your new plan . . . It is common knowledge that our coastal school districts are terribly underserved . . . Teachers and administrators must become citizen coastal managers trained in your programs for students to become invested in the sound management of Washington's coast . . . I feel it is imperative that the Sanctuary become a major contributor to the education of our children along the coast.
- Monthly data collecting activities [should] . . . be established with website listing all need to know about various places that provide training, when the data collecting events are, and access to the data . . .
- Please continue OCNMS efforts to "HELP EDUCATE PEOPLE ABOUT THE WONDERS of PUGET SOUND & OCNMS MARINE LIFE and ways to protect that life (including accidental oil spill prevention techniques for ships within the OCNMS & creating MPAs)".

- I would like to see more programs that work directly with the schools so that children are more aware of the special gifts we have here at our local sanctuary.
- I hope the Sanctuary will continue to support marine science education for our tribal students.
- More or better public education could help improve the understanding of what the sanctuary is and what the sanctuary's capabilities are.
- The OCNMS needs to improve its' engagement with the public by coming up with an Ambassador program. Expand/extent the annual training you have for docents to include Ambassadors from your different Partners. . . Having the MEDIA on board will play well when you need the media to explain what is going on.
- The Sanctuary needs to prioritize a public outreach strategy that includes at minimum a quarterly electronic newsletter that is sent to the public as well as to the press, a regularly updated website with information about the latest Sanctuary research findings and education opportunities.
- We believe it is crucial for the Sanctuary to focus on public education. The Sanctuary could better educate the public about all ongoing and prospective programs, as well as provide advance notice of upcoming public engagement and comment opportunities.
- The Sanctuary could begin publishing a newsletter to enhance its public outreach and to provide better accountability of its activities
- Create hands-on activities for teens empowering them to experience while learning more about the marine environment.
- Facilitate improved adult education and interaction between rural and urban user groups.
- Update website to be more readily accessible to the public, providing timely information.
- Develop a Sanctuary newsletter that is published quarterly to expand outreach and education opportunities and account for Sanctuary staff activities.
- The sanctuary should work to improve public literacy of the marine environment.
- [Work with Olympic National Park to] educate visitors about the importance and fragility of marine resources, threats to them, and protection and mitigation measures to reduce impact.
- The Pacific Education Institute (PEI) was asked in 2006 by the Washington State Ocean Caucus to work with partners to develop a plan to strengthen K-20 ocean systems education. . . . PEI found Ocean Systems Curriculum should: 1. Develop ocean systems curriculum using existing, proven curricula resources available from local and national sources 2. Understand stakeholders' roles and responsibilities 3. Include Field Investigations in which students directly measure ocean system health indicators determined by the Oceans Policy Group. 4. Be based on civic participation, including problem solving through systems understanding and inquiry. Students should develop and implement stewardship projects that protect or enhance the marine environment. 5. Follow a performance or outcome based design that reflects what we want students to know and be able to do. The design will include recognized best practice of place-based learning involving inquiry and problem solving through real world projects. 6. Align ocean systems curriculum to state learning standards preparing students for WA Academic Student Learning Standards. 7. Incorporate credible assessments of student ocean systems literacy through curriculum benchmarks. We hope that the Olympic Coast National Marine Sanctuary will continue to work with the State's ocean educational partners on these objectives. Not only would we benefit from the continued involvement of the Sanctuary, but we believe that this partnership leverages the efforts of the OCNMS to reach more students with a deeper impact.
- Outreach offers an excellent opportunity to engage coastal users, organizations and coastal communities, including schools in partnership building efforts while increasing ocean literacy and appreciation for the Sanctuary.
- Develop interactive programs to engage school children that can be used in homes and schools throughout the U.S.
- Utilize modern technologies and social media to reach younger audiences: Utube, facebook, myspace, etc.
- WDFW sponsors programs like Project WILD and *Nature Mapping* in order to provide citizens the training and opportunity to gather data and help increase awareness of the current

environmental health and biodiversity within their communities. The National Project WILD curriculum educates K-20 teachers and students in eco-system health and functions. . . . The Mission of the WA Department of Fish and Wildlife is to protect and sustain fish and wildlife populations and conserve our precious natural resources. Public engagement and support is key in meeting this mission. We believe that the citizens of this state should work with us as co-managers of the WA flora and fauna. Citizen involvement should begin with our youth so they are prepared and empowered to help shape the direction of their communities throughout their lives. We hope that the Olympic Coast National Marine Sanctuary will continue to work with the WDFW and our educational partners in order to support this level of engagement.

## **27. PUBLIC & PRIVATE RESOURCE USE - COMMERCIAL DEVELOPMENT**

- The sanctuary should establish a cable corridor through the sanctuary for allowed use of laying cables. There is so much uncertainty in working with the sanctuary that cables are going in less advantageous areas. The sanctuary and tribes could work together to form a set of regulations for the corridor (and commercial interests could help in research and other management efforts).
- The ban on offshore oil and gas development should be continued.
- In the next 5 to 10 years, the sanctuary should put forth some positions on how it would entertain offshore development in the sanctuary (e.g. wave power, wind, tidal, other alternative energies).
- The sanctuary has to be protective of the resource from the National Oceanic and Atmospheric Administration's promotion of offshore aquaculture in terms of introduced species, diseases, and conflicts with wildlife.
- Research of the impacts of new ocean energy technology (wave energy) should be studied elsewhere before being used in the sanctuary. Those impacts should be explored outside the sanctuary first.
- The sanctuary should research wave energy technology and do the study inside the sanctuary.
- The sanctuary should take a precautionary approach to any alternative energy development proposals within the sanctuary given the significance of the sanctuary – especially since this has never been done in any other sanctuary before – because it could become precedent.
- Sanctuary should prioritize developing a permitting process for exploitive technologies that are emergent and pressing on society. The sanctuary should work with the public to develop such permitting goals.
- Promote alternative energy such as wind and wave (as a fork in the road to offshore to oil and gas development).
- Would like to understand better the compatibility of wave energy projects (alternative energy projects generally) with the mission of the sanctuary. Clearly define criteria in advance of development within the sanctuary. Consider alternatives for commercial development within the sanctuary in environmental analysis.
- The sanctuary should continue looking at research into the impacts and feasibility of wind, wave and tidal energy production.
- The sanctuary should be proactively involved with assessment, monitoring and mitigation of impacts of alternative energy development in the sanctuary, including interfacing with the Federal Energy Regulatory Commission (FERC) and participating in regulatory processes associated with alternative energy development.
- Concerned about wind and wave turbines. The sanctuary should research the impacts of these projects, and understand impacts to users.
- Wind/wave energy projects: concerned about effects on nutrient flows, and effects to sand flow. The sanctuary should address this.
- Grayland fishermen do not want to see offshore wind turbines.
- Concerned about potential loss of area access from wind/wave energy projects.
- Sanctuaries should maintain that no offshore drilling should occur within their boundaries.
- The sanctuary should promote wave-energy research and the capturing of that energy because of current and future energy needs.

- Given climate change, it is important for the sanctuary to be open to the alternative energy industry and the sanctuary needs to engage industries in a continual dialog and find a way to make things work compatibly.
- Tribal council should have had a study done about minerals to see what they were giving up when the sanctuary was created. They need fair representation of what they are giving up if they are not going to be allowed to mine in the ocean. Is there a legal right to the minerals for the tribal members? Do they have minerals to the low tide mark or all the way to the 3-mile state waters limit?
- The sanctuary should support a study to find out how much minerals (lead, mercury, precious metals ...) are present in coastal areas. The tribe needs more knowledge of what is there as resources. What is the sanctuary's position on minerals mining as it relates to the existing regulations?
- Jobs are an issue here – people of Neah Bay need diversification and minerals mining could be one of the ways to do this. The state of Washington is the most prohibitive of the 5 northwest states with respect to minerals extraction because they are over-protective of the fisheries.
- The sanctuary should allow permitting for the exploration and extraction of minerals (such as oil or gas) from areas adjacent from sanctuary, i.e., angular or slant drilling, if it doesn't hurt sanctuary resources.
- The sanctuary should work from a research-based approach to address commercial development impacts such as wave energy.
- The sanctuary should not allow the exploration of minerals, oil and gas if it is going to degrade natural resources within the sanctuary. There is concern that slant drilling or angular drilling could contaminant ground water or other resources, it may be a slow process of contamination over the generations. The sanctuary should consider not only this current generation but the children and their children's generation.
- Research and the potential uses of ocean for energy. Wave energy, other potential alternatives - plusses and minuses of each. Issue – the implications of developing alternative energy compatibility.
- The sanctuary should take the lead in research on harnessing energy from the ocean: ocean energy should be appropriate for the area and the sanctuary should help guiding this issue.
- Recognizing potential for wave and/or energy, and other development. Does it make sense in the sanctuary? Programmatic EIS for wave energy
- What are going to be the cumulative effects of wave energy buoys? How will these buoys affect what lives in the sanctuary?
- The apparent ineffectiveness of the existing management plan in protecting the sanctuary resources from 1) the likely expansion of the Navy's test range into the sanctuary, 2) the unknown effects of the experimental wave-energy project, 3) destructive fisheries
- We encourage the Sanctuary's updated management plan to consider strategies for reducing, mitigating, or preventing ocean development activities that may impact the marine environment and sanctuary resources. Any proposed ocean development activity must be thoroughly evaluated and only proceed if it can be conducted in a manner that is compatible with the resource protection goals of the sanctuary. Evaluation and planning for any proposed ocean development activities should include: Protection of Important Ecological Areas; Representation of the local communities, subsistence and other cultural uses, and their needs; Identification of the best available technology needed to ensure development activities can be conducted without harming the ecosystem or traditional cultural uses; Clear demonstration that development can be conducted without harming the health, biodiversity, or resilience of the ecosystem; Investment in research, monitoring, and technological development and safeguards; Revenue sharing to ensure that local communities benefit from any offshore development activities and that a substantial portion of the revenues are dedicated to science and monitoring; and Adaptive management.

- With increased interest in marine energy generation utilizing wind, wave or tidal options, it will be important to evaluate any such programs from the perspective of preserving Sanctuary resources.
- Evaluate human activities, including proposed development projects for ecosystem wide effects and cumulative impacts.
- If NOAA control of the OCNMS would ever come back to a reasonable approach to submarine cables there would be interest by a few more international cables to route into the Straits of Juan de Fuca. But completely absence of any data or science the managers of the OCNMS have basically eliminated the ability of any cables to transit its area. But it is OK for trawlers to operate there and the Navy to do what it pleases.
- I think it is important to prohibit new industries from endangering the environment, i.e., wind and wave energy devices and oil drilling.
- Prohibit offshore aquaculture in the Sanctuary to protect existing wild fish stocks from disease and genetic pollution from farmed fish escapes.
- No aquaculture farms or operations should be permitted anywhere in or near the sanctuary.
- Wave-energy projects should be allowed if the developers show that they will cause little or no damage to the ecosystem.
- We urge the banning of offshore oil and gas drilling. We also reserve judgment, as should NOAA -- especially in our sanctuary, on other energy projects (wind, wave, tidal, or carbon sequestration), until from "cradle to cradle" these industries demonstrate they are safe for the sanctuary environment, its marine life and the dependant wildlife. Governments overseeing our commons must stop advocating for privatization of the single most essential resource for life on this planet.
- Open-ocean aquaculture should not be allowed in the OCNMS. We are a co-signer on the "International Declaration Against Unsustainable Salmon Fish Farming". (Attached) Therein are well developed reasons for opposing this industry, and particularly within a sanctuary.
- OPA also supports the recommendations of OCA to monitor, regulate, and prohibit energy projects, including alternative energy, oil and gas exploration, or future ideas to generate energy that would conflict with the goals of the Sanctuary to protect its ocean habitat.
- Off-Shore Energy Development: PPF strongly urges banning offshore oil and gas drilling.
- Open-ocean aquaculture should not be allowed in the OCNMS. The polluting impacts of this industry, both processing and environmental and human health impacts, are well cited in the literature. . .
- If suitable locations are not available outside the Sanctuary, consider requests to conduct wave energy and other power generating research only where and to the extent that Sanctuary resources would not be compromised.
- The Sanctuary should formally oppose the citing of offshore aquaculture within the boundaries of the Olympic Coast National Marine Sanctuary. Rearing of high trophic level species requires considerable feed and results in significant amounts of nutrients added to the environment. In addition, large offshore pens serve as an attractive nuisance to marine predators and pose the risk of spreading disease to wild stocks as well as for the potential of biological pollution from escapees.
- Increase transparency of Sanctuary actions which include comments toward proposed industries within our Treaty Area, such as wave energy.
- OCA calls for a permanent ban on offshore oil and gas drilling and any other energy project (wind, wave, tidal, or carbon sequestration) within the Sanctuary that has not been approved as of January 1, 2008. OCA recognizes the need for energy, but also asserts that the OCNMS and its associated ecosystem are too precious for exploitation.
- If a complete ban is not adopted, OCA requests that the OCNMS play a major role in the permitting, siting, and monitoring of any energy facility, up through and including the removal of the project from Sanctuary waters. OCA calls for ecosystem wide review of the impact of any energy project within or adjacent to OCNMS waters.

- If a complete ban is not adopted, OCA calls for bonding of sufficient funding from any energy producer to pay for monitoring, operation, maintenance, removal, and remediation of any energy project within the OCNMS. OCA believes that the land, air, and water within the OCNMS are the property of the public and that bonding funds need to be set aside by energy producers for the true and actual cost of any project, whether it is construction, maintenance, monitoring, or removal. These funds should not come out of the General Fund or special appropriation, and should be paid for on an “up-front” basis by the energy producer.
- If a complete ban is not adopted, OCA calls for a ban on seismic and sonar testing associated with any energy project in or adjacent to the OCNMS. OCA encourages potential energy producers and the federal government to use best available technologies that do not cause harm to mammals or other marine life.
- OCA calls for a ban on all open-ocean aquaculture within or adjacent to the OCNMS.
- Clearly define criteria in advance of permitting alternative energy projects, such as wave energy development within the sanctuary.
- Play a critical role in the siting, design and development of these [alternative energy] projects to ensure that impacts to the ecosystem are minimal.
- Require careful monitoring [of alternative energy projects].
- Require complete removal of all associated [alternative energy] structures by the developers.
- Identify potential effects from any proposed offshore drilling that would affect Sanctuary waters.

## **28. PUBLIC & PRIVATE RESOURCE USE - COMPATIBILITY ANALYSIS**

- Research of the impacts of new ocean energy technology (wave energy) should be studied elsewhere before being used in the sanctuary. Those impacts should be explored outside the sanctuary first.
- The sanctuary should research wave energy technology and do the study inside the sanctuary.
- Sanctuary should establish a process for determining priorities among the multiple uses of the sanctuary.
- Describe and map various human uses that occur within the sanctuary that include commercial and recreational activities, and ultimately regulate what activities are allowed to occur within the sanctuary and where they are allowed to occur.
- Promote site specific sanctuary definitions for compatible human uses in the context of what is sustainable. Is the sanctuary’s mission conservation or is sustainable management achieving conservation? How do we sort out whose mission has priorities when preempting another agencies priorities. How do we determine if it’s needed, how do we determine if it is feasible with other sanctuary mandates and is the expertise in house to do so? Are there other more efficient alternatives to address specific concerns? This needs to be clearly defined through a public process including interagency and intergovernmental engagement.
- Would like to understand better the compatibility of wave energy projects (alternative energy projects generally) with the mission of the sanctuary. Clearly define criteria in advance of development within the sanctuary. Consider alternatives for commercial development within the sanctuary in environmental analysis.
- For ecosystem-based management, the sanctuary should determine compatibility of human activities with habitat types.
- The sanctuary should be very proactive in the review of all permit proposals for wind and wave energy, aquaculture and oil drilling to ensure that the sanctuary resources are protected.
- The sanctuary should work together with the state, counties, port authorities, and the tribes to expand knowledge of habitat characterization. Collecting the data would help other initiatives such as siting of wave energy structures, ecosystem assessments, protection of essential fish habitat, etc ...
- The sanctuary should support best science and research to inform decision-making on the issue of cable laying, drilling, wave and wind energy siting.

- The sanctuary should be part of the decision-making (permitting, etc...) for all of these issues mentioned above even if it can't prohibit/regulate any of them.
- There is an issue of overcrowding of commercial/industrial ocean uses outside of the sanctuary boundaries.
- Ecosystem protection: Assess areas in the sanctuary for commercial development including wave energy projects for risk analysis, however aquaculture also applies.
- The sanctuary should be off limits to corporate interests. What is the purpose of the sanctuary if it allows all types of development?
- Research and the potential uses of ocean for energy. Wave energy, other potential alternatives - plusses and minuses of each. Issue – the implications of developing alternative energy compatibility.
- Recognizing potential for wave and/or energy, and other development. Does it make sense in the sanctuary? Programmatic EIS for wave energy
- It's not clear to me how the National Marine Sanctuary system addresses trade-offs among your many worthy goals. Do you take a multiple-use approach in which all legitimate uses must be balanced against one another? Or do you take a more hierarchical approach to goals, as the National Wildlife Refuge System has taken since 1997? I would like to see an explicitly hierarchical approach to the goals in your planning process. In this approach, ecosystem management goals would take priority, and would have to be met before other goals could be pursued.
- Jointly [identify] important threats to those resources, both operating now and in the likely future due to human and natural impacts
- Jointly [identify] strategies for compatible management and uses in the sanctuary
- The management plan should incorporate the use of spatial planning as a tool to allow human activities to take place in zones where marine life can withstand the resulting human impacts. Zoning prevents user conflicts by separating activities that are incompatible with each other, and protects biodiversity by prohibiting disturbance in vulnerable habitat. The sanctuary should review the experiences of existing zoning efforts, such as Australia's Great Barrier Reef Marine Park, and integrate applicable lessons into the management plan.

## **29. PUBLIC & PRIVATE RESOURCE USE - RECREATIONAL OPPORTUNITIES**

- A combined impact to the OCNMS from vehicles and development is the removal of natural light from the beaches. There are considerable impacts from flood lights, street lights and vehicles on the natural beach environment.
- The beaches of the OCNMS are being impacted by all nature of human activity. There is an effort to allow commercial horse riding companies to use the beaches south of Joe's Creek year round. This means horse manure being churned up in the tidal flows and spread across the beaches. Please take a position to prevent commercial activities of this nature.
- The sanctuary should recognize Neah Bay to Tatoosh Island as that best part of the sanctuary where recreational SCUBA diving does occur. And that the sanctuary should manage that part of the sanctuary to increase population levels of the longer-lived rockfish such as canaries, tigers and China rockfish. Work in cooperation with the Washington Department of Fish and Wildlife (WDFW) and the tribes to promote watchable wildlife.
- Oyster farming, fishing, crabbing... How can we enhance and maintain those commercial and recreational industries within the sanctuary? The sanctuary should be proactive in seeking out issues related to this and help protect those industries.
- I have never been to Neah Bay, But would love to Dive there. I am interested in helping .
- I have been diving since 1971 and Neah Bay is the best diving I've done in the United States. That includes Hawaii and territories like Guam and the Virgin Islands. Please protect the area for us.
- I hope, in managing this resource, that you will take into account the needs of all users and residents in the area. We need only look to the north to Canada, and see how they have cultivated and managed diving resources, and how much enjoyment and education that brings to the diving

community, as well as the millions of dollars of revenue that those divers bring with them. Washington state would do well to manage our resources sustainably, while realizing the many recreational, educational and economic benefits that they bring.

- I would also like to express support for managing the Strait of Juan de Fuca portion of the sanctuary from a Watchable Wildlife perspective for scuba divers, enhancing the recreational and economic (tourism) benefits of these underwater resources.
- WHILE I ONLY HAVE 2 DIVES THERE.THE VARIETY AND AMOUNT OF LIFE THERE IS ASTOUNDING. THE ONLY AREA I CAN COMPARE IT TO WOULD BE QUADRA ISLAND, BC. THE AREA SHOULD BE PROTECTED FOR ALL TO SEE
- I had the opportunity to visit Neah Bay for the first time about 2 months ago. How wonderful to have such an amazing place to dive that is so close! I look forward to many dive-related visits to the Neah Bay area in the future!
- Rockfish, as a major recognizable member of coastal bottom communities, are sought by non-fishing recreational divers. The Makah Tribe can profit by encouraging and catering to this segment of the diving community.
- . . . I enjoy visiting the many dive sites that are within the Olympic Coast National Marine Sanctuary. The ones located within the Strait of Juan de Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is one of the few places in all of Washington State that scuba divers have a good possibility of encountering Tiger, China, Yellowtail, Black, Canary, Yelloweye and Blue Rockfish. The numbers of these fish are declining rapidly and need to be protected and better managed. . . .Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective. . .
- Please approach management of the Sanctuary (parts of Strait of Juan de Fuca, Tatoosh Island, Duncan Rock...) from a "Watchable Wildlife" viewpoint! Many divers enjoy these areas as a place to view rockfish and other long-lived species. . . this incredible living resource must be protected and managed so that future generations can continue to enjoy what we are so fortunate to have today.
- . . . I enjoy visiting the many dive sites that are within the Olympic Coast National Marine Sanctuary. The ones located within the Strait of Juan De Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is one of the few places in all of Washington State that scuba divers have a good possibility of encountering Tiger, China, Yellowtail, Black, Canary, Yelloweye and Blue Rockfish. The numbers of these fish are declining rapidly and need to be protected and better managed. . . Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective
- Please include SCUBA divers in your "Watchable Wildlife" management plans as far as safe and secure access along with general conservation interests.
- . . . I enjoy visiting the many dive sites that are within the Olympic Coast National Marine Sanctuary. The ones located within the Strait of Juan De Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is one of the few places in all of Washington State that scuba divers have a good possibility of encountering Tiger, China, Yellowtail, Black, Canary, Yelloweye and Blue Rockfish. The numbers of these fish are declining rapidly and need to be protected and better managed. . . .Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective
- As one who has done diving in the vicinity of Neah Bay on the mouth of the Strait of Juan De Fuca, there is a concern about the amount of rockfish being taken from those waters. . . Now from recent counts by other divers working with REEF as fish surveyors, the fish count has gotten to a point where these particular fish now need protection. . . This whole marine area is special, as a dive site and as a continuation of our own natural marine heritage. It needs more recognition and respect as being important rockfish habitat. It should be guarded from any mass depletion of fish, whether the fish are being taken by sport divers or by commercial fishing or by sports fishermen.
- I am writing to express my support of management of the Olympic Coast National Marine Sanctuary for wildlife-watching by recreational scuba divers.

- The Olympic Coast National Marine Sanctuary is one of the few places in all of Washington State--and the entire west coast-- that scuba divers have a significant possibility of encountering Tiger Rockfish, China Rockfish, Canary Rockfish and other long-lived rockfish species while diving. Please make it a priority to take a leadership role working with WDFW and the tribes to ensure that rockfish populations within OCNMS are managed appropriately to keep viable populations in the littoral zone (less than 130 feet).
- Please consider ways that OCNMS can partner with WDFW to help Washington State IMPROVE - Environmental Tourism - Nature Tourism - Ecotourism in or near the OCNMS.
- . . . I enjoy visiting the many dive sites that are within the Olympic Coast National Marine Sanctuary. The ones located within the Strait of Juan De Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is one of the few places in all of Washington State that scuba divers have a good possibility of encountering Tiger, China, Yellowtail, Black, Canary, Yelloweye and Blue Rockfish. The numbers of these fish are declining rapidly and need to be protected and better managed . . . Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective. . . Without protecting these areas in Neah Bay you are removing something that many people are able to enjoy.
- Many species of rockfish (Blues, Blacks, Yellowtails, Chinas, Tigers, Yelloweyes and Canaries) are a big attraction for divers to view underwater. Unfortunately, without some protection, these resources are quickly disappearing. I have serious concerns about the sustainability of these long-lived rockfish species. . . Please protect these species and truly be a SANCTUARY for these fish! Sound management practices can ensure that future populations will be around for both recreational fishermen, as well as "Watchable Wildlife" for divers.
- Consider creating the stretch from Koitlah Point eastward to Cape Flattery a special reserve for Watchable Wildlife.
- . . . I enjoy visiting the many dive sites that are within the Olympic Coast National Marine Sanctuary. The ones located within the Strait of Juan de Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is one of the few places in all of Washington State that scuba divers have a good possibility of encountering Tiger, China, Canary, Yelloweye and Blue Rockfish, as well as other long-lived rockfish species. Divers are also able to view rare hard and soft corals, hydrocorals and unique sponges while diving. Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective. . .
- . . . I enjoy visiting the many dive sites that are within the Olympic Coast National Marine Sanctuary. The ones located within the Strait of Juan de Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is ONE of the few places in ALL of Washington State that scuba divers have a good possibility of encountering Tiger, China, Yellowtail, Black, Canary, Yelloweye and Blue Rockfish. The numbers of these fish are declining rapidly and need to be protected. Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective so scuba divers from around the state, nation and world have a place within Washington where these long-lived rockfish , other species of fish and invertebrates can be seen, PHOTOGRAPHED and enjoyed for many years to come.
- I would also urge you to manage the reserve to expand scuba diving opportunities in the area. . . if the communities of Port Angeles and other surrounding areas latched on to providing more services and charters for SCUBA diving- one can only imagine the economic multiplier . . .
- KDA would like to see an accessible shipwreck MPA Underwater Park created within OCNMS for Scuba Diver ECO-TOURISM, similar to what our British Columbia neighbors have done with 366 foot ex-HMCS Canadian Destroyer Escort Shipwreck Parks <http://www.artificialreef.bc.ca/>.
- Tiger, China, Yellowtail, Black, Canary, Yelloweye and Blue Rockfish have been reported as declining rapidly and should be protected within Marine Protected Conservation Areas for Scuba Diver ECOTOURISM within the OCNMS near accessible dive sites (such as Tatoosh Island and Duncan Rock).
- Please manage reasonably accessible scuba diving sites that are within the Olympic Coast National Marine Sanctuary, such as the Strait of Juan De Fuca, Tatoosh Island and Duncan Rock

from a "Watchable Wildlife" perspective so that scuba divers from around the state, nation and world have a place within Washington where long-lived rockfish and other fish and invertebrate species can be seen, photographed and enjoyed for years to come.

- The dive sites located within the Strait of Juan de Fuca (and Tatoosh Island and Duncan Rock) are in the only portion of the Sanctuary easily accessible by scuba divers. This is one of the few places in all of Washington State that scuba divers have a good possibility of encountering Tiger, China, Canary, Yelloweye and Blue Rockfish, as well as other long-lived rockfish species. Please manage this portion of the Sanctuary from a "Watchable Wildlife" perspective so that scuba divers from around the state, nation and world have a place within Washington where these long-lived rockfish and other fish and invertebrate species can be seen, photographed and enjoyed.

### **30. PUBLIC & PRIVATE RESOURCE USE - SOCIOECONOMIC VALUES & HUMAN USE**

- A combined impact to the OCNMS from vehicles and development is the removal of natural light from the beaches. There are considerable impacts from flood lights, street lights and vehicles on the natural beach environment.
- The beaches of the OCNMS are being impacted by all nature of human activity. There is an effort to allow commercial horse riding companies to use the beaches south of Joe's Creek year round. This means horse manure being churned up in the tidal flows and spread across the beaches. Please take a position to prevent commercial activities of this nature.
- What is ecosystem management? Goal should be: Protecting the oceans resources and fisheries while maintaining the fisheries that depend on these resources.
- Describe and map various human uses that occur within the sanctuary that include commercial and recreational activities, and ultimately regulate what activities are allowed to occur within the sanctuary and where they are allowed to occur.
- The sanctuary should have awareness for other activities within the sanctuary other than recreation and commercial, but to include traditional cultural activities. To be more active in public awareness specific to the site.
- How much do we know about resources (species and habitats); what are important resources to local communities? The sanctuary should fill in data gaps and find ways to work collaboratively to manage, protect, and sustain uses on shared priorities.
- Sanctuary should continue its objective of multiple uses within its boundaries. The Office of Marine Sanctuaries should maintain this focus. Diversity of use is important to local communities. It maintains engagement of a greater portion of society with sanctuary program, and has economic benefits (e.g., contributes a significant portion of local economies).
- Concerned about wind and wave turbines. The sanctuary should research the impacts of these projects, and understand impacts to users.
- The sanctuary should acknowledge that the sanctuary is not only a protected area but also where people make a living and an important economic source for local communities. This needs to be reflected better in the information published by the sanctuary.
- The sanctuary itself should remain accessible to the public.
- Fisheries and the sanctuary can co-exist – it is not a negative thing, but a positive thing and this needs to be publicized.
- Like to see protection of traditional fishing (all species) at economically feasible and sustainable level.
- The sanctuary is in unique position to review pitfalls and problems of marine reserve initiatives at California sanctuaries to avoid repeating mistakes. Sanctuary needs to work with all entities involved to develop common goals and objectives, work with PFMC, state, and tribes more effectively.
- Management of sanctuary should be based on the area/community needs not directives from Washington DC.

- Oyster farming, fishing, crabbing... How can we enhance and maintain those commercial and recreational industries within the sanctuary? The sanctuary should be proactive in seeking out issues related to this and help protect those industries.
- What I would like to come out of the management plan is a shared/joint understanding of what the sanctuary should be. As we revise the management plan, we need to be cognizant/respectful/reflective of the specific needs on the WA coast.
- The sanctuary should be protected as much as possible in conjunction with peoples needs. There is a balance that needs to be maintained.
- Economy is not doing very well. Make the peninsula a center for marine oceanography. Need for tourism, kid camps, etc that are focused on marine resources. Promote peninsula for marine research and a center for marine study. If National Oceanic and Atmospheric Administration (NOAA) based in Port Angeles, it would be a great opportunity to promote entire peninsula for marine resources. Need for integrated effort to promote marine research and tourism.
- The needs of the tribes need to be heavily considered especially when it comes to fishing.
- Need balance between protection and fishing rights. Respect fishermen and the economy, and protect natural resources, at the same time.
- Take has always been contemplated statutorily within national marine sanctuaries. The sanctuary is not a reserve; it is not a national park.
- There continues to be considerable use of the beach environs as transportation by motorized vehicles. While it is the policy of the State of WA to designate the beaches as "highways", there is no enforcement, no standard road signs for speed, no protection for pedestrians (four or two legged) from vehicle aggression and any vehicles that get stuck in the sand are left to sink. There are considerable photos of these events and the debris is now bleeding or leaching by-products into the waters of the ONCMS. I have never heard of the State of WA, the OCNMS or any county - issuing any fine or violation of the beach environs by abandonment of vehicles.
- Marine Sanctuaries are vital to supporting and maintaining the animals, plants, and shoreline ecosystems. These ecosystems are necessary to support the habitats, economy and quality of life that we depend on here in the Pacific Northwest. . .
- Educate the public on existing partnerships and how they are envisioned to work, perhaps by starting an outreach campaign and developing public education materials, in coordination with the Tribes, explaining the importance of marine resources for the Coastal Tribes, what is the Trust Responsibility and how the Sanctuary meets and maintains its Trust responsibilities to the Coastal Tribes.
- Develop a better working relationship with commercial fishermen and allow for new economic development opportunities.
- [U]nderstanding baseline conditions, ecosystem functions, and status and trends of biological and socioeconomic resources to effectively inform management should be a priority.
- Assess and monitor human uses within the Sanctuary.

### **31. REGULATIONS, PERMITTING & ENFORCEMENT**

- The sanctuary should weigh in more on state legislation in Olympia – in committee hearings.
- Sanctuary should prioritize developing a permitting process for exploitive technologies that are emergent and pressing on society. The sanctuary should work with the public to develop such permitting goals.
- Sanctuary should offer more protection of anthropological and maritime heritage sites within the sanctuary.
- Use permitting authority to structure and coordinate research.
- The sanctuary should implement an immediate ban on actions that have damaged resources of sanctuary. Protection of resources should be the primary role of sanctuary management, and action should occur immediately. Naval testing and damage to corals are examples where this is needed.
- The sanctuary should be proactively involved with assessment, monitoring and mitigation of impacts of alternative energy development in the sanctuary, including interfacing with the Federal

Energy Regulatory Commission (FERC) and participating in regulatory processes associated with alternative energy development.

- Sanctuary should resolve conflicts based on best available science.
- Enough protection without sanctuary – do prevent oil drilling
- No justification for sanctuary
- Concerned about federal offshore oil and gas moratorium being lifted.
- The sanctuary should be proactive in the issues of cable laying, drilling, wave energy and wind energy siting. These activities should not occur in the sanctuary. This comes from the negative experience with the cable laying in the sanctuary (damages, efforts in fixing the impacts, etc...).
- The sanctuary should be part of the decision-making (permitting, etc...) for all of these issues mentioned above even if it can't prohibit/regulate any of them.
- The sanctuary should be a centralized data gathering body for all research related to the sanctuary. Permits should require researchers to bring their data back to the sanctuary.
- The sanctuary should support a study to find out how much minerals (lead, mercury, precious metals ...) are present in coastal areas. The tribe needs more knowledge of what is there as resources. What is the sanctuary's position on minerals mining as it relates to the existing regulations?
- Permits needed – not just cooperation issue but may be culturally sensitive area
- Need for time to do studies that need to be done before more restrictions are put in place and receive courtesy copies of studies done. More available data sharing: reauthorization bill for the National Marine Sanctuary Act?
- Maintain the ban on offshore drilling.
- In the new management plan, the regulation of fisheries should not be authorized. Continue the same management plan action as the one in 1994 with regards to fishing.
- I am really opposed to whaling in the sanctuary. It is contrary to the sanctuary's mandates. The sanctuary needs to protect marine mammals.
- While it may not want to get involved in helping to determine catches, the Sanctuary should prohibit damaging fishing techniques within its boundaries, such as bottom trawling.
- I am sorry to report that you continue to fail control of the low flying aircraft in the OCNMS. Airplanes and the occasional helicopter regularly turn off the beach environs to the east flying just over our subdivision. It is commonplace to see aircraft fly below the 80' elevation of our home when the flight floor is 3000'. Why do you not set up a monitoring station in the area cliffs? This could be temporary or automated. Does the OCNMS issue regular warnings to airports in Western Washington, Oregon and British Columbia? Why do you not close the Copalis airport that is on the beach, in the OCNMS and has been there since WWII? Low flying aircraft do touch downs right over the spit that is a nesting and habitat area. Why will the Navy not give you access to its radar?
- My primary residence is just South of Pacific Beach, WA. about 1000' feet from the cliffs of the OCNMS and 80' above its waters. Over the past nearly two decades, I have witnessed a tremendous amount of abuse on the Sanctuary and its resources. I feel that the Sanctuary and other U.S. Government agencies could address this issue with coordination.
- On a regular basis there are breaches of the 3000' ceiling that is meant to protect the OCNMS. My home is at 80' in the cliffs and it is common place for small planes and helicopters to fly below the cliffs. While I have called the local law enforcement offices they refer me to the FAA who is not available on the weekends. There are no managers at the airport between Olympia and the beach environs so there is no responsible part to contact. I have yet to hear of any attempt by agencies to shut down the airport. The sanctuary should enforce the flight floor by using monitoring stations, press or notices to airports or pilots, or intervention by radar available from the Pacific Beach Navy Base.
- There continues to be considerable use of the beach environs as transportation by motorized vehicles. While it is the policy of the State of WA to designate the beaches as "highways", there is no enforcement, no standard road signs for speed, no protection for pedestrians (four or two

legged) from vehicle aggression and any vehicles that get stuck in the sand are left to sink. There are considerable photos of these events and the debris is now bleeding or leaching by-products into the waters of the ONCMS. I have never heard of the State of WA, the OCNMS or any county - issuing any fine or violation of the beach environs by abandonment of vehicles.

- Stiff fines for violators causing adverse impacts
- Not sure if it is possible, I imagine it depends on resource issues and safety, maybe allow permits for eco-tourism under certain conditions and only if it doesn't create adverse impacts
- Ban cruise ship discharges, similar to protections adopted in northern California Sanctuaries. Given the increase in harmful algal blooms and dead zones off the Washington coast, this action is critical.
- Increasing the size of the sanctuary and strict enforcement of existing limitations will be the keys to maintaining this area as an educational highlight for the public, divers and non-divers both.
- No motorized boats should be allowed in the sanctuary, other than rescue vessels or cases of emergency. And certainly, no ships should be allowed to discharge into the sanctuary.
- The non-regulatory benefits of enhanced coordination and education due to Sanctuary designation are often promoted as being more important than the regulatory ones. Clearly more can be done to fulfill this basic program mandate in Washington.
- The Olympic Coast Sanctuary should utilize the findings from the recently completed EIS for the Northern California Sanctuaries to similarly ban all vessels greater than 300 gross tons from discharging their grey and black water within Sanctuary waters.
- Improper use of the Copalis Beach aircraft landing area (beyond designated area) is a safety hazard for beach pedestrians and causes disturbance to wildlife. The sanctuary should work with the FAA, WDOT, and WSPRC to regulate the area and restrict beach use by aircraft to the area within 4,500 feet north of the Copalis River. Consider limiting its use to emergency situations.
- Address any changes in resource management as a result of actions taken by the Sanctuary subsequent to the regulations that were part of the initial 1994 designation.
- The MTC insists that fishery regulation authority be retained within existing management processes and not duplicated within the regulatory scope of the Sanctuary. No circumstances have arisen since 1994 that warrant such a change in fishery management authority. The Pacific Fishery Management Council (PFMC) provides an efficient and effective public forum for dealing with ocean fishing management and essential fish habitat issues. This process has proven both responsive and precautionary in dealing with emerging issues.
- OCA calls for regulations that prohibit harvesting of kelp forests within the OCNMS. Additional regulations are also needed to prevent degradation of existing kelp forests from other current and future Sanctuary uses such as fishing, military testing, wave energy generation, and sea floor disturbance.
- OCA requests that there be better monitoring and enforcement of current policies that mandate negligible impact of sound on marine mammals in the OCNMS.
- Additional Sanctuary regulations to reduce risk. The Sanctuary could consider regulating, where appropriate, to reduce risks from vessels operating within the ATBA, such as fishing vessels that could pose the risk of both large-scale spills and chronic small spills.
- The sanctuary should provide consistent regulations with the northern California sanctuaries in regards to the banning of discharges from cruise ships.
- Management plan should incorporate enforcement and surveillance needs.
- Work with other sanctuaries on the West Coast to research cruise ship dumping and pursue other opportunities to reduce this dumping in the Sanctuaries.
- Consistency between west coast sanctuaries with management of cruise ship discharges which may influence water quality.
- The Navy should not be conducting exercises in the sanctuary.
- The Navy should not be doing target practice in the sanctuary because it has impacts on birds and marine mammals.

### **32. RESEARCH TO SUPPORT ECOSYSTEM MANAGEMENT**

- Research within the sanctuary needs to shift. Currently, research is focused on certain charismatic species. Monitoring should occur more on the community level (not just on certain species).
- A priority should be the scientific research and the data collected, including ecosystem parameters that the biological resources rely on, effects of pollutants from Puget Sound; water quality research, oceanic processes, dissolved oxygen and CO<sub>2</sub>.
- Archeological sites contain information that can be used to understand the ecology of present systems which could help us with resource management (e.g., look at things in the past before management issues such as overfishing were occurring).
- Prioritize the research of cultural history from the period when sea level was low to help in the understanding of long-term change (cultural and natural history components).
- Reconstruct the trends in ecosystem change and human use over time.
- The sanctuary should consider that habitat mapping data should support other ecosystem objectives, and not just support sanctuary or rockfish needs.
- The sanctuary should initiate a stakeholder process to develop a shared set of species and habitats to be evaluated. Determine the conditions of those species and habitats and jointly develop strategies to protect them. Leverage partnerships and identify gaps.
- A program to monitor the interspecies dynamics of increased abundance warm water species such as tuna and pelican. How are these changes affecting the ecosystem and what are these species eating (stomach contents analysis)?
- The sanctuary should pursue a policy of ecosystem-based management, which should focus on interaction of all elements of ecosystems, including humans as element of the system.
- Monitoring program for near shore buoys should be expanded to record plankton and other water quality parameters at depth. Surface monitoring currently conducted does not fully address data needs, especially to identify issues such as ocean acidification.
- More research on indicators of ocean health. Examples: eelgrass, kelp forests, reefs.
- Need to know more about fishery resources to manage them sustainably.
- Key data needs are oceanographic and biological processes, for example larval transport, sink locations, habitat requirements.
- Fishery stock assessment studies should focus on species-habitat associations and depth preferences and differences in timing, tidal cycles, seasonal factors, etc. Stock assessments as now conducted do not accurately account for these preferences.
- Need to develop long-term monitoring and characterization program for marine resources within sanctuary utilizing ecosystem based management approach – full life cycle of organisms and habitat associations.
- The Pacific Fisheries Management Council (PFMC) and National Marine Fisheries Service (NMFS) northwest fishery science center have long-term research plans. These plans should be reviewed by sanctuary to potentially form partnerships for research. In the past they focused on single species and stock assessment. In the new research plans, they must ask whether there are regional differences in the stocks (where the fish lives, migrates, etc) when doing stock assessment. Now they need to ask “Is there a reason to manage stock differently in different regions?” The sanctuary should make sure that there is communication with fisheries researchers and that resources and data can be pooled together to help further our goals. What makes the sanctuary special may create various habitats for different stocks of fish. The sanctuary can help fisheries managers with refining regional differences within stocks.
- More ecosystem protection assessment of dynamics – impacts by climate change, human interaction, natural variation – create baselines of species, and habitat (coral, kelp)
- Conduct ecosystem inventory and assessment and analysis by the Intergovernmental Policy Council (IPC) and the sanctuary. There is currently a lack of data and data integration.
- Support the development of new technologies to investigate marine ecosystems structure and function.

- The sanctuary should act as a science based advisory panel and not implement belief based policy. Research that will fill data gaps in the transition to ecosystem based fisheries management. Specifics to include monitoring of apex predators, or sea otter-sea urchin dynamics. Conduct research that is mutually beneficial to tribes and the sanctuary. To be collaborators.
- The sanctuary should conduct long-term research projects.
- Encourage the development of an outer coast atlas. Oceanographic currents, biotic resources, habitat mapping, monitoring, near shore cell circulation patterns
- Develop basic knowledge. Better understand basic mechanics of process.
- Cannot manage something that we do not know.
- Develop collaborative research to investigate seabirds as indicator species and indicator of ocean health. Need to better understand seabirds. Great indicator of trophic levels.
- Sanctuary should monitor long-term higher apex predator abundance as bio-indicator of ecosystem health (at least 5 years, but ideally 20 yrs).
- Understanding ecosystems dynamics. Refine a program to focus on physical parameters and biological populations in the near shore areas. Concerns with anoxia, upwelling and plankton-food web connections. Natural disturbance or influenced by anthropogenic influences such as meteorological conditions or climatic conditions. Concerns with effects on fisheries and seabird populations.
- Sanctuary needs to commit itself to long-term monitoring of important parts of the food web. Should conduct review of protocols that can be conducted year after year so that these programs continue.
- Synthesizing and integrating data from fish and wildlife, tribes and the National Marine Fisheries Service. The sanctuary or someone needs to be the integrator.
- Coordination with other agencies to get a better understanding of roles and responsibilities. Comprehensive understanding of research trends. Analysis of trends that have changed since the sanctuary designation. What improvements have occurred since designation?
- Understanding of keystone species and interspecies dynamics in the ecosystem
- Species research that captures trends and status of different types in the sanctuary. Research should focus on habitat conditions and habitat types, i.e., deep corals.
- Continued exploration of different habitats
- Research: there were a lot of question marks in the sanctuary's 2008 Condition Report. It would be a good thing to try and answer those questions/unknowns identified in the Condition Report. In particular, research is needed on the deep-sea trenches. Additional research is needed on the base of the food chain (krill etc.) – especially in light of anticipated effects of climate change.
- I'd like to see the sanctuary do its own independent research (instead of just piggy-backing on other programs). The only independent work seems to be on deep-sea coral.
- The sanctuary needs to do more research to back up its belief system/objective/mission.
- The sanctuary should assist/support fisheries managers by doing research that helps managers (rather than managing fisheries itself). For example, seafloor mapping research could help fisheries managers.
- The sanctuary needs to research the impacts of overabundance of marine mammals. What are the impacts on shellfish populations? What are the impacts on salmonids? What are the ecosystem-wide impacts on ecosystem structure and function?
- There needs to be hypothesis-based research done by the sanctuary.
- Continue research on birds, whales, and pollution
- Data collection and ongoing scientific research programs are important.
- Given the current expectations for global climate change, I believe that it would be a very good idea for the sanctuary to support more paleoenvironmental research. It may be possible to model and plan for possible changes. For example, there are several archaeological sites on the Olympic Peninsula that are associated with a relatively higher sea level than at present. The animal remains (and in one case so far, plant remains) in these archaeological sites can shed light on the nature of the marine environment in the area, when sea level is higher. The human/marine environment

- interaction can be traced through time, which will shed light on management issues (known archaeological records of more than 4,000 years of interaction). Research in non-archaeological sites (such as lake bottom sediments) can help separate the human and natural factors in the human/environmental interaction.
- [Survey] ocean conditions, physical habitats, species and species interactions to better understand what lives where, and how, within the sanctuary
  - Where possible, provide data and information to fisheries management entities to improve stock assessments -- but in so doing, characterize the full life cycle of organisms and their habitat associations - to support sustainable fisheries.
  - In addition to banning cruise ship discharges in the Management Plan the Sanctuary needs to reeducate itself to informing the public about the natural wealth that lies off the coast, enhance our region's ability to prevent and respond to oil spills and conduct research that helps to inform fisheries management rather than including fishing within the scope of regulations as you told the public when the Sanctuary was first designated.
  - We believe that there are several goals and objectives that the Sanctuary, together with its partnering agencies and the Tribes, should work toward. First, we need to gather baseline data to better understand ecosystem interactions and conduct more research on multi-species dynamics, including the assessment of natural processes and human/cultural interactions with the environment.
  - We believe that there are several goals and objectives that the Sanctuary, together with its partnering agencies and the Tribes, should work toward. We . . . need to gather baseline data sufficient to measure change in marine resources within the boundary of the Sanctuary. From this, the Sanctuary can begin to develop an understanding of the distribution and quality of habitats and the role in which they function in the marine ecosystem.
  - Develop a long-term characterization and monitoring protocol in order to fill data gaps (both bottom up and top down) necessary for the development of ecosystem based fisheries management.
  - OCA recommends that the OCNMS increase biodiversity monitoring within the Sanctuary. Our understanding of the diversity of species existing in the biological web of life in the Sanctuary is necessary for an ecosystem management approach, focusing on ecosystem connections. We recommend that OCNMS focus on the lower ratings in the Condition Report.
  - [We recommend that the updated OCNMS Management Plan include] identification of Important Ecological Areas based on ecological criteria and the physical and biological features of the sanctuary (e.g. kelp forests, corals and sponge, rocky shores, critical habitat, and habitats important to marine life for breeding, feeding and shelter).
  - Focus the monitoring program on collecting data that will enable NOAA scientists to answer key questions about the biological health of the Sanctuary. For example, there is a concern about the periodic occurrences of low dissolved oxygen (DO) in near shore waters of the Sanctuary. These occurrences have the potential to impact all aquatic populations as well as bird life. Are these low DO levels a result of natural conditions or from a build up of anthropogenic materials in the area? Are they the result of recent meteorological conditions which were different from long term historical conditions? Are recent meteorological conditions possibly the result of changes due to global climate change? There are many questions. OPAS would like to see NOAA identify the most important questions which relate to the health of the Sanctuary and then focus the monitoring program to collect the data that will allow them the best chance to understand these issues.
  - Many species of seabirds are in decline Washington Marine Waters. It is important to monitor the distribution and abundance of birds in the Sanctuary. What factors are influencing key bird food resources? Are changes in short term (last 10 years) meteorological conditions influencing nutrient dynamics and near shore productivity?
  - Focus on summarizing data from an ecosystem approach. How do meteorological conditions, near shore water quality (including nutrients), and all trophic level biological populations relate to one another.

- Investigate ecosystem dynamics. Continue assessment of habitat types, plus the relationships between habitats, species and biological processes.
- Assess how the system is impacted by human activities, climate change, and natural variation.
- [U]nderstanding baseline conditions, ecosystem functions, and status and trends of biological and socioeconomic resources to effectively inform management should be a priority.

### **33. SPILL PREVENTION, CONTINGENCY PLANNING & RESPONSE**

- Continue to support the stationing of the Neah Bay Response Tug
- Improve infrastructure at Neah Bay to support oil spill response and salvage staging
- Surfrider also supports increased preparedness for contingencies like oil spills in the coastal environment.
- Full annual funding of the Neah Bay Rescue tug is a priority.
- I support year round, permanent funding of the Neah Bay tug.
- Require the Neah Bay Rescue Tug to be on-call year round. The Neah Bay response tug boat has responded to 41 ships in distress since 1999 but its future is in jeopardy because State funding runs out at the end of 2008.
- Require a schedule of emergency drills and exercises for oil spills in the new Plan. This was one of the most important original goals of the previous Sanctuary Management Plan, but there has yet to be a successful emergency oil spill drill conducted in the Sanctuary.
- A rescue tug should be funded to operate out of Neah Bay.
- Improved Documentation of Oil Spills and Incidents: Continuous improvement is dependent on good data and monitoring. Data needs to be accurate and should include detailed information about existing spill prevention regimes to better inform continuous improvement efforts. Additionally, descriptions of responses to incidents should be detailed and accurate in order to better focus on areas for prevention and response improvements. Oil spill data should include detailed information about what types, sources and quantities of oil have spilled in specific incidents as well as spills that occur in areas adjacent to the sanctuary. PMSA has collected this information from agencies and is prepared to assist with the documentation in order to have the best information possible about oil spill incidents.
- We must continue to make spill prevention a priority to minimize the risk of a major incident. The OCNMS should continue to support voluntary compliance that results in ships and oil barges that transit along the coast of Washington staying beyond the ATBA. The desired outcome is compliance and that is being achieved.
- The International Tug of Opportunity System (ITOS) is in place and working. At any given time, more than 100 tugs are located along the coast, in the Strait of Juan de Fuca, around the San Juan Islands and throughout Puget Sound. It is imperative that the OCNMS supports this system and educates stakeholders about its effectiveness in protecting the outer coast as well as Puget Sound.
- In addition to the numerous safeguards, the layered safety net including the monitoring of deep draft ocean-going vessels, other vessel types and operations should be evaluated by OCNMS for spill histories and operations of concern to OCNMS stakeholders.
- Advance marine vessel safety, underwater noise control, and oil spill preparedness.
- NOAA needs to invest in technology that would enable the Sanctuary to efficiently assess the seasonal occurrence of marine organisms in the water column for the development of a dispersant use matrix.
- The Sanctuary needs to formally express its support in writing to Congress and the Washington State legislature for the permanent year-round presence of a multi-mission tug with spill response, fire fighting and salvage capability in Neah Bay to protect the Sanctuary from the devastating impacts of a catastrophic oil spill.
- The Sanctuary needs to work with the Coast Guard, Washington Department of Ecology, oil spill response contractors and coastal tribes to conduct regular oil spill drills and exercises in the

Sanctuary including the tug and to assure that the gear stockpiled along the coast is appropriate for the operating conditions and can be called out in a timely fashion.

- In addition to banning cruise ship discharges in the Management Plan the Sanctuary needs to rededicate itself to informing the public about the natural wealth that lies off the coast, enhance our region's ability to prevent and respond to oil spills and conduct research that helps to inform fisheries management rather than including fishing within the scope of regulations as you told the public when the Sanctuary was first designated.
- Establishing a larval fish assessment monitoring program is also a top priority, as it will provide much needed insight into year-round water column vulnerabilities and can inform an oil spill dispersant decision matrix.
- The Sanctuary should advocate for minimizing the risk from a catastrophic oil spill while supporting safe, efficient and environmentally sound marine transportation. The Sanctuary should work with the Makah Office of Marine Affairs to better understand how federal and state policy, rulemakings and planning processes may impact our Treaty Area and the Sanctuary. The Sanctuary should focus on improving its capacity to perform natural resource damage assessments by working within NOAA to update the outer coast Environmental Sensitivity Index.
- The Makah Tribe strongly recommends the Sanctuary officially recognize the need for a multi-mission emergency towing/rescue tug as a fundamental improvement to our safety regime. This accomplishment would be an essential insurance policy to both assure the flow of waterborne commerce and prevent devastation to Tribal and Sanctuary resources in the event of a major vessel incident.
- The Sanctuary should formally outline its policy on dispersant use, outline procedures for emergency data collection and provide natural resource damage assessment guidelines. We understand the Sanctuary's oil spill contingency plan exists in draft form, and this document could serve as a blueprint for improvements to the Sanctuary's emergency response procedures. If these policies do not exist, a process for achieving them as a part of the goal of mitigating a catastrophic oil spill release should be addressed through the MPR process. The Sanctuary should coordinate with the Coast Guard, Ecology, Navy and the spill response community to schedule and participate in regular spill response exercises and drills within the Sanctuary.
- Support the stationing of an industry-funded multi-mission rescue tug in Neah Bay.
- Support the Makah Office of Marine Affairs by working with the Coast Guard to move the high volume port line from Port Angeles, Washington to Cape Flattery.
- Coordinate with the Coast Guard, Department of Ecology and Makah Office of Marine Affairs to set up an oil spill response exercise and drill schedule for 2009-2014.
- Support the Makah Office of Marine Affairs as it works to ensure that the Department of Ecology regulations making Neah Bay a primary staging area are met by response contractors.
- Assist in coordinating response training for Makah resource managers and their staff.
- Coordinate within NOAA to begin updating the Environmental Sensitivity Index maps for the outer coast.
- Outline policies on dispersant use and initial natural resource damage assessment actions.
- Request the appropriate funding for a larger, cutting edge research vessel capable of performing initial on-water spill assessment and monitoring.
- Install real time surface current detection equipment for the outer coast and western Strait of Juan de Fuca.
- Oil spill prevention and response, and partnerships to further these measures, should remain a priority for the sanctuary.
- If a complete ban is not adopted, OCA calls for bonding of sufficient funding from any energy producer to pay for a "worst case" scenario involving a spill, accident, or other incident that has an adverse impact on the OCNMS ecosystem. The calculus for bonding shall include all costs for necessary and appropriate restoration and remediation of habitat.
- The Council is concerned about the possibility of oil spills impacting the Sanctuary. Large spills pose a huge threat. As the number of transits along the coast increase, and as the capacity of ships

to hold bunker and oil cargo increases, so does this threat. An oil spill in or near the Sanctuary could leave a devastating and long-term scar on this very place we cherish so greatly. As the Sanctuary works to update and expand its Management Plan, it is imperative to focus on oil spill prevention and response issues.

- Additional protections for vessels carrying “clingage plus.” The Council could consider working with the oil industry to better define what should be considered “carrying cargo” verses carrying mere “oil clingage,” such that some vessels currently transiting within the sanctuary because they are not fully loaded with oil cargo could (voluntarily perhaps) be treated as being “in cargo status” and consequently transiting outside the sanctuary.
- Rescue tug. The state funded Neah Bay tug has proved to be key asset to oil spill prevention in Washington and is located at the Sanctuary’s northern edge. This tug not only protects state assets along much of Washington’s Coast and the Strait of Juan de Fuca, but also the federal Sanctuary. The Sanctuary could consider acknowledging this protective benefit to the Sanctuary and supporting federal participation in maintaining the tug at Neah Bay.
- Limited scope of GRPs. This issue addresses the fact that there are too few GRPs and these are pretty much limited to exclusion at river mouths. Also note that almost none of these have been tested. The Sanctuary could consider revisiting the lack of GRPs providing protection to sensitive areas and what is to be used as a strategy for protecting environmentally-sensitive areas (which are many) in place of GRPs.
- Coordinating with sister agencies. The Sanctuary could consider coordinating with the Olympic National Park regarding access for response efforts.
- Weather data. The Sanctuary could consider utilizing existing weather data to determine how frequently the deployment of response equipment can take place and (for on-water recovery, GRP deployments, in situ burning, and dispersant use) whether the available equipment is adequate for conditions. The Sanctuary could utilize NOAA buoy data to support an analysis of whether relevant spill responders are prepared for a spill that could threaten the Sanctuary.
- Appropriate local response equipment. The Sanctuary could take steps to assure that appropriate local response equipment is pre-staged in locations that, considering deployment and arrival times, would be useful in cleaning up an oil spill within the first 48 hours after an oil spill. This evaluation would also include a review of whether locally staged equipment is capable of doing spill response in open ocean conditions.
- Reviewing oil spill provisions in current Management Plan for their current applicability and for the progress that has been made on them. This review would be to determine what activities the Sanctuary should continue to pursue. Some of the items may no longer be relevant. Additionally, the Sanctuary may have fulfilled its goals on these items. The Council understands, however, due to funding limitations, the Sanctuary has not completed all of the work it had hoped to complete when the existing Management Plan was written. The Sanctuary could renew its commitment to accomplishing the items that have not been completed and remain relevant.
- [T]he management plan should include the Sanctuary’s current management focus on spill and dumping preventative measures, including relocating ship traffic lanes offshore, tracking ships, enhancing spill response assets, reducing waste discharge from ships, and water quality monitoring (OCNMS 2008 Condition Report at 4).
- NOAA should also focus on how to best protect the Marine Sanctuary and its biological populations from oil spills and other potential stresses. NOAA should maintain close liaison with existing hazardous spill response entities (Puget Sound vessel traffic service (USCG)), Tofino traffic control center (Canada), Spill management contractors- such as MSRC, and Washington State Department of Ecology). NOAA should monitor the evolution of critical planning documents: The Washington State Maritime Cooperative Oil Spill Contingency Plan and the Washington Department of Ecology Outer Coast Geographical Response Plan (especially Chapter 4). These plans undergo constant revision, and directly affect the Marine Sanctuary.
- While it is probably out of the scope of the Sanctuary program, any support that NOAA can exert on finding a stable source of funding for the rescue tug station at Neah Bay is important. This will probably take legislation at the Federal level.

- Develop a functional communications system between offshore, nearshore, and shore based locations. The Olympic coast creates very challenging communications conditions, including cell phone service blackout on most of the shoreline and near coast. In order to coordinate activities, it is imperative that a functional communications system be developed, tested, and deployed prior to the occurrence of an oil spill.
- Enabling and conducting proper oil spill trajectory modeling. Unfortunately, this modeling is severely hindered or not possible for major regions of the coast because of a lack of surface current data. While the OCNMS seasonally deploys several mooring buoys from April to October to profile surface currents, these buoys are not deployed from November through March, and therefore adequate data on surface currents for trajectory analysis are not available for these areas. Note that November through March is the most critical time for adequate modeling as it is a period of strong and frequent storms, substantially increasing the threat of an oil spill. Without adequate trajectory modeling, oil spill response can be severely impacted. The Sanctuary should develop plans to deploy current monitoring buoys throughout the year so that adequate oil spill trajectory modeling can be done.
- Coordinate contingency plans with relevant agencies, including the National Park Service.
- Ensure that response equipment is ready and tested in multiple locations up and down the outer coast.
- Organize and participate in drills to test preparedness.
- Support efforts to the greatest extent possible to establish a permanent funding source for a year round rescue tug at Neah Bay.
- Coordinate with the Oil Spill Advisory Council, implement recommendations from the Council when relevant to the Sanctuary and share research and information pertaining to preventing, preparing and responding to spills.
- [We] urge the OCNMS management to consider plans for the use of dispersants in case of a large spill. Dispersants can be one additional response tool when other measures fail. Consideration should also be given to developing formalized agreements for “Harbors or Places of Refuge” for distressed vessels outside vicinity of the OCNMS.
- Support efforts to obtain funding for a permanent emergency response tug at Neah Bay.
- Preventing and aggressively responding to point-source pollution (oil spills) within the Sanctuary should remain a priority. Sanctuary staff should be a catalyst to ensure appropriate and timely action is taken by other responsible regulatory agencies.
- Support emergency response planning by providing sanctuary staff with basic Incident Command System training and ensure active participation in drills and exercises.
- Support conducting oil spill drills along the outer coast, ensuring coordination and involvement with local stakeholders.
- Research the need for additional oil spill response equipment caches for local stakeholders to enhance rapid protection of sensitive resources and early response capability.
- Support development of the dispersant use matrix to establish a comprehensive baseline of biological data.
- Develop memorandums of understanding with oil spill response trustees to assist in natural resource damage assessments by developing ephemeral data collection plans, training Sanctuary staff, and making sanctuary resources available.
- Has the sanctuary acted on the November 10, 2006 letter from the SAC in support of the Neah Bay tug? If not, the sanctuary should.
- The sanctuary should call for the Navy to mitigate their current and proposed expansion of operations in the Quinault range through the stationing of spill response and salvage equipment along the coast.
- It is important that the sanctuary support funding/requirement (year round) for the Neah Bay tug.
- It is important that the sanctuary support development of the dispersant use matrix (this would help lead to establishing a comprehensive understanding of baseline biological data).

- The original scoping meetings for the sanctuary's Draft Environmental Impact Statement in 1991 were well-attended (by over 500 people) who have not been kept in touch with over the 14 years since designation (1994), and who called for improved capabilities to protect the resources from oil spills having occurred in the winter of '88 and summer of '91 with Exxon in '89 in between. To this date, there has yet to be a successful no-notice equipment deployment oil spill drill in the sanctuary despite specific identification in the current management plan to do so. The Condition Report's identification of the fact that there has been no major spills in the sanctuary since designation fails to acknowledge the 41 times the Neah Bay tug has been called out to respond to ships in distress since 1991 and the fact that funding for the tug ends this year.
- The sanctuary should work with other partners in the federal government to help prevent oil spills. Reevaluate memorandums of understanding for prevention and response to spills.
- Push for Spill of National Significance exercise. Request annual worst case scenario oil spill response drill off the Washington Coast.
- Integration of cultural information with oil spill response activities to prevent damage by spill response workers to cultural resources.
- Point-source pollution (oil spills) should remain a priority. Continued vigilance (monitoring and compliance of the Area to be Avoided) is important. Pushing other regulatory agencies toward stronger prevention measures.
- The sanctuary should do more research on baseline levels of water column plankton larval fish and forage fish species. This data is needed for oil spill response and natural resource damage assessment.
- The sanctuary should collaborate with the working parties in understanding the implications and effects of oil dispersants.
- The sanctuary should conduct HAZWOPER (Hazardous Waste and Emergency Response) training for its staff and Coastal Observation and Seabird Survey Team (COASST) volunteers.
- The sanctuary should research facts to support an intergovernmental policy agreement for quicker oil spill response times and increased capacity. The sanctuary should work with the tribes, and other state and federal agencies. Consider participating in the Regional Response Team. The sanctuary should be a strong voice for the needs for these response mechanisms. And that the threat comes from more than just the oil carriers but should include all commercial shipping carriers.
- To develop Memorandums of Understanding with oil spill response trustees to make available sanctuary resources (boats, volunteers, etc) to assist with natural resource damage assessment.
- The sanctuary should identify certain areas along the coast that are key for larval dispersal for a prioritized oil spill response to reduce impacts to critical habitats. Primarily identifying critical intertidal habitats.
- Oil spill prevention and response are important priorities for sanctuary.
- Sanctuary should support year-round funding of Neah Bay rescue tug.
- Faster or more readily available spill response equipment (cleanup)
- Want a year-round rescue tug available at Neah Bay.
- Westport/Grays Harbor area is important for increased tug services given increased ship traffic due associated with biodiesel plant; add rescue staging area in Grays Harbor for spill response (for tugs, boom, equipment, etc.)
- Investigate spill response resources available at La Push.
- The sanctuary should continue to keep concern about oil development and oil spills as a high priority issue.
- Continue efforts for oil spill prevention.
- Spill protection response programs need to be coordinated. We are in good shape but we cannot take it for granted; we need to keep ourselves ready for when it happens.
- Make it a priority to get the funding for a permanent rescue tug
- Having response equipment available up and down the sanctuary and conduct response drills.
- Keep tug.

- The sanctuary should support continuous training for members in communities adjacent to the sanctuary for response to catastrophic events, for example oil spills and tsunamis.
- Pollution Response and Prevention
- One of the 4 goals in the original designation document was to do no-notice drills for oil spill prevention. There has not been a successful no-notice drill in the past 14 years. There should be at least one done annually. The Makah have been leaders in oil spill prevention. There should be better partnership between the sanctuary and the Makah to inform rulemaking (under OPA 90) and to advocate oil spill prevention locally. This would help fulfill goals from the original designation document.
- Pollution Response – oil; Will the tug be here in years to come to protect our national marine environment?
- The sanctuary should set up a monitoring program to help with oil spill prevention that would monitor larval stages of rockfish and other groundfish species. To date, there is mainly risk assessment info on near shore species but no or little monitoring to assess damage to groundfish species, migratory species, recruitment, etc. Monitoring should be seasonal or even monthly.
- There has never been a successful no-notice equipment oil spill exercise. They should be conducted regularly.
- Reaffirm sanctuary support for the Neah Bay rescue tug. No official sanctuary statement. There is a proven value of the tug to prevent oil spills
- Update ESIs (Environmental Sensitivity Index) for coast shoreline
- Natural Resource Damage Assessment (NRDA) near shore species characterization.
- When to use oil dispersant use matrix for responsible dispersant use

#### **34. TREATY TRUST RESPONSIBILITY**

- The sanctuary should continue to develop its partnership with the coastal tribal governments, and recognize the tribes as the equal powers/partners that they are. We are partners in protecting treaty resources; resources in the sanctuary are co-managed (they are not exclusively sanctuary property). As compared to the other sanctuaries in the national system, the relationship between the tribes and Olympic Coast National Marine Sanctuary (OCNMS) is a unique one. The sanctuary should embrace this relationship not from a top down management style, but from the ground up. The sanctuary should continue to develop its understanding of the physical/spiritual connection between the tribal peoples and the environment. It is important for the sanctuary to combine its understanding of trust responsibilities and tribal values with strong science. The sanctuary needs to continue to improve its relationship with the coastal tribes (this a mutual obligation).
- The sanctuary staff and volunteers should have training on the overlapping responsibilities and roles of the individual governments; tribes, state agencies, and federal agencies that have roles within the boundaries of the sanctuary.
- Relationship between coastal tribes and sanctuary has developed through the Intergovernmental Policy Council (IPC), but areas for potential conflict exist. The sanctuary's priority for protection of resources should outweigh treaty rights of Native American tribes.
- Respect rights of indigenous populations to utilize the ocean for their livelihood. They were here before the sanctuary was created and have the right to pursue their subsistence and harvest rights and the right to management of those resources.
- When sanctuary volunteers are trained, they need to be trained about tribal treaty rights. The volunteers are representing the sanctuary.
- The sanctuary should not take away from native rights (in particular the right to harvest food).
- Olympic Coast is the only sanctuary that encompasses the treaty areas of recognized tribes. We need a different management approach compared to other sanctuaries. Sanctuary needs to capture the spirit of working with the tribes not just as co-managers of the fisheries resources but also in designing management processes that are mutually beneficial and cooperative. The IPC was a

starting point, but more work should be done to capture the spirit of the treaties in a broader management perspective.

- The sanctuary was not supposed to interfere with treaty rights (supreme law of the land). The tribes work with geoducks but they need to disturb the sand to do so. They have right to gather geoducks but they are not allowed to disturb the sand – this is a problem.
- The sanctuary should be careful not to engage in regulation of Makah fishing rights. Leave issue to regulators such as the Pacific Fisheries Management Council (PFMC).
- Fisheries management to benefit the tribe. What impact is this park going to have on Fisheries? Marine mammals are part of the fisheries here. What benefit will this Sanctuary be for the indigenous people that have lived here for the millennium?
- The needs of the tribes need to be heavily considered especially when it comes to fishing.
- The management plan should take a balanced approach to address tribal concerns but not to the detriment of all other communities.
- I am really opposed to whaling in the sanctuary. It is contrary to the sanctuary's mandates. The sanctuary needs to protect marine mammals.
- The sanctuary needs to recognize all treaty rights (whaling, fishing, hunting, etc.), and recognize that its mandates to protect resources do not supersede treaty rights.
- Take has always been contemplated statutorily within national marine sanctuaries. The sanctuary is not a reserve; it is not a national park.
- Sustainable harvest of fish and other marine resources should certainly be part of OCNMS goals, with priority to tribal treaty rights.
- The Olympic Coast National Marine Sanctuary should be expanded and have increased protections. It should be a true sanctuary that bans all hunting and fishing. The Makah whale hunt should not be allowed!
- Continued work with tribes to minimize impacts from their fishing and harvesting including closures when needed
- [The sanctuary should place an] emphasis on shared understanding and joint management decisions that respect cultural traditions, rights, and ecological conditions and constraints.
- Educate the public on existing partnerships and how they are envisioned to work, perhaps by starting an outreach campaign and developing public education materials, in coordination with the Tribes, explaining the importance of marine resources for the Coastal Tribes, what is the Trust Responsibility and how the Sanctuary meets and maintains its Trust responsibilities to the Coastal Tribes.
- Increase transparency of Sanctuary actions which include comments toward proposed industries within our Treaty Area, such as wave energy.
- The Sanctuary should advocate for minimizing the risk from a catastrophic oil spill while supporting safe, efficient and environmentally sound marine transportation. The Sanctuary should work with the Makah Office of Marine Affairs to better understand how federal and state policy, rulemakings and planning processes may impact our Treaty Area and the Sanctuary. The Sanctuary should focus on improving its capacity to perform natural resource damage assessments by working within NOAA to update the outer coast Environmental Sensitivity Index.
- OCA requests that the Navy continue consultation with the Quinault Nation on all aspects of test range extension that will affect tribal fishing and ceremonial harvesting. The Navy should look for options that do not include access to Quinault beaches to avoid interference with tribal activities.

### 35. VISITOR SERVICES

- There are a lot of people in the state who don't know that there is a marine sanctuary on the coast. There is a big awareness gap and this should be addressed in the sanctuary's education programs. The sanctuary needs to connect to the major population areas in the state (e.g. more connections with the aquarium and other groups throughout the state).
- The sanctuary should make better use of the web and public media to get its message out to the public.

- The sanctuary needs to be better known on the Peninsula as well as in the metropolitan areas.
- The sanctuary should have more outreach on the goals of the sanctuary.
- The sanctuary should have awareness for other activities within the sanctuary other than recreation and commercial, but to include traditional cultural activities. To be more active in public awareness specific to the site.
- Increase public awareness of marine conservation issues.
- Conduct more outreach about the sanctuary in regional communities.
- Sanctuary outreach materials (such as those used at the scoping meeting) should be made available to the general public in places where they visit (e.g., Seattle Aquarium, schools, etc.).
- Investigate ways to use social media (facebook, myspace, etc.).
- Make sanctuary sound bites and downloadable videos available to the public.
- Interactive web programming (e.g., species identification game).
- Develop a widget for the sanctuary. Idea: vessel operation highlights.
- People are also interested in shipwrecks, cultural resources and history. Engage the public in these topics.
- Increased interpretive signage, staff presence and/or center for educational programs primarily during the summertime. Develop cooperative with local entities such as the Olympic National Park, the tribes and local business.
- The sanctuary should organize ecotourism events.
- Media outreach and film series to promote the sanctuary for regional communities. Even consider a nationwide audience.
- The sanctuary should study who is the target audience for education programs, i.e., is it K-12 relative to the specific objective? Be strategic in determining the target audience considering funding is limited.
- The sanctuary should also seek to understand further who is coming to the coast and why (or alternative would be to determine who is not coming to the coast and why). Target to increase visits or education based on this information.
- Sanctuary should take lead in educating public especially with marine mammals and improvements to whale watching operations. Whale watching is main way for public to interact with marine mammals.
- Would like to see an educational/visitors center (“south coast discovery center”) developed by the sanctuary in Westport/Grayland area. Could promote tourism, involve local schools and Grays Harbor College, and provide general public education.
- The sanctuary should have a program to educate people to not throw debris overboard when on the water -- to improve awareness about the disposal of garbage.
- There is more need for general information about the sanctuary that is more accessible to the public, not just limited to the web.
- Provide information to public so people understand the problem of low oxygen better.
- Promote the sanctuary to allow and permit tours of the sanctuary be it marine wildlife. When people are in the sanctuary they can be more appreciative of the resources. This is not currently happening.
- The sanctuary should partner more with the Feiro Marine Science Center to collaborate with the educational service districts on programs aimed at creating programs that are transportable to the field.
- The sanctuary is of concern to the rest of the nation, because it is a national treasure.
- The sanctuary advisory council needs to be more publicized and emphasized as a means of communication between the sanctuary and the public.
- The education goal in the present management plan “to foster involvement by encouraging feedback on the effectiveness of education programs ...” needs to have action plan that details the program that are in place to meet that goal. This action plan should be easily accessible through the website.

- Continue underwater research and integrate information into existing education programs in coordination with Olympic National Park and others. Understanding resources helps the public value the sanctuary.
- Public Education/Outreach: it is important for the sanctuary to focus on public education in coastal communities/schools regarding the environment.
- Communication: we need to communicate what our goals and objectives are.
- The sanctuary needs to flesh out the way it represents the tribes to the public. The sanctuary needs to update the representation of the tribes; the tribes are more than just their heritage. The tribes are involved in modern technology and current management processes. The tribes are only portrayed in an 1855 cast, and that leads to misunderstandings among the public.
- More/better public education could help improve the understanding of what the sanctuary is and what the sanctuary's capabilities are.
- Communities are remote here on the peninsula. Newsletters could be distributed through the Makah Access Portal in order to reach local communities. A quarterly e-newsletter would be useful (for example like the one at Channel Islands).
- Plastics - Charlie Moore ship traveling in Pacific cut across Northern Pacific Gyre and saw large amount of plastics. Coastal alliance cleans beaches and lots of plastic found; some fishermen are very aware and careful with not allowing plastics to go in the sea, others are not as concerned – need more education; awareness of impacts of plastics on wildlife.
- Economy is not doing very well. Make the peninsula a center for marine oceanography. Need for tourism, kid camps, etc that are focused on marine resources. Promote peninsula for marine research and a center for marine study. If National Oceanic and Atmospheric Administration (NOAA) based in Port Angeles, it would be a great opportunity to promote entire peninsula for marine resources. Need for integrated effort to promote marine research and tourism.
- Use education to share pristine environment with others.
- Increase public education. What is it, why do we need it, what have we done thus far, how can people get involved, where do we want to be in five years? Ask person on street; most will not know what the sanctuary is.
- Education/outreach is key and should be done with existing entities to expand the current outreach capacity: outreach should be expanded from children to more adult communities; Should create an opportunity for weekend city dwellers to interact more with local residents.
- Disappointing at this is the first newsletter from the sanctuary since it was designated. Should have had (or have) better flow of information. Many web-based opportunities. Sanctuary appears to be a stealth operation. Need to let public know the resource exists, what the sanctuary is doing. Present early results. What are the trends, baselines, etc? Must be communicated.
- The sanctuary needs to improve signage at highway pull-outs. There needs to be more interpretive signage. The sanctuary needs to better inform people as they drive on the coast that they are looking out on a marine sanctuary. There needs to be more signage for travelers on 101.
- The Olympic Coast Discovery Center (OCDC) has stagnated. The OCDC needs to be updated and needs to evolve continually. Volunteers have been saying the same messages over and over for years. The center needs to change messages more frequently. The OCDC needs to be more dynamic. There needs to be more signage for the OCDC. So many people pass by and don't know that they went through a marine sanctuary.
- The sanctuary should do more to utilize new technology on the internet to improve its website. There could be more interactive aspects of the website. This is something that should be implemented across the sanctuary program. The purpose/goal of this would be to improve education and outreach.
- The sanctuary needs to make the public more aware of the IPC and their roles.
- OCDC need improved public visibility and periodic changes to exhibits
- Provide interpretive materials to public for sale with profits going for the area's management, would love to see/have DVD or book of this sanctuary

- Not sure if it is possible, I imagine it depends on resource issues and safety, maybe allow permits for eco-tourism under certain conditions and only if it doesn't create adverse impacts
- The first nation people of the area would make the best guides of the area since they are from the land. This also allows them to tell their story first hand.
- Instead of the center at Port Angeles provide 3 research/marine Center for the public that are located along the coast. These centers will support research, education and naturalist tours. . . This will provide education and awareness for the public more data for research and employment for 1st nation people, help with research and marine center for the public that are located along the coast.
- Increase visibility and public awareness of the OCNMS.
- The Sanctuary should strive to keep its website updated and to reformat information into a more user-friendly format.
- Olympic Coast National Marine Sanctuary and the Makah Tribe have worked collaboratively in education and outreach for over 8 years. Each year, Makah tribal members conduct education program at Cape Flattery and at the Makah Cultural and Research Center's Makah Museum. Staff funding and training are provided by the Sanctuary, with program administration by the Makah Cultural and Research Center (Makah Museum).
- [Work with Olympic National Park to] educate visitors about the importance and fragility of marine resources, threats to them, and protection and mitigation measures to reduce impact.

### **36. WATER QUALITY MONITORING**

- A priority should be the scientific research and the data collected, including ecosystem parameters that the biological resources rely on, effects of pollutants from Puget Sound; water quality research, oceanic processes, dissolved oxygen and CO<sub>2</sub>.
- Expand upon current physical and biological parameter monitoring using remote ocean sensing devices (buoys) to provide baseline data and early warnings (e.g., harmful algal blooms). Integrate current deployments into Coastal Ocean Observing Systems, and partner with them.
- Improve data acquisition, data management, and data sharing. Implement the Sanctuary Integrated Monitoring Network (SIMoN) at Olympic Coast National Marine Sanctuary.
- NOAA should use all of its observation assets (e.g., satellites) to the benefit of the national marine sanctuaries. Make this part of the management plan.
- Data collected by the sanctuary needs to be available to concerned parties in an electronic format – especially Geographic Information System (GIS) data. Data also needs to be processed and analyzed in a timely manner. Cooperative agreements could help insure the analysis gets done.
- Monitoring program for near shore buoys should be expanded to record plankton and other water quality parameters at depth. Surface monitoring currently conducted does not fully address data needs, especially to identify issues such as ocean acidification.
- Make funding available to organizations that conduct water quality testing. Example: Surfrider program for testing water quality.
- Local knowledge from fishermen should be used to help develop sanctuary research.
- Monitoring oxygen levels is important, as well as early notification of low levels. Work with local fishermen to enhance early reporting.
- Utilize local charter or commercial vessel operators for monitoring of baseline conditions. Create two-way communication process (e.g., email) to inform of changes in environmental conditions.
- Dead zones: O<sub>2</sub> levels effect crab, fish, and other habitat. Work with fishermen to improve knowledge, map affected areas, get information to/from fishermen.
- There is a strong need to provide sanctuary data in a timelier manner and we need to identify the impediments that inhibit these reports from being produced and made available to other agencies and organizations.
- Conduct and/or support those conducting analyses of existing data and identify data needs.
- Continue studies on ocean conditions on causes of oxygen depletion.

- Need monitoring using remote sensing. More work with partnerships; agencies, tribes, non government organizations, and research institutions. To monitor physical changes and biological changes in the water of the sanctuary (e.g., harmful algal blooms - HABs).
- The sanctuary should develop data standards that provide for data and interpretation of the data to be translatable and available to resource managers in a timely fashion.
- The sanctuary should make its data/research more accessible to the public and others.
- Research and monitor the deposition of airborne pollutants from Asia and marine vessel traffic.
- Develop and adhere to a standard to making existing data translatable and available in a reasonable time period to inform resource management.
- Low oxygen problem. Need continued focus, improved understanding of oceanographic and climate change linkages.
- Need a baseline for future monitoring. Sanctuary to help facilitate with agencies, academic, tribes and act as a clearing house. Coordinate a bi-annual symposium of knowledge of the sanctuaries, i.e., recent research results.
- The sanctuary needs to find a way to fund “spiders” on existing buoys that monitor ocean acidification. The degree of ocean acidification is extremely important to monitor.
- The sanctuary needs additional near shore monitoring buoys. That way, the sanctuary can get a bigger data set with which to assess ocean conditions.
- The sanctuary needs an on-line database where the public can access data and information. This would better educate people about what the sanctuary is doing. It is difficult to access sanctuary data. If data was accessible on-line, it would lead to more transparency.
- There is a new report on ecological conditions of coastal ocean waters along the U.S. western continental shelf, inclusive of the five west coast National Marine Sanctuaries. One of the major take-home messages of this report is that NOAA’s five NMSs along the West Coast of the U.S., including OCNMS, appeared to be in good ecological condition, based on the measured indicators, with no evidence of major anthropogenic impacts or unusual environmental qualities compared to nearby non-sanctuary waters. I am writing to bring your attention to this new report and to encourage you to make use of the results in your efforts to finalize the Sanctuary's management plan.
- Outreach occurs when you get partners that are in industry. Industry has resources that you can't afford and a desire to try them out to gain a competitive advantage. . . I see from page 24 of your Condition Report 2008 that vessel traffic is running the edge of the OCNMS and what an ideal chance to partner and outreach. Have sensors on the ships and have the ship lines as part of your team.
- My point is the citizen scientists can be partners. If salmon season is closed it is more fun to be out on a boat gathering data than sitting in port. Have a sampling rally.
- Advance the study, knowledge, and awareness of oxygen depletion - its causes, locations, consequences, and future threats.
- Study deposition and impacts from airborne pollutants.
- Sanctuaries should be places where basic long-term natural resource monitoring is done as a consequence of designation. At a minimum NOAA should be archiving their own satellite data to track seasonal changes in temperature and primary productivity in the nation’s 13 Sanctuaries, but this is not done. These data will enable the Sanctuary program to provide an archive of the impacts global climate change is having on our nation’s marine habitats.
- Increase monitoring capacity, through adding a NANOOS buoy within the Sanctuary, via in situ and satellite sensors to monitor the ocean's physical and biogeochemical properties, including carbon, nitrogen, current patterns, sea surface and sub-surface temperature, salinity, and acidity.
- Ocean acidification could be detrimental to calcifying organisms and potentially have ecosystem-altering effects, but the extent of ocean acidification is not being monitored in the sanctuary. With monitoring infrastructure already in place for many aspects of the sanctuary’s oceanographic conditions, the management plan should look into including the monitoring of pH changes in the sanctuary’s ongoing research program.

- [W]e encourage the sanctuary to continue monitoring water quality using mooring stations and to collect data to better understand global climate change induced impacts such as ocean acidification, temperature changes and hypoxic events.
- Continue to build partnerships for comprehensive monitoring and research on the issue of hypoxic events in the northern California Current. There is a clear need for near real-time data results to be readily available and useful to the research community.

### **37. WATER QUALITY PROTECTION**

- Ban cruise ship discharges, similar to protections adopted in northern California Sanctuaries. Given the increase in harmful algal blooms and dead zones off the Washington coast, this action is critical.
- No motorized boats should be allowed in the sanctuary, other than rescue vessels or cases of emergency. And certainly, no ships should be allowed to discharge into the sanctuary.
- With more than 200 cruise ships traveling through the OCNMS every year, and each cruise ship having the capability to discharge hundreds of thousands of gallons of sewage, graywater, blackwater, or ballast water every day, these ships represented a significant threat to the water quality and the health of the marine life living within the OCNMS. . . currently there exists no legally binding, enforceable, regulation that prohibits graywater, blackwater, or ballast water discharge inside the sanctuary boundary.
- Although the 1994 establishment of the Area to be Avoided (ATBA) that prohibits cruise ship (and other large vessels) from traveling through a majority of the sanctuary has been highly successful (more than 98% compliance in 2007), there is little enforcement and no financial consequences that can be levied against cruise lines for non-compliance. Additionally, as the ATBA does not include the entire OCNMS boundary, more than 30% of the sanctuary can still be traversed by cruise ships. Even assuming that the cruise ships comply with the ATBA, the Clean Water Act (CWA) only prohibits the dumping of sewage within the sanctuary boundary. It does not include any provisions for the other discharge water types.
- [Cruise ship] ballast water can contain plants, animals, and bacteria, among other biological organisms. Ballast water can, and often does, contain non-native, invasive species that that can cause extensive harm to sensitive ecosystems, such as those found with OCNMS.
- OCNMS must require the regulation and enforcement of all discharges coming from cruise ships within the sanctuary boundary.
- In the absence of a federal law prohibiting or regulating harmful cruise ship discharges within the sanctuary boundary, it is recommended that NOAA work with the Coast Guard and the Washington State Department of Ecology to strengthen the limitations on cruise ship discharges within the entire boundary of the OCNMS, enacting guidelines that are legally binding with enforceable fines for illegally dumping any non-authorized water supplies. . . As an example of how regulations needs to be put in place and managed by the OCNMS, focus on how cruises ship discharge is managed in the Monterey Bay National Marine Sanctuary (MBNMS).
- Identify and clean up threats to water quality, such as nearshore dumpsites, marine vessel discharges, land-based sewage discharges, and potential discovery of hazardous materials.
- The increasing frequency of cruise ships with their significant levels of grey and black water discharges in Sanctuary waters needs to be addressed in the Management Plan.
- The Olympic Coast Sanctuary should utilize the findings from the recently completed EIS for the Northern California Sanctuaries to similarly ban all vessels greater than 300 gross tons from discharging their grey and black water within Sanctuary waters.
- It is our belief that you could simply adopt the findings of the California Sanctuary's EIS on their vessel discharge ban and apply it to the Olympic Coast given that the length of transit is shorter in Washington than California.
- Consider a complete prohibition on all cruise ship discharges within the Sanctuary boundary.
- OCA recommends that the OCNMS increase research on bio-accumulative toxins in the Sanctuary. The deposition of toxins by air, water, and land into the west coast marine environment

likely has significant long-term and cumulative impacts to the Sanctuary's biota and on the human populations that harvest Sanctuary resources for food. OCA encourages OCNMS to collaborate with other agencies to increase our knowledge of the build-up of these toxins in the Sanctuary's water and biota.

- The revised Sanctuary management plan must include strategies for reducing, mitigating and eliminating sources of ocean pollution including, human waste, noise, trash, toxins, hydrocarbons, and even carbon dioxide and greenhouse gases. If unmonitored and unabated, these various sources of pollution may result in severe impacts to the Sanctuary environment and resources.
- The Sanctuary's revised management plan should also include local, regional and national efforts to reduce, mitigate and eliminate sources of pollution. These efforts should include collaboration with the U.S. Environmental Protection Agency (EPA) and Washington State in monitoring and controls necessary to protect Sanctuary resources.
- Work with other Sanctuaries on the west coast to assess the impact from cruise ship dumping and pursue opportunities to prevent this dumping within Sanctuary boundaries.
- [Non]-point source pollution, untreated sewage, and runoff have been demonstrated as much greater sustained threats to our waters than commercial vessels –despite the lack of fanfare these threats produce. The management plan should given these harmful purveyors of pollution the kind of attention they deserve. As an example, after years of complaints, the City of Victoria, Canada still is without a primary treatment system for its sewage. Staff should determine if this is a greater risk to the Sanctuary than the secondary treated sewage from transiting cruise vessels.
- Ban all discharges from cruise ships within the sanctuary.
- Sanctuary should track and address stormwater runoff, upland erosion, and non-point source runoff pollutants because of their potential to have adverse impacts on the marine ecosystem.
- A priority should be to maintain existing resources (living and non-living) – with focus on biodiversity, water quality, habitats. Research, education, partnerships, and preparing for change are ways to approach this.
- Vessel traffic levels decreasing, especially sport and commercial fishing traffic. Commercial shipping stable levels, but cruise ship traffic increasing. Vessel discharges within or adjacent to sanctuary waters may be increasing. To protect water quality and shellfish health, sanctuary should work towards developing agreement(s) to address the threats posed by these discharges.
- Water pollution from land ends up in ocean. Sanctuary should do more work preventing pesticides, chemicals, human waste from reaching the ocean.
- Work with other sanctuaries on the West Coast to research cruise ship dumping and pursue other opportunities to reduce this dumping in the Sanctuaries.
- Continue to promote a healthy ecosystem in the sanctuary, using the best science to promote a healthy habitat for sea life, good water quality.
- There was a crane that fell a few years ago, and there may be possible pollution as a result (smelt populations have decreased).
- There need to be proper bathrooms along the beach to protect water quality.
- Close and remediate solid waste dumpsites along shoreline (action item). Runoff, water quality (underlying priorities).
- Address cruise ships, Victoria about discharge and water quality issues.
- Cruise ships and incoming shipping traffic should not be allowed to dump bilge and garbage in the sanctuary, and this should be enforced by the coast guard. Monitoring instances of such dumping would be helpful in enforcing the regulations.

## APPENDIX B NOTICE OF INTENT

53161

### Proposed Rules

Federal Register

Vol. 73, No. 179

Monday, September 15, 2008

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

#### DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

#### 15 CFR Part 922

Initiation of Review of Management Plan/Regulations of the Olympic Coast National Marine Sanctuary; Intent To Prepare Draft Environmental Impact Statement and Management Plan; Scoping Meetings

**AGENCY:** Office of National Marine Sanctuaries (ONMS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC).

**ACTION:** Initiation of Review of Management Plan/Regulations; Intent to Prepare Environmental Impact Statement; Scoping Meetings.

**SUMMARY:** Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) was designated in May 1994. It spans 3,310 square miles of marine waters off the rugged Olympic Peninsula coast, covering much of the continental shelf and the heads of several major submarine canyons. The present management plan was written as part of the sanctuary designation process and published in the Final Environmental Impact Statement in 1993. In accordance with Section 304(e) of the National Marine Sanctuaries Act, as amended, (NMSA) (16 U.S.C. 1431 *et seq.*), the Office of National Marine Sanctuaries (ONMS) of the National Oceanic and Atmospheric Administration (NOAA) is initiating a review of the OCNMS management plan, to evaluate substantive progress toward implementing the goals for the Sanctuary, and to make revisions to the plan and regulations as necessary to fulfill the purposes and policies of the NMSA. NOAA will conduct public scoping meetings to gather information and other comments from individuals, organizations, tribes, and government agencies on the scope, types and significance of issues related to the

Sanctuary's management plan and regulations. The scoping meetings are scheduled as detailed below.

**DATES:** Written comments should be received on or before November 14, 2008.

*Scoping meetings will be held on:*

- (1) September 29, 6–9 p.m., Peninsula College Longhouse, South Campus, Port Angeles, WA.
- (2) September 30, 6–9 p.m., Makah Marina Conference Center, Bay-view Ave, Neah Bay, WA.
- (3) October 1, 6–9 p.m., A-Ka-Lat Center, La Push Road, La Push, WA.
- (4) October 2, 6–9 p.m., Ocean Shores Convention Center, 120 W Chance a La Mer, NW., Ocean Shores, WA.
- (5) October 3, 6–9 p.m., Westport Maritime Museum, 2201 Westhaven Drive, Westport, WA.
- (6) October 4, 2–5 p.m., Governor Hotel, Washington Room, 621 S. Capitol Way, Olympia, WA.
- (7) October 5, 7–10 p.m., Seattle Aquarium, Pier 59, 1483 Alaskan Way, Seattle, WA.

**ADDRESSES:** Written comments may be sent to the Olympic Coast National Marine Sanctuary (Management Plan Review), 115 Railroad Ave. East, Suite 301, Port Angeles, WA 98362, or faxed to (360) 457-8496. Electronic comments may be sent to [ocnmsmanagementplan@noaa.gov](mailto:ocnmsmanagementplan@noaa.gov).

Comments will be available for public review at the street address mentioned above. All comments received are a part of the public record. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information. NOAA will accept anonymous comments. Attachments to electronic comments will be accepted in Microsoft Word, Excel, Wordperfect, or Adobe PDF file formats only.

**FOR FURTHER INFORMATION CONTACT:** George Galasso, 360.457.6622 Ext. 12, [ocnmsmanagementplan@noaa.gov](mailto:ocnmsmanagementplan@noaa.gov).

**SUPPLEMENTARY INFORMATION:** The proposed revised management plan will likely involve changes to existing policies of the Sanctuary in order to address contemporary issues and challenges, and to better protect and manage the Sanctuary's resources and qualities. The review process is

composed of four major stages: (1) Information collection and characterization; (2) preparation and release of a draft management plan/environmental impact statement, and any proposed amendments to the regulations; (3) public review and comment; (4) preparation and release of a final management plan/environmental impact statement, and any final amendments to the regulations. In the event that the potential impacts of new actions described in the management plan do not warrant the need for an Environmental Impact Statement, NOAA will publish the appropriate environmental analysis and notify the public. NOAA anticipates completion of the revised management plan and concomitant documents will require approximately thirty-six months.

#### *Preliminary Priority Topics*

NOAA, in consultation with the Intergovernmental Policy Council (State of Washington and the Coastal Treaty Tribes who have jurisdiction of resources within the sanctuary), has prepared a list of preliminary priority topics. This list represents our best professional judgment of the most important issues NOAA should consider in preparation of a new OCNMS management plan. We are interested in the public's comments on these topics, as well as any other topics of interest to the public or other agencies. It is important to note that this list does not preclude or in any way limit the consideration of additional topics raised through public comment, government-to-government consultations, and discussions with partner agencies.

**Improved Partnerships—**Recent initiatives for regional ocean management, including the formation of the Olympic Coast Intergovernmental Policy Council (IPC), the Washington Ocean Action Plan and the West Coast Governors Agreement on Ocean Health, provide the sanctuary with new opportunities to strengthen partnerships, particularly with the four coastal treaty tribes and the state of Washington in their role as governments. The sanctuary will work in active partnership to provide a more transparent, cooperative and coordinated management structure of Olympic Coast marine resources within tribal, state and federal jurisdictions.

**Characterization and Monitoring**—There is a need to develop an understanding of baseline conditions of marine resources within the sanctuary, ecosystem functions, and status and trends of biological and socioeconomic resources to effectively inform management. OCNMS, in conjunction with IPC and other entities, will work to resolve these needs.

**Spill Prevention, Contingency Planning and Response**—The risk from vessel traffic and other hazards remains a significant threat to marine resources. The potential for a catastrophic oil spill remains a primary concern and while advances in maritime safety have been made since the sanctuary was designated, better coordination is needed for response to these threats. Oil spills cause immediate and potentially long-term harm to marine resources as well as socioeconomic impacts to coastal communities.

**Climate Change**—Climate change is widely acknowledged, yet there is considerable uncertainty about current and future consequences at local, ecosystem and oceanic scales. Increased coordination and cooperation among resource management agencies is required to improve planning, monitoring and adaptive management to address this phenomenon.

**Ocean Literacy**—Enhancing the public's awareness and appreciation of marine, socio-economic, and cultural resources is a cornerstone of the sanctuary's mission. Recent regional initiatives offer opportunities for the sanctuary, in conjunction with IPC and other entities, to expand educational contributions and reach a larger audience.

**Marine Debris**—Coastal marine debris is a persistent and poorly diagnosed problem within the sanctuary that negatively impacts natural and socioeconomic resources and qualities.

**Condition Report**

In preparation for management plan review, NOAA has produced an Olympic Coast National Marine Sanctuary 2008 Condition Report. The Condition Report provides a summary of resources in OCNMS, pressures on those resources, the current condition and trends, and management responses to the pressures that threaten the integrity of the marine environment. Specifically, the Condition Report includes information on the status and trends of water quality, habitat, living resources and maritime archaeological resources and the human activities that affect them. The report serves as a supporting document for the Management Plan Review Process, to

inform constituents who desire to participate in that process.

Additionally, the Olympic Coast Intergovernmental Policy Council (IPC) has requested that an IPC authored addendum be distributed with the Condition Report. The IPC is composed of the state of Washington, the Hoh, Makah, Quileute Indian Tribes and Quinault Indian Nation, and was formed to provide a forum for resource managers to exchange information, coordinate policies, and develop recommendations for resource management within the sanctuary.

The Hoh, Makah, Quileute Indian Tribes and Quinault Indian Nation signed treaties with the U.S. government and exist as domestic sovereigns. Since the affirmation of treaty fishing rights in *U.S. v. Washington*, tribal, state and federal governments developed a unique management approach for fisheries in western Washington. This addendum explains this co-management approach, its underlying legal framework, and Washington Coastal Treaty Tribes' historic and present use of marine resources.

The condition report and the IPC addendum will be made available to the general public in advance of scoping meetings and on the Internet at: <http://sanctuaries.noaa.gov/science/condition/welcome.html>.

**Scoping Comments**

Scoping meetings provide an opportunity to make direct comments to NOAA on the management of the sanctuary's natural and cultural resources, including administrative programs. We encourage the public to participate and welcome any comments related to the sanctuary. In particular, we are interested in hearing about the public's view on:

- The sanctuary's potential management priorities for the next five to ten years.
- Effectiveness of the existing management plan in protecting sanctuary resources.
- Sanctuary programs, activities and needs, including but not limited to resource protection programs, research and monitoring programs, education, volunteer, and outreach programs.
- Implementation of regulations and permits.
- Adequacy of existing boundaries to protect sanctuary resources.
- Assessment of the existing operational and administrative framework (staffing, offices, vessels, etc.).

Authority: 16 U.S.C. 1431 et seq. (Federal Domestic Assistance Catalog Number 11 429 Marine Sanctuary Program).

Dated: September 4, 2008.

Daniel J. Basta,  
Director for the Office of National Marine Sanctuaries.

[FR Doc. E8-21489 Filed 9-12-08; 8:45 am]

BILLING CODE 3510-HK-P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 52**

[EPA-R04-OAR-2008-0593-200818b; FRL-8714-6]

**Approval and Promulgation of Implementation Plans Alabama: Volatile Organic Compounds and Open Burning**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

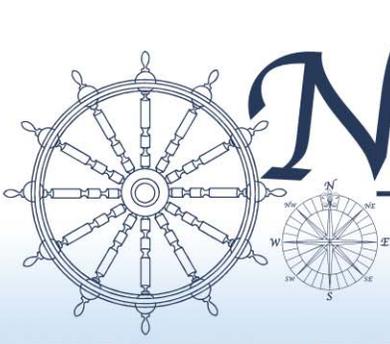
**SUMMARY:** EPA is proposing approval of revisions to the Alabama State Implementation Plan (SIP), submitted by the Alabama Department of Environmental Management on January 8, 2008. The revisions include modifications to Alabama's Volatile Organic Compounds and Control of Open Burning and Incineration regulations, found at Alabama Administrative Code Chapters 335-3-1 and 335-3-3, respectively. This proposed action is being taken pursuant to section 110 of the Clean Air Act.

This SIP revision also contains a letter addressing the requirements of section 110(a)(2)(D)(i), which EPA will consider separately.

**DATES:** Written comments must be received on or before October 15, 2008.

**ADDRESSES:** Submit your comments, identified by Docket ID No. "EPA-R04-OAR-2008-0593," by one of the following methods:

1. [www.regulations.gov](http://www.regulations.gov): Follow the on-line instructions for submitting comments.
2. *E-mail:* [harder.stacy@epa.gov](mailto:harder.stacy@epa.gov).
3. *Fax:* 404-562-9019.
4. *Mail:* "EPA-R04-OAR-2008-0593," Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW., Atlanta, Georgia 30303-8960.
5. *Hand Delivery or Courier:* Ms. Stacy Harder, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW., Atlanta, Georgia 30303-8960. Such deliveries are only accepted during the



OLYMPIC COAST NATIONAL MARINE SANCTUARY

# *Navigating the Future*

*Management Plan Review*



Agenda Item E.1.b  
Attachment 3  
April 2009

## **PUBLIC SCOPING & ISSUES ANALYSIS**

### **PART 2: TOPICS ANALYSIS REPORT**



**DECEMBER 2008**

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**PUBLIC SCOPING & ISSUES ANALYSIS  
PART 2 TOPICS ANALYSIS REPORT**

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## I. INTRODUCTION

This document was created to assist Olympic Coast National Marine Sanctuary (OCNMS or Sanctuary) staff, sanctuary Advisory Council (AC) members, Olympic Coast Intergovernmental Policy Council (IPC) representatives, and Office of National Marine Sanctuaries (ONMS) staff in understanding, interpreting and prioritizing the comments received during the Public Scoping & Issues Analysis (scoping) phase of management plan review (*Navigating the Future*) at OCNMS. A companion report, the Scoping Summary report (Part 1), describes how comments received during Olympic Coast National Marine Sanctuary's (OCNMS or Sanctuary) public comment period were reviewed and sorted under 37 topics. This report (Part 2) provides a brief analysis of each of these 37 topics.

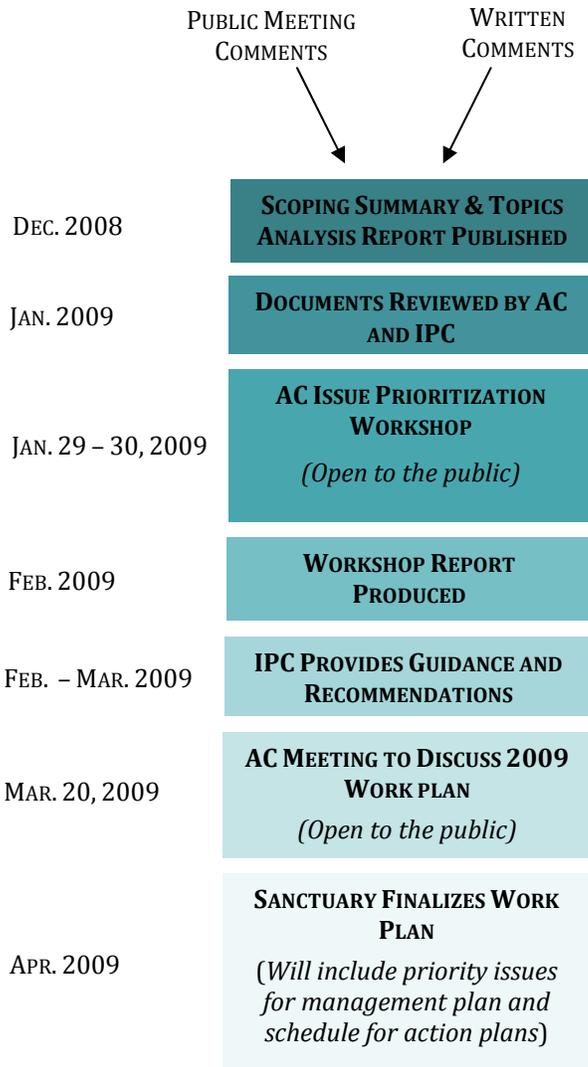
The goal of this report is to inform the next step of the scoping process, when OCNMS will work with the AC and IPC to identify priority topics that will be further addressed during management plan review and may be incorporated into the revised management plan for OCNMS.

This report is comprised of analyses for the 37 topics identified as a result of public comment. Each topic analysis has three elements:

- a description of the topic based on public comments with limited interpretation by sanctuary staff,
- a synopsis of public comments related to the topic that emphasizes the focus provided by the public, and
- a summary of findings from the OCNMS 2008 Condition Report and a brief description of OCNMS work related to the topic.

### **Public Scoping and Issues Analysis**

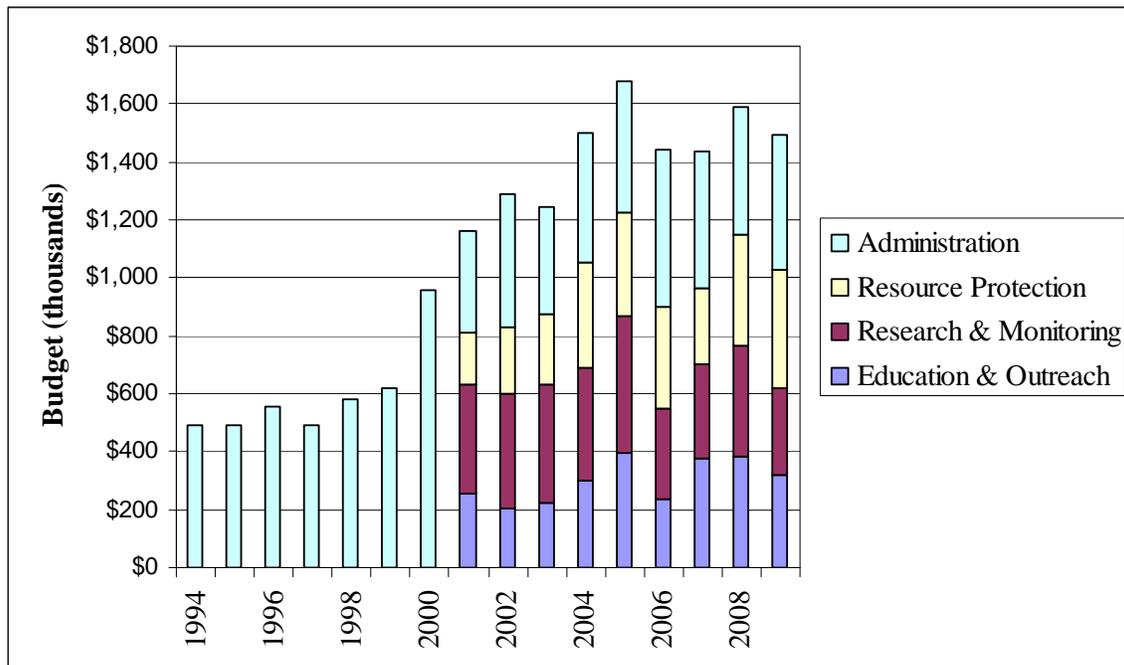
Figure 1 outlines the basic steps OCNMS will take to reach the end goal of the Public Scoping & Issues Analysis phase of *Navigating the Future*: a work plan that outlines how OCNMS will develop action plans for each issue identified as a high priority during scoping. These action plans will form the foundation of the revised management plan for OCNMS. In order to focus the work plan, the topics identified here will be evaluated by the Advisory Council at a workshop in late January 2009. The goals of the workshop will be for AC members to understand and discuss the issues identified through the scoping process, and then to provide the Sanctuary Superintendent with advice on rating and ranking for each topic identified during scoping. If possible, the AC will recommended narrowed-down list of topics to be addressed through *Navigating the Future*. These topics will be evaluated by the IPC, whose guidance will assist the Sanctuary Superintendent in making the final decision on topics to be evaluated through action plans.



**FIGURE 1. Diagram showing activities for remainder of the *Navigating the Future* Public Scoping & Issues Analysis phase at OCNMS.**

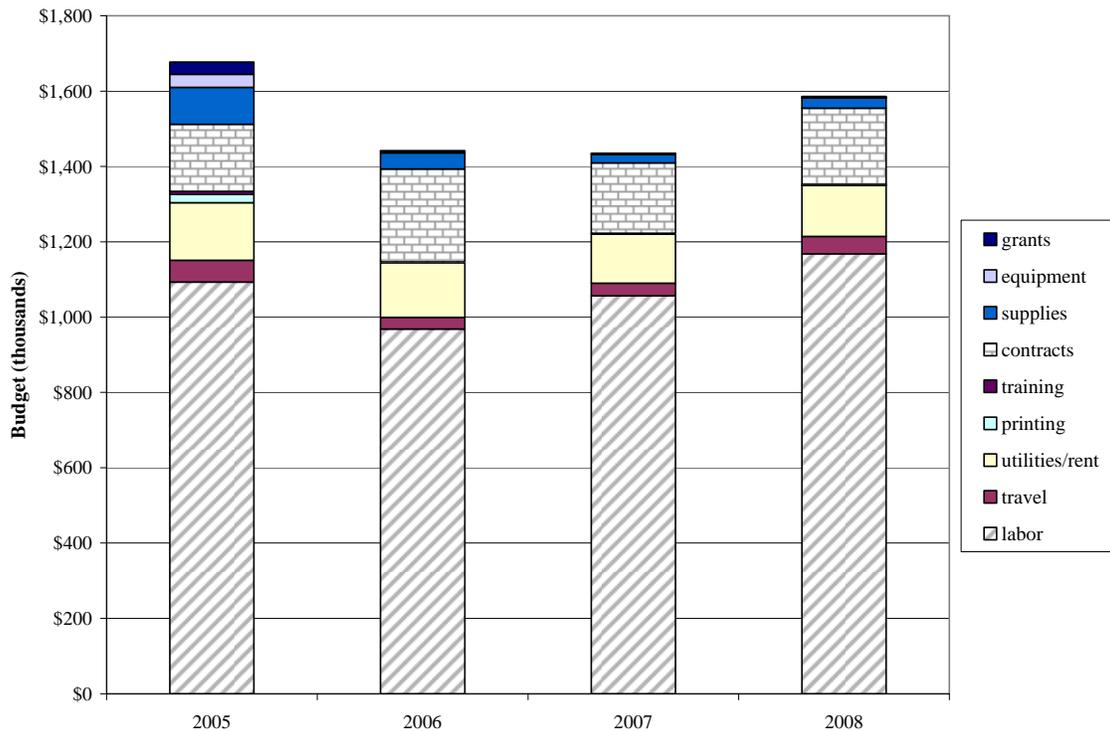
**Sanctuary Budgets**

A theme that could have been mentioned in nearly all topic analyses is that funding has limited the progress, accomplishments, and successes of OCNMS over its 14-year history. If budgets had been larger, more work could have been accomplished. Figure 2 shows the growth in OCNMS’ budget relative to its original levels in the 1990s. Comparison between years is complicated because labor was not broken out by major program area prior to 2001. Also, two factors moderate the apparently large increases since 1999: 1) values are not adjusted for inflation, and 2) OCNMS staff increased from 4 to 11 federal employees between 1994 and 2008.



**FIGURE 2. OCNMS budget by year**

Perhaps more relevant is a breakout of the budget by fixed administrative expenses (i.e., salaries, utilities, rent) and more discretionary expenses such as travel, supplies, equipment, and contracts (primarily equipment leasing and support staff for graphics, data management, vessel skipper, Advisory Council coordination). Figure 3 shows that the majority of the OCNMS budget goes to salaries, utilities, and rent, and that discretionary spending that supports OCNMS programs has been a relatively small portion of the total budget. In recent years, funds available for equipment purchases and program support beyond staff salaries have been limited.



**FIGURE 3. OCNMS budget by spending category**

### Preliminary Priority Topics

In September 2008 in advance of the public scoping period for *Navigating the Future*, OCNMS consulted with the IPC (state of Washington and the Coastal Treaty Tribes who have jurisdiction over resources within OCNMS) to prepare a list of preliminary priority topics for the OCNMS management plan review process. This list was considered by OCNMS and the IPC to represent the most important issues that NOAA should consider in preparation of a new OCNMS management plan. OCNMS and the IPC were interested in hearing public comments on these topics, as well as any other topics of interest to the public or other agencies. These preliminary priority topics were included in the Federal Register announcement of OCNMS management plan review and in public outreach materials for the public scoping period.

This effort appears to have been successful – numerous public comments centered on preliminary priority topics. When appropriate, preliminary priority topic titles and the description language developed by OCNMS/IPC were used as the basis for topic descriptions provided in this document. The following listing indicates the alignment between OCNMS/IPC preliminary priority topics and topics identified through public scoping comment review.

OCNMS/IPC Preliminary Priority Topics

Public Scoping Topics

Improved Partnerships

- Collaborative and Coordinated Management

Characterization and Monitoring

- Ecosystem-level Research
- Habitat Characterization
- Living Resources Monitoring
- Water Quality Monitoring

Spill Prevention, Contingency Planning and Response

- Spill Prevention, Contingency Planning and Response

Climate Change

- Climate Change

Ocean Literacy

- Ocean Literacy

Marine Debris

- Marine Debris – Shoreline Cleanup
- Marine Debris - Abandoned Submerged Equipment

**II. SUMMARY ANALYSIS OF TOPICS RAISED DURING THE PUBLIC SCOPING PERIOD**

These analyses are intentionally brief and are not intended to provide thorough documentation or extensive discussion. They are concise descriptions of topics as identified in the public comments and interpreted by sanctuary staff. Because they are based on public comments, topic description language, and especially the “focus of comments”, does not necessarily reflect the opinions of sanctuary staff.

**1. Administration - Flexibility to Respond to Emerging Issues**

**Description** In an era of rapidly advancing technologies, intense human pressures on the regional and global environment, and improved understanding of ecosystem interactions and resiliency, issues are likely to arise that are not anticipated during management plan review. A framework that guides OCNMS’ responses to emerging issues would help to address these issues more thoughtfully and effectively. While the Sanctuary’s revised management plan will direct actions on defined priority topics, it may also limit management flexibility to assess and respond to emerging issues that arise between management plan review cycles.

**Focus of comments** Comments suggest the Sanctuary could be an area for testing and research on environmental impacts of developing technologies or a

control area for these studies; should employ adaptive management techniques; and should have an interim, public evaluation or a flexible process by which it can assess and respond to emerging issues that arise between management plan review cycles.

**Status** Administrative issues were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. The Sanctuary occasionally confronts new issues that were not envisioned at the time of sanctuary designation. When a new activity has been proposed with potential to impact sanctuary resources or conflict with a prohibited activity, it has been addressed through the permitting process and consultation with state/federal/tribal partners. On occasions where a new resource management concern has been raised, it has been addressed through changes in staff assignments, expenditures, and/or annual operating plans.

## **2. Administration - Infrastructure**

**Description** Expanding sanctuary operations and programs with additional funding and infrastructure would improve sanctuary staff's abilities to meet the current research, education, outreach and resource protection needs. Sanctuary operations and programs need to be expanded and supported with appropriate funding and infrastructure. The responsibility for administering the Sanctuary falls to the Sanctuary Superintendent who is responsible for developing an annual budget and operating plan, as well as promoting capital improvement projects.

**Focus of comments** Comments suggest that the Sanctuary should replace the *RV Tatoosh* and move OCNMS offices. Other comments recommended that OCNMS establish visitor and research centers or facilities near the coast adjacent to the Sanctuary, and establish a telephone "hotline" for reporting incidents and observations.

**Status** Administrative issues were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. Since designation the Sanctuary has continually reviewed its infrastructure needs, including vessels, moorage, warehouse, office and interpretive spaces. In 1998 the Sanctuary created a master plan for interpretive facilities, including coastal interpretive signs and the Olympic Coast Discovery Center, which guided the use of Procurement, Acquisition and Construction funds. A long range master plan for facilities was completed in 2002 and has been partially implemented. In 2006, a small boat requirements study identified 2008 as an estimated replacement date for the *RV Tatoosh*.

However, vessel replacements and facilities construction are dependent on appropriation levels and internally defined priorities across the sanctuary system, with needs routinely exceeding appropriations levels.

### **3. Administration - Sanctuary Goals & Objectives**

Description	OCNMS' goals and objectives, as articulated in the 1994 management plan, should be updated based on new priorities identified through the management plan review process.
Focus of comments	Comments suggest that the Sanctuary's highest priorities should be conservation of biodiversity, protection of the ecosystem and habitats, and resource conservation. Also, OCNMS should better define its roles and authorities, support collaborative planning and management, assess accomplishments relative to the original 1994 goals and objectives, promote sustainable harvest, but not be involved in fisheries management.
Status	Administrative issues were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. While the Sanctuary has not officially changed its goals and objectives as of December 2008, priorities are evaluated on an ongoing basis as part of annual operating plan development and annual programmatic priorities established by the Office of National Marine Sanctuaries (ONMS) and the ONMS <i>Strategic Plan 2005-2015</i> .

### **4. Boundary Adjustment**

Description	The current boundaries of the Sanctuary were determined during the designation process to represent a distinct ecosystem, informed by the best available science at the time. Adjustment of sanctuary boundaries could be considered in the future.
Focus of comments	Comments suggest that current boundaries be re-examined to consider expansion east into the Strait of Juan de Fuca to include rich kelp beds, south to Grays Harbor, and/or west to include deep canyons. Others suggested that OCNMS should cover the entire Washington coast or encompass a more complete ecosystem.
Status	The need to adjust of sanctuary boundaries was not assessed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. The Sanctuary has not evaluated any boundary adjustment options since its designation in 1994. OCNMS has worked

collaboratively on wide-scale regional initiatives, such as the Northwest Straits Commission and the Washington State Ocean Policy Working Group, and regional biological assessments, such as California Current Large Marine Ecosystem studies, which might inform a future evaluation of boundary modification options.

## **5. Climate Change**

**Description** Ongoing changes to the climate and marine ecosystem have been documented, yet there is considerable uncertainty about current and future consequences at local, ecosystem and oceanic scales. Increased coordination and cooperation among resource management agencies would improve planning, monitoring and adaptive management to address this phenomenon. Monitoring data can serve as a baseline from which to assess changes in the coastal ecosystem that may occur as a result of climate change.

**Focus of comments** Comments suggest there should be an assessment of vulnerabilities, predictive modeling, and identification of key species susceptible to impacts and/or appropriate for monitoring. Baseline and long-term monitoring should be conducted and focused on climate change; partnerships improved to expand monitoring and research efforts. Paleoshoreline studies could provide historical context for resource use and inform studies of impending shifts in species abundance.

**Status** The 2008 OCNMS Condition Report noted early evidence of environmental changes in the region linked to human-influenced climate change, but that some linkages are uncertain. This is a rapidly developing body of knowledge (e.g., the December 2008 paper by Wootton et al. on ocean acidification at Tatoosh Island). OCNMS has contributed to long-term monitoring including kelp, intertidal and subtidal invertebrates and macroalgae, seabird and marine mammal abundance, distribution, and mortality rates, and since 2000 has studied nearshore water quality and movement. In general, these programs have not been analyzed specifically for their utility to support climate change research; however this work contributes to programs that do examine climate change.

## **6. Collaborative and Coordinated Management**

**Description** A collaborative and coordinated approach is essential to effective management of OCNMS. Active partnerships provide a more transparent and inclusive structure for management of Olympic Coast marine resources within tribal, local, state, federal and international jurisdictions.

**Focus of comments**      Comments suggest that this collaborative approach needs to be developed on an international scale through partnership with Canada, as well as on a regional and state level through partnership with the Olympic Coast Intergovernmental Policy Council (IPC), and involvement in implementation of the Washington Ocean Action Plan and the West Coast Governors Agreement on Ocean Health. Additionally, the Sanctuary needs to strengthen its relationships with the four coastal treaty tribes and other local communities by working on collaborative research, education and stewardship programs, and supporting community-based coastal and marine management efforts, such as the establishment of Outer Coast Marine Resources Committees.

**Status**      The Sanctuary’s management approach was not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. Since designation, OCNMS has actively worked toward collaborative and coordinated management, seeking partnerships with various governments and communities, including Canada. This is a fundamental element of our programming; there are few activities or programs that the Sanctuary does independent of partnerships. The Sanctuary has had an active and ongoing Advisory Council since 1996, sponsored international symposia on the Big Eddy system, and most recently signed a Memorandum of Agreement with the four coastal treaty tribes and the state of Washington to form the Olympic Coast Intergovernmental Policy Council.

**7. Community Outreach**

**Description**      Involvement of local and regional communities in sanctuary programs is vital. It is important that people on the Olympic Peninsula and in the region are aware of the Sanctuary’s presence and management goals, and have meaningful opportunities to be involved in sanctuary programs. This will foster a sense of marine stewardship.

**Focus of comments**      Comments suggest that the Sanctuary’s outreach program should have a strong focus in regional communities, use partnerships and modern outreach technology (e.g., social networking sites, internet videos and widgets), produce publications, regularly update the web site, and provide stewardship, volunteer and learning opportunities to engage the local public of all ages.

**Status**      The 2008 OCNMS Condition Report, which assessed natural and

cultural resources, did not address community outreach. OCNMS regularly conducts outreach at annual community events (e.g., Makah Days, Grays Harbor Shorebird Festival, Beachcombers Fun Fair, Port Townsend Sea Kayak Symposium etc.), provides periodic presentations on education and research programs to local service groups, maintains an information-rich web site (containing information on sanctuary resources, background documents, profiles of staff and programs and archives of public domain images), and assists with organization of the annual beach cleanup that brings hundreds of volunteers to the Sanctuary's shore. OCNMS also manages the citizen science Coastal Observation and Seabird Survey Team (COASST) beached bird program along the sanctuary coastline, for which more than 60 volunteers conduct monthly surveys for dead birds and marine mammals, marine debris and unusual events (e.g., mortalities of any species).

## **8. Ecosystem Impacts of Fishing**

Description	Uncertainty exists related to ecosystem-level impacts from physical disturbance to seafloor habitats and effects of biomass removal from fishing within the sanctuary area. An ecosystem-based management approach that considers potential impacts of fishing can promote sustainable fisheries.
Focus of comments	Comments suggest that the Sanctuary should promote ecosystem-based fisheries management, prohibit fishing practices that damage seafloor habitats from all or portions of the Sanctuary, protect biogenic habitats where they are located, and protect rockfish populations that appear to be in decline.
Status	The 2008 OCNMS Condition Report notes that information on past and present locations of biogenic habitats within the Sanctuary is sparse. Because bottom trawl and longline fisheries can damage biogenic habitat and have been practiced widely throughout the Sanctuary, the report assumes habitat damage has been widespread. Reduction of fish biomass has led to some depleted species, but recovery plans and management practices have led to recovery of some overfished stocks. Poor understanding of ecological processes makes it difficult to determine the ecosystem level impacts of these practices. In association with its habitat mapping and characterization program, OCNMS conducts surveys to identify locations of habitat-forming corals and sponges that are vulnerable to physical disturbance, and documents species-habitat associations (including fish) and collects information on physical disturbance to seafloor habitats. Survey effort for this expensive work has been

limited by funding and generally requires grant funding beyond the sanctuary budget.

## **9. Fisheries Stock Assessment**

Description	Stock assessments provide important information about the health of fish populations and serve as the foundation for many fisheries management decisions. Some believe that current assessments of groundfish stocks off Washington are inadequate for management of groundfish on a regional basis, and that improved fisheries stock assessments for the Washington coast will assist fisheries management decisions.
Focus of comments	Numerous public comments request the involvement of the Sanctuary in fisheries stock assessment work and specifically note that current assessments of groundfish stocks off Washington are data poor and inadequate for regional management of the fishery (as opposed to coast-wide).
Status	The 2008 OCNMS Condition Report notes indications that some groundfish stocks off Washington have a relatively high biomass. However, existing data for most targeted groundfish species have not been analyzed to determine if stocks off Washington are more abundant than those off Oregon and California. As background, when the Sanctuary was designated in 1994, NOAA determined that, at that time, existing fishery management authorities were adequate to address fishery resource issues. Thus, OCNMS has not been involved in assessing the status of fish stocks, work that is currently conducted by Northwest Fisheries Science Center. OCNMS has been mapping seafloor habitats and documenting fish use of different habitat types. Sanctuary staff and fisheries managers have initiated discussions to identify how OCNMS' research programs can collect data to support fisheries management needs.

## **10. Habitat Characterization**

Description	The Sanctuary and its partners have made progress mapping habitats in the Sanctuary, but much work remains to be done. There is a need to complete characterization of seafloor habitats and identify species-habitat associations to effectively inform management decisions.
Focus of comments	Comments included the need to complete seafloor mapping work as a means to characterize benthic habitat, its condition, and associated species. This should be a high priority, with focus on habitat forming species (deep sea coral and sponge communities). Goals

should include accessing existing data collected by the Navy and sharing data with partners.

**Status** The 2008 OCNMS Condition Report notes that intertidal habitats of the outer Olympic Coast are fairly well characterized. Nearshore habitats remain poorly characterized except for the distribution of kelp. Since 2001, OCNMS with assistance from our federal/state partners has conducted approximately 20 high resolution acoustic surveys in support of our seafloor habitat characterization efforts, mapping an estimated 25% of the Sanctuary. This continues to be a major emphasis for the Sanctuary. Three research cruises have included efforts to collect information on benthic communities and species associations. Although the condition of seafloor habitats was not documented before large-scale commercial activities began, video surveys have been conducted in limited areas and provide evidence of disturbance to physical structure and biological communities.

## **11. Habitat Protection**

**Description** In seeking to balance human use of the Sanctuary with conservation goals, habitat protection should be a priority. The Sanctuary needs to develop a holistic approach to conservation and management of the marine ecosystem(s) within its boundaries, including a plan to protect seabed, water column, and biogenic habitats and habitats that support marine mammals and seabirds.

**Focus of comments** Comments called for protection of habitats and water quality that support marine mammals, seabirds, larval dispersal. Biogenic seafloor habitats (deep sea corals and sponges), estuaries, kelp beds, and deep sea canyons were identified as priority habitats for protection. Zoning was noted as a tool to mitigate habitat damage from bottom contact fishing gear and intertidal harvest.

**Status** The 2008 OCNMS Condition report reviews habitat characterization efforts, a critical first step to habitat protection. Human impacts to sanctuary habitats were discussed in relation to bottom contact fishing gear, intertidal visitation, marine debris, and underwater noise pollution. Surveys and monitoring conducted by OCNMS and federal/state partners informs management actions related to habitat protection through identification of habitat impacts and trends in species abundance and diversity. Existing OCNMS regulations provide some protection of habitats (i.e., low overflight restrictions; prohibitions on discharges and seafloor disturbance). Regulations implemented by the Coastal Treaty Tribes, national wildlife refuges,

national park, and NOAA Fisheries complement these protections. OCNMS has briefed the Pacific Fisheries Management Council on recent deep sea coral and sponge findings. OCNMS also has a seat on the Council's Essential Fish Habitat (EFH) review committee that reviews existing and new proposals for EFH designations.

## 12. Invasive Species

Description	While invasive species are not currently known to cause significant harm in the Sanctuary, there are ecological and socioeconomic risks, often severe, associated with a compromised ecosystem if invasive species are introduced and spread over wide areas. Monitoring for introductions of non-native and invasive species should be proactive and routine to mitigate or prevent establishment of invasive species.
Focus of comments	Comments recommend aggressive, proactive monitoring efforts in coordination with partners for early detection of invasive species, and eradication programs when appropriate.
Status	The 2008 OCNMS Condition Report reviewed findings from survey work supported by the Sanctuary. Relatively few non-indigenous species have been identified, and, of those, only a few are invasive. OCNMS has sponsored intensive, short duration surveys of intertidal areas conducted by taxonomic experts to develop a comprehensive list of species and to search for non-indigenous invertebrates and macroalgae. OCNMS has collaborated on studies of invasive tunicates and settlement of non-indigenous larvae in nearshore areas, and also conducts routine monitoring for the invasive green crab. To date, no eradication plans have been implemented because a significant problem has not been identified.

## 13. Living Resource Conservation

Description	OCNMS hosts abundant and diverse wildlife communities that are threatened by an array of human activities. In particular, acoustic and visual disturbances may have physical and behavioral impacts on wildlife. OCNMS should be proactive in promoting wildlife conservation and mitigating the numerous activities (e.g., recreational, commercial, military etc.) that can impact wildlife.
Focus of comments	Comments advise that conservation of biodiversity and protection of all wildlife species should be a primary focus for OCNMS. Recommendations included protection of depleted, threatened, and vulnerable species, minimization of wildlife disturbance (from human activities), and consideration of noise pollution in the marine

environment.

**Status** The 2008 OCNMS Condition Report, noted the need to locate, study and protect vulnerable habitat forming species on the seafloor; identified overexploitation of some groundfish species as having led to wide area closures to rebuild fish stocks and negative impacts to biodiversity; hypothesized that depletion of high-order predators may have altered ecosystem dynamics; reported on reduced populations of key species (Common Murres, sea otters, several rockfish species); and provided an improving trend in living resources with decreased commercial and recreational fishing pressure. To protect wildlife populations and their habitats, OCNMS regulations contain several prohibitions, including take or possession of any marine mammal, sea turtle or seabird and flying motorized vehicles below 2000 feet altitude within one mile of shore, with exceptions consistent with tribal treaty rights. Ongoing monitoring and ecosystem-level research by OCNMS and partners informs wildlife management decisions. OCNMS has conducted targeted outreach on overflight regulations at regional air shows and has promoted “ocean etiquette” to minimize wildlife disturbance at kayak symposia, during COASST training, and in response to marine mammal strandings.

**14. Living Resources Monitoring**

**Description** Long-term monitoring of biological resources is critical to the successful management of the Sanctuary. Long-term and collaborative monitoring is required to assess the current status (abundance) and condition (health) of key species in the Sanctuary, as well as seasonal and multi-year trends.

**Focus of comments** Comments support continuation of existing long term monitoring work, as well as monitoring biodiversity and the status and condition of key species, specifically high order predators, threatened or endangered species, seabirds, salmon, larval fish, and kelp. Recommendations included year round monitoring, increased use of technology, focus on collaborative efforts, and monitoring for impacts of climate change.

**Status** The 2008 OCNMS Condition Report reviews living resource monitoring supported by the Sanctuary and its partners in the context of biodiversity, extracted, non-indigenous, and key species, and impacts of human activities. In collaboration with multiple partners, OCNMS has contributed to long-term monitoring of kelp, invertebrates and macroalgae, and seabird and marine mammal abundance, distribution, and mortality rates, ranging from intertidal

areas to the deep seafloor.

### **15. Local and Customary Knowledge**

Description	The Sanctuary needs to develop a holistic, ecosystem-based management approach that incorporates tribal and non-tribal knowledge about the ecology of sanctuary resources. The Sanctuary needs to work with tribal and non-tribal communities to catalogue this knowledge and use it to inform management decisions.
Focus of comments	Comments included the importance of collecting oral histories, the need to inform the scientific process with traditional knowledge, and the value of local knowledge to sanctuary research.
Status	The Sanctuary has connected with tribal members, local communities and fishers on a number of sanctuary initiatives on a case by case basis. Sanctuary work with the Makah Cultural and Research Center has focused on interpreting Makah cultural understanding of marine environment and hosts about 45,000 visitors annually.

### **16. Marine Debris – Abandoned Submerged Equipment**

Description	Marine debris in subtidal areas injures wildlife and marine habitats, and is a persistent problem for which removal and reduction efforts are necessary. Partnerships and regional efforts should be fostered to identify locations of derelict vessels, abandoned fishing gear, and other materials, develop methods for their removal, and educate all area users about environmental impacts of abandoned submerged equipment.
Focus of comments	Comments emphasized the importance of collaborative efforts to fund survey, cleanup, and prevention work to address abandoned submerged equipment. Unfished crab pots were noted as a problem.
Status	The 2008 OCNMS Condition Report reviewed efforts supported by OCNMS to assess and remove marine debris, identified habitat degradation as an impact of marine debris, and noted unfished crab pots as a management issue. In 2005, OCNMS partnered with the Makah Tribe to assess the extent of and remove derelict fishing gear in waters off the Makah Reservation. OCNMS documents the presence of derelict fishing gear during seafloor surveys, and has sought partnerships with tribal fisheries managers and the state of Washington to address the problem of abandoned crab pots. OCNMS works with partners to mitigate impacts of derelict vessels and remove them when feasible. For example, in 2007, OCNMS

worked with the U.S. Coast Guard (USCG) and responsible party to require the stabilization and salvage of a 72' fishing vessel that sank with approximately 2,500 gallons of fuel aboard.

### **17. Marine Debris – Shoreline Cleanup**

Description	Marine debris on the shore injures wildlife and marine habitats, degrades the wilderness aesthetic of outer coast beaches, and is a persistent problem for which removal and reduction efforts are necessary. This can be addressed through a comprehensive, collaborative shoreline cleanup program that includes regular debris removal, monitoring of debris types, and outreach efforts focused on volume reduction and explanation of environmental impacts of plastics and other debris on our shores.
Focus of comments	Comments recommended continued partnerships to characterize and remove debris from shorelines. Education and source reduction programs were emphasized, as well as the need for multiple efforts throughout the year.
Status	The 2008 OCNMS Condition Report reviewed efforts supported by the Sanctuary to assess and remove marine debris, and identified habitat degradation as an impact of marine debris. Since the first effort in 2000, OCNMS has supported the annual spring beach cleanup along the Olympic Coast. OCNMS was instrumental in developing a five year strategic plan for coastal cleanups, and in 2007 was a founding partner in Washington Clean Coast Alliance that now coordinates this event. Currently, sanctuary staff leads work groups that focus on monitoring, recycling and outreach elements of Alliance efforts. In addition, OCNMS encourages COASST volunteers to collect data on shoreline debris to support the EPA/Ocean Conservancy Marine Debris Program, which focuses on plastics. These data will be useful in development of source reduction programs.

### **18. Maritime and Environmental Safety - Harbors of Refuge**

Description	Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Harbors of refuge are areas where disabled vessels can shelter while repairs are made. The lack of such harbors along the Olympic Coast was identified as a concern.
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Focus of comments      Comments identified a need for additional harbors of refuge between Grays Harbor and Neah Bay, and development of formalized agreements for their use.

Status      Harbors of refuge were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. Although a systematic analysis has not yet been conducted, it appears that the exposed and rocky nature of the Olympic Coast may make it a poor candidate for locating a harbor of refuge within OCNMS .

**19. Maritime and Environmental Safety – Navigation**

Description      Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Improvements to navigational aids and nautical charts can improve marine safety and reduce the risk of environmental impacts from oil spills.

Focus of comments      Comments requested improved NOAA charts for the area, and specifically the need for a navigational aid on Duntz Rock.

Status      Navigation issues, other than vessel management and monitoring, were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. The Sanctuary actively notifies the Office of Coast Survey when navigational hazards are identified in the Sanctuary. Habitat mapping data collected on Office of Coast Survey vessels is also used for charting purposes. OCNMS does not have responsibility for navigational aids but could work with others within NOAA and the USCG on navigation issues.

**20. Maritime and Environmental Safety - Vessel Management**

Description      OCNMS is co-located with the entrance to the inland water ports of Seattle, Tacoma and Vancouver, British Columbia, and the marine route to major regional oil refining facilities. Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Vessel traffic in the Sanctuary is managed through a system of reporting, communications, traffic lanes, monitoring and an Area To Be Avoided (ATBA). Improvements to this system could be considered to further reduce risk of release of hazardous cargo.

Focus of comments      Comments included recommendations to study coastal barge towing practices, continue monitoring the ATBA, make the ATBA mandatory, work in partnerships especially with the USCG, conduct

an analysis of vessel traffic to identify potential risk reduction measures, and focus on smaller vessels that are most often the source of oil spills.

**Status** The 2008 OCNMS Condition Report summarized large vessel traffic management and trends at the entrance to the Strait of Juan de Fuca, and discussed improved ballast water and cruise ship discharge management practices in the context of water quality. The Sanctuary has been active in maritime issues since prior to designation, with its major contribution being the designation and continued monitoring of and modifications to the ATBA.

## **21. Maritime and Environmental Safety - Weather Forecasting**

**Description** Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Large portions of the Washington outer coast do not have National Weather Service doppler radar coverage. Expanded radar coverage would improve marine safety on the outer Washington coast.

**Focus of comments** Comments specifically requested extension of doppler radar coverage to areas where it is lacking on the outer Washington coast.

**Status** Weather forecasting was not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. Although the Sanctuary does not have any weather forecasting programs, it recognizes the need for improved forecasting capabilities and could raise this concern with NOAA's Weather Service.

## **22. Maritime Heritage -Cultural Resource Management**

**Description** Characterizing and protecting maritime archaeological and cultural resources is an important role of the Sanctuary. Currently, these resources are inadequately characterized within the Sanctuary.

**Focus of comments** Comments suggest that emphasis should be placed on partnering with volunteers and other organizations to conduct surveys for shipwrecks and monitor their status, and seeking funding beyond the Sanctuary budget to support survey efforts.

**Status** The 2008 OCNMS Condition Report concludes that maritime archaeological resources are not being effectively managed, primarily because funding has limited survey efforts. OCNMS has

conducted remote sensing for shipwrecks in five nearshore areas and conducted numerous surveys of the shipwreck *Austria* at Cape Alava. In 2008, volunteer divers, supported by the Sanctuary, surveyed portions of the *Andalusia*.

### **23. Maritime Heritage - Living Cultures**

Description	Within the Sanctuary system OCNMS is unique in that it is entirely encompassed by the usual and accustomed fishing areas of the Hoh, Makah, and Quileute tribes and the Quinault Indian Nation. OCNMS needs to expand its knowledge of and improve its communication messages about the Native American cultures that have lived along Washington's Outer Coast for thousands of years, as well as the more recent history of non-tribal residents and fishers.
Focus of comments	Comments recommend efforts to collect oral histories associated with maritime activities, engage the public in maritime history through outreach efforts, protect maritime heritage and sacred sites, and pursue archaeological and paleoshoreline research that reveals how past generations used the marine environment.
Status	Living cultures were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. OCNMS has provided support for and helped document Tribal Journeys (an annual tribal canoe expedition) and has conducted cooperative projects with the Makah Cultural and Research Center to investigate a paleoshoreline site on the Makah Reservation and prehistoric sites on Tatoosh Island.

### **24. Military Activities**

Description	The U. S. Navy conducts operations within OCNMS, with military training, warning and operating areas, as well as equipment research and development in the Quinault Underwater Test Range (QUTR). Sanctuary regulations contain a number of exemptions related to these activities. The U.S. Navy is currently conducting environmental analyses of these activities and plans to expand the QUTR as well as increase training and other operations in OCNMS. To minimize impacts of Naval operations on natural and cultural resources, a better understanding of the types of activities and their potential impacts to sanctuary resources and qualities is needed.
Focus of comments	Comments called for OCNMS to collaborate with the Navy in the assessment of impacts of military activities, with resource protection the primary consideration of OCNMS. Comments specifically raised

concerns about impacts to wildlife, particularly disturbance and injury to marine mammals from sonar. Some opposed expansion of the QUTR; some recommended elimination of all Navy testing and training in OCNMS.

**Status** The 2008 OCNMS Condition Report reviews naval activities in OCNMS and ongoing environmental reviews, and notes the potential for impacts related to noise, seafloor disturbance, and release of chemical contaminants. OCNMS has communicated regularly with the U.S. Navy on new activities being proposed within OCNMS or on collaborative projects. However, security concerns have limited information available to the sanctuary about the nature and extent of exempted military activities in OCNMS. Recent draft environmental impact statements published by the Navy have provided an outline of proposed future naval activities.

## **25. Non-point Source Pollution**

**Description** Runoff from upland sites may contain pollutants, including toxins and pathogens. Understanding of the types and sources of non-point source pollution is essential to OCNMS' ability to address potential impacts to sanctuary resources.

**Focus of comments** Comments focused on linkages between upland activities, particularly land clearing, and erosion, runoff of sediment and toxins into OCNMS.

**Status** The 2008 OCNMS Condition Report mentions a suspected but indefinite link between increased sediment and turbidity contributions from freshwater systems and declines in kelp beds near river mouths. Improved land management may have reduced impacts, but this has not been monitored. Historic practices (e.g., roads and culverts) continue to impact freshwater systems entering OCNMS. Atmospheric sources of contaminants are identified as a growing concern. OCNMS contributed to a comprehensive study of sea otter health that analyzed pollutants and pathogens levels in otters and their prey, and investigated potential routes for pathogen exposure, including a linkage between pathogens in domestic cats and sea otters. In 2003, OCNMS participated on U.S. Environmental Protection Agency's Environmental Monitoring and Assessment Program that sampled sediment, water, and fish tissue samples from the West Coast, including stations in OCNMS, for contaminants. NOAA's Status and Trends program has long term data for mussel tissue concentrations of chemical pollutants.

## **26. Ocean Literacy**

Description	Enhancing the public’s awareness and appreciation of natural and cultural resources is a cornerstone of the sanctuary’s mission. Recent regional initiatives and modern technology developments offer opportunities for OCNMS to expand educational efforts, reach a larger audience, and provide experiential learning to youth and adults alike.
Focus of comments	Comments suggest that the sanctuary’s education program should connect people with the ocean, provide opportunities for citizen science (such as monitoring programs), reach people of all ages but have a strong emphasis on experiential learning, youth, and local communities, have a regular newsletter, and use modern technology to engage the public.
Status	The 2008 OCNMS Condition Report, which assessed natural and cultural resources, did not address ocean literacy. Since 1994, OCNMS has developed programs in areas of formal and non-formal education. These programs have included targeted experiential education, formal classroom education and interpretive programs operated cooperatively with partners. In addition, OCNMS has used a wide variety of media, including print, electronic, web content, exhibits and visitor centers to deliver Ocean Literacy content to many audiences. Currently, OCNMS is the lead NOAA partner to Seattle Aquarium on a multi-year Ocean Literacy grant, “Ocean Science,” bringing ocean science subject expertise to teacher training programs for 4 <sup>th</sup> and 5 <sup>th</sup> grade teachers in regional schools. Sanctuary staff regularly speaks at local meetings of civic organizations and interest groups.

## **27. Public and Private Resource Use - Commercial Development**

Description	Commercial development in coastal waters has potential to harm resources and qualities of OCNMS, yet it often involves technologies for which environmental impacts have not been thoroughly evaluated. Commercial development also has potential to create area-use conflicts. Improved understanding of potential environmental impacts of ocean technologies will help OCNMS determine if project siting can be compatible with sanctuary goals and objectives and existing use. A sanctuary permitting process that allows for technologies that provide essential services for human society may be recommended or required.
Focus of	Comments varied considerably from promoting a ban on commercial

comments            development, especially aquaculture, to suggesting OCNMS be an area where new technologies and their impacts on natural resources are evaluated. A continued ban on oil and gas development was supported, while others asked for evaluation of mineral resources and treaty rights for their extraction. Permitting to accommodate development that provides essential services and zoning were recommended as tools.

Status                The 2008 OCNMS Condition Report mentions open ocean aquaculture and ocean energy projects as potential concerns in the future. Also, the report identifies environmental and social impacts associated with submarine cable installations. While sanctuary regulations allow for activities that are not otherwise specifically prohibited, most commercial development activities that could occur in OCNMS likely would require a permit that requires both an assessment of potential impacts to sanctuary resources and whether or not the use is consistent with sanctuary goals and objectives. To date, commercial development proposals have been evaluated through the sanctuary permitting process.

**28. Public and private resource use - Compatibility Analysis**

Description        The National Marine Sanctuaries Act allows for public and private uses of sanctuary resources, as long as those uses are not prohibited by other authorities and are compatible with the primary mandate of resource protection. This makes compatibility determination a key function of sanctuary management. The best available science and precautionary principle should be used to inform decision-making about compatibility and cumulative impacts of activities within OCNMS, while acknowledging that humans are part of our coastal and marine ecosystems.

Focus of comments    Comments included recommendations that the Sanctuary define which activities are compatible with its mission and with different habitat types, and conduct science to support compatibility analysis.

Status                Compatibility analysis was addressed in the 2008 OCNMS Condition Report in the context of pressures and impacts of various existing uses in the sanctuary. Recently, OCNMS acted as a community partner to a group of University of Washington students working on an Environmental Management Keystone Project, "Evaluating approaches for determining compatible uses that foster ecosystem-based management in the Olympic Coast National Marine Sanctuary".

## **29. Public and private resource use - Recreational Opportunities**

Description	Recreational opportunities in OCNMS need to be maintained and enhanced. The living resources that recreational users come to see and enjoy need to be protected.
Focus of comments	Comments suggested that tourism related to watchable wildlife and SCUBA diving should be encouraged, with protections provided to the most popular locations.
Status	Recreational opportunities were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. OCNMS in the past has had programs aimed at supporting ecotourism, promoting ocean etiquette, and educating pilots on wildlife disturbance issues and the sanctuary overflight regulation. No active programs beyond outreach at local fairs and symposia (Beach Combers Fair, kayak symposia) are currently in place, but outreach to the various recreational communities occurs on an ad-hoc basis.

## **30. Public and Private Resource Use - Socioeconomic Values & Human Use**

Description	Resource management should support socioeconomic values and human use, and value human beings as part of Washington's coastal and marine ecosystems. Protection of living resources, habitats and water quality, as well as sustainable use that supports local economies and cultures should be management priorities.
Focus of comments	OCNMS received comments emphasizing that 1) socioeconomic values of local communities along Washington's coast need to be respected and taken into consideration when making sanctuary management decisions, and 2) human use of the resources should be allowed to continue and OCNMS should help, not hinder, the survival of local economies and traditional fishing cultures. Additional themes include striking a balance between public use and resource protection, and zoning for different uses.
Status	In the 2008 OCNMS Condition Report, socioeconomic values and human use were discussed in the context of pressures on natural and cultural resources during the assessment of the condition of those resources. OCNMS recognizes the value of sanctuary resources for societal and economic reasons, in addition to inherent natural and cultural values. Sanctuary staff believes these are not mutually necessarily exclusive values and in reality are integral to its primary goal of resource protection. Examples of existing zoning in OCNMS

include the ATBA and overflight restrictions to minimize disturbance to seabird colonies.

### **31. Regulations, Permitting & Enforcement**

Description	When OCNMS was designated in 1994, NOAA promulgated regulations to protect sanctuary resources. These regulations outline the requirements of the sanctuary's permitting program, through which permits can be issued to conduct an otherwise prohibited activity for a limited number of reasons. The responsibility for enforcing these regulations falls primarily to NOAA's Office of Law Enforcement. Potential improvements to OCNMS regulations, permitting process, and enforcement program should be considered.
Focus of comments	OCNMS received a number of comments related to potential changes in regulations and permitting. Some asked for no sanctuary involvement in fishery management; others asked for bans on all motorized boats, fishing, whaling, cruise ship discharges, Navy exercises, and use of the Copalis Beach airstrip.
Status	The 2008 OCNMS Condition Report, which assessed natural and cultural resources, did not directly address regulations, permitting and enforcement in OCNMS. In 2002, Olympic Coast sanctuary conducted an internal review of their <i>Enforcement and Voluntary Compliance Programs</i> . ONMS is currently working on a program-wide enforcement strategy and needs document. OCNMS' current status and needs will be reviewed in the context of this program-wide initiative. OCNMS currently benefits from a NMFS enforcement agent stationed on the Olympic Peninsula and a MOA with the USCG regarding enforcement

### **32. Research to Support Ecosystem Management**

Description	Improved understanding of ecosystem processes and functions will benefit OCNMS by informing management decisions. A scientific research program that focuses on ecosystem-level processes, species-habitat associations, and interspecies interactions and is conducted in collaboration with partners is essential.
Focus of comments	Comments suggest that OCNMS collaborate in and coordinate research efforts, identify and study key indicators of ocean health, use historic information to assess long term ecosystem changes, improve understanding of human and other apex predators influences on the system, study all life stages of organisms, monitor for

biodiversity, research linkages between physical, chemical, and biological ocean processes, and study interspecies dynamics. In the context of ecosystem based management, sanctuary research also could inform regional fisheries management efforts.

**Status** The 2008 OCNMS Condition Report addresses many elements of ecosystem health and discusses research findings relevant at the ecosystem level. However, the report acknowledges that species-habitat associations, trophic level interactions, and connections between oceanic processes and biological productivity are not well understood. Seafloor habitat and benthic species surveys, nearshore oceanographic monitoring, COASST surveys for dead birds and marine mammals, and marine mammal and seabird surveys supported by OCNMS and federal/state partners all improve our understanding of ecosystem-level processes, yet there is ample opportunity to augment these studies to improve our understanding of ecosystem processes. In addition, OCNMS has collaborated in ecosystem-level studies of the California Coastal Current system and has co-sponsored regional workshops on the Big Eddy ecosystem.

### **33. Spill Prevention, Contingency Planning and Response**

**Description** While advances in maritime safety have been made since the Sanctuary was designated, the potential for a catastrophic spill remains as a significant threat to marine resources. Oil spills cause immediate and potentially long-term harm to marine resources, as well as socioeconomic impacts to coastal communities. Involvement in regional planning efforts to strengthen prevention and response capabilities, including evaluating impacts of alternative response technologies, encouragement of equipment deployment drills off the outer coast, training staff, and protection of cultural resources and shoreline habitats are all important aspects of sanctuary management.

**Focus of comments** Comments called for year-round funding for the rescue tug, enhanced response equipment, and focus on prevention programs and response planning. Recommendations included staff training, analysis of water column impacts of dispersed oil, regular conduct of unannounced drills in the Sanctuary.

**Status** The 2008 OCNMS Condition Report analyzed vessel traffic management and characterized oil spills as having low probability but high risk. The lack of a major oil spill off Washington's outer coast since 1991 precluded assessment of real impacts of an oil spills on natural and cultural resources. OCNMS worked on designation of the Area To Be Avoided (ATBA) in 1994 and improvements to the

ATBA and vessel traffic lanes in 2002. OCNMS routinely monitors ATBA compliance to reinforce high compliance rates for this voluntary measure. OCNMS also has sponsored periodic meetings and trainings of outer coast trustees, participated in regional preparedness and response planning and drills, facilitated involvement of cultural resources specialists in 2008 NPREP drill, developed sanctuary-specific spill response documents to support response efforts and natural resource damage assessment, and participated in regional and national evaluations of alternative response technologies.

### **34. Treaty Trust Responsibility**

Description	The Sanctuary's relationship with federally recognized tribes is unique within NOAA's Office of National Marine Sanctuaries. Tribal treaties along with associated federal statutes, Executive Orders, and court rulings have established a unique legal relationship, an overarching federal trust responsibility of the United States to Indian tribes. This trust responsibility establishes legal obligations of the United States to Indian tribes, including the protection of treaty fishing rights. The trust responsibility of the Sanctuary to the Makah, Quileute, and Hoh tribes and Quinault Indian Nation is articulated in several judicial decisions, OCNMS regulations and in Executive Order 13175 of November 6, 2000, Consultation and Coordination With Indian Tribal Governments. The Sanctuary must honor its treaty trust responsibilities.
Focus of comments	Comments emphasize the importance of the Sanctuary's treaty trust responsibility and request that the Sanctuary not infringe on the treaty rights, particularly fishing rights, of the coastal tribes. Sanctuary staff should understand the implications of treaty rights to their work.
Status	Treaty trust responsibility was not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. Since designation, the Sanctuary has worked with the four coastal treaty tribes through research and outreach collaborations, permitting and policy discussions, and government to government consultations. In 2007, the Olympic Coast Intergovernmental Policy Council was established and has been supported through sanctuary funding to facilitate consultation, discussion and collaboration between the Sanctuary, treaty tribes and the state of Washington.

### **35. Visitor Services**

Description	The Sanctuary visitor experience could be enhanced through more interpretive signage and experiential, field-based interpretive programs on the outer coast. Modern outreach technology (e.g., social networking sites, internet videos and widgets) can be used to engage the public and inform a wider audience about the Sanctuary.
Focus of comments	Comments suggest that the Sanctuary should update the Olympic Coast Discovery Center exhibits, establish visitor and/or research centers on the Washington coast, support ecotourism in the Sanctuary, enhance coastal signs with sanctuary messages, and make sanctuary outreach materials available at a wider variety of locations.
Status	Visitor services were not addressed in the 2008 OCNMS Condition Report, which assessed natural and cultural resources. The Sanctuary has sponsored visitor services programs over the years, including installation of interpretive signs on the outer coast and a visitor center in Neah Bay. OCNMS also led a cooperative interpretive program, through which the Sanctuary provided training and support for interpreters that worked for Washington State Parks, Olympic National Park and the Makah Tribe. Due to financial constraints, the Makah program is the only one currently active. Currently, our most active program is the Olympic Coast Discovery Center in Port Angeles which hosts about 17,000 visitors annually. Development of new video offerings called “Secrets of the Deep” is underway for opening in 2009.

### **36. Water Quality Monitoring**

Description	Biological resources and their dependent uses, as well as human health, can be impacted by degraded water quality. Water quality monitoring off the Washington coast should involve collaborative efforts that should focus on improving understanding of physical and chemical processes, assessing potential degradation of water quality, monitoring ecological impacts, and improving data sharing.
Focus of comments	Comments recommended collaborative monitoring of biological, chemical, and physical oceanographic parameters, with focus on harmful algal blooms and depleted oxygen. Improved use of remote sensing and citizen science was called for, as well improved data sharing.
Status	The results of water quality monitoring informed the 2008 OCNMS Condition Report, which assessed natural and cultural resources. In

general, water quality in the Sanctuary received a good/fair rating, with pressures based on low oxygen, naturally occurring harmful algal blooms, and the threat of an oil spill. Since 2000, OCNMS has deployed instrumented oceanographic moorings in the nearshore on a seasonal basis to monitor biological, physical and chemical parameters of marine waters. In recent years, OCNMS has collaborated in regional monitoring programs and has added instrumentation to monitor for depleted oxygen (hypoxia). OCNMS collects baseline water quality data along fixed transects on periodic research cruises, supports monitoring programs conducted by others, and has contributed to studies of harmful algal blooms and pathogens in nearshore species.

### **37. Water Quality Protection**

Description	Unimpaired water quality is essential to the health of the marine ecosystem. In seeking to balance human use of the Sanctuary with conservation goals, water quality protection should be a priority.
Focus of comments	Comments expressed concern about threats to water quality from cruise ship discharges (e.g., treated sewage) and from large vessel discharges of ballast water, as well as storm water runoff.
Status	The 2008 OCNMS Condition Report, which assessed natural and cultural resources, discussed improvements to water quality protection in the context of monitoring programs, the ATBA and oil spill prevention, and minimization of vessel discharges. To protect water quality, OCNMS regulations prohibit discharge of any material (with limited, defined exceptions) within sanctuary boundaries or adjacent to OCNMS if the discharge harms sanctuary resources. Water quality monitoring conducted by OCNMS and others informs management for water quality protection. In 2004, discharge of residual solids (biosolids) from cruise ship wastewater treatment systems was banned in the Sanctuary through a voluntary agreement with the Port of Seattle and Washington Department of Ecology.

### **III. NEXT STEPS**

Sanctuary staff is not at the point of deciding what actions will be taken on particular issues. The next step in the *Navigating the Future* process is to identify a subset of topics from public scoping that will be priority issues to be addressed in the revised OCNMS management plan. In addition to being available to the public, the Scoping Summary & Issues Analysis reports will be provided to the AC and IPC as a primer for the issue prioritization process. The 37 topics will serve as a platform from which to launch the

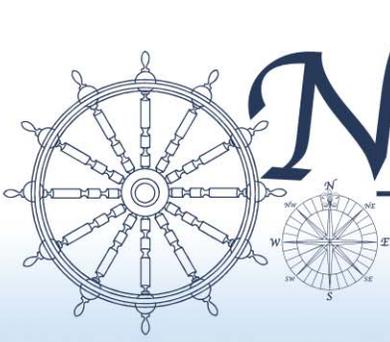
Advisory Council’s Issue Prioritization workshop, January 29 – 30, 2009 at the Olympic Natural Resources Center in Forks, WA. This AC meeting will be open to the public, and public comment periods will be included in the agenda.

The goal of the workshop is for the AC to provide the Sanctuary Superintendent with recommendations on a short list of priority issues it would like to see addressed in the revised management plan. The results of the workshop will be summarized in a report that will be available on the OCNMS website (Table 3). Following this, the IPC will consider the three OCNMS reports that summarize public scoping and provide guidance and recommendations to the Sanctuary Superintendent for the priority topics to be addressed in a revised management plan for OCNMS.

The Sanctuary Superintendent, through ongoing dialogue with the IPC and AC, will work with sanctuary staff to review these recommendations, decide on a final list of priority issues for the management plan, and develop a Work Plan for the next phase of *Navigating the Future* - action plan development. During action plan development, all of the suggested actions provided in public comments will be compiled and provided to relevant workgroups. The Work Plan will be the fourth and final public document produced for the scoping phase of *Navigating the Future*.

**TABLE 3. List of public documents being produced as part of the *Navigating the Future* scoping phase**

	<i>Title of Document</i>	<i>Estimated Publication Date</i>
1	SCOPING SUMMARY	DECEMBER 2008
2	TOPICS ANALYSIS REPORT	DECEMBER 2008
3	ADVISORY COUNCIL ISSUE PRIORITIZATION WORKSHOP REPORT	FEBRUARY 2009
4	WORK PLAN FOR ACTION PLAN DEVELOPMENT	APRIL 2009



OLYMPIC COAST NATIONAL MARINE SANCTUARY

# *Navigating the Future*

*Management Plan Review*



**FINAL FOR ADVISORY COUNCIL DISCUSSION**  
13 MARCH 2009

Agenda Item E.1.b  
Attachment 4  
April 2009

PUBLIC SCOPING AND ISSUES ANALYSIS

**PART 3: ADVISORY COUNCIL ISSUE PRIORITIZATION  
WORKSHOP REPORT**



**MARCH 2009**

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## **I. INTRODUCTION**

This document was created to assist Olympic Coast Intergovernmental Policy Council (IPC) members, the public, Olympic Coast National Marine Sanctuary (OCNMS) staff and Office of National Marine Sanctuaries (ONMS) staff in understanding the outcomes of the OCNMS Advisory Council (Council) Issue Prioritization Workshop, held January 29 and 30, 2009. This is the third in a series of documents being produced as part of the Public Scoping and Issues Analysis (scoping) phase of OCNMS' *Navigating the Future* management plan review process. This scoping phase is focused on gathering public comments and, in consultation with the Council and IPC, selecting priority issues to address in OCNMS' revised management plan.

The two preceding documents, titled *Part I: Scoping Summary* and *Part II: Topics Analysis Report*, summarized and analyzed the public comments received during the scoping public comment period (September 15 – November 14, 2008). The purpose of the Issue Prioritization Workshop was for Council members to use the scoping public comments as a platform from which to develop recommendations for the Sanctuary Superintendent on priority issues to be addressed in the revised management plan.

The Council is comprised of representatives of state and local governments, other federal agencies, Coastal Treaty Tribes, marine industry, conservation organizations and citizens. There are 21 seats on the Council, of which 15 are voting members and 6 are governmental seats considered non-voting ex-officio representatives (Appendix A). Each seat has a primary and alternate member. The Council operates under a charter and serves the Sanctuary in an advisory role. Thus the opinions and findings of the Advisory Council as reflected in the workshop summary do not necessarily reflect the position of OCNMS and National Oceanic and Atmospheric Administration. However, OCNMS greatly values the Council's recommendations and considers all Council recommendations carefully. Council members provide an invaluable service to the Sanctuary as subject area experts, sounding boards for pending management decisions, and connections to and spokespersons for the broader community that is interested in the work of the Sanctuary.

Throughout the *Navigating the Future* process, the Council will play a critical role by advising the Sanctuary Superintendent on priority issue selection, leading and participating in workgroups that address priority issues, commenting on recommended strategies developed by workgroups, providing feedback on the draft and final management plans, and making recommendations on strategic matters related to how OCNMS conducts management plan review.

## **II. WORKSHOP STRUCTURE**

The workshop was held January 29 and 30, 2009 at the University of Washington's Olympic Natural Resources Center in Forks, Washington. It was facilitated by Robert Wheeler and Blake Trask of Triangle Associates, Inc. The primary goals of the

workshop were for Council members to understand and discuss the 37 topics identified in the *Topics Analysis Report* and provide the Sanctuary Superintendent with advice on the relative importance of each. The Council achieved this through scoring and ranking of each topic. A secondary goal was for the Council to provide, if possible, a recommended list of topics to be addressed in the revised management plan. This prioritization exercise recognized that, while many topics are of importance to sanctuary management over the long-term, some will be more important than others in the next five to ten years.

In advance of the workshop, Council members were asked to review a series of documents relevant to sanctuary management, including the National Marine Sanctuaries Act, OCNMS' designation document, the OCNMS 2008 Condition Report, the IPC Addendum to the Condition Report, the Washington Ocean Action Plan, the Treaties of Neah Bay and Olympia, and the IPC Charter. In addition, each Council seat (primary plus alternate) was asked to complete a homework assignment for which they scored each topic on a scale of 1 to 5 (where 1 = extremely low priority for OCNMS and 5 = an extremely high priority). It was recommended that topic scores be based on the following criteria:

- Benefits to the resource;
- Urgency of the topic;
- The extent to which the topic advances the mission and goals of the Office of National Marine Sanctuaries; and
- Limiting Factors – for example, factors that may limit a successful outcome.

OCNMS asked primary and alternate Council members to work together to submit one response per seat prior to the workshop. The facilitator used these initial results as a basis from which to launch discussion at the workshop.

Over the two days, the facilitator led Council members through a series of discussions focused on achieving consensus on both the scoring (or importance of the topic *independent* of other topics), as well as the ranking (or *relative* importance in comparison to other topics) of these 37 topics to sanctuary management over the next five to ten years. The Council also had opportunity to identify additional topics not raised during public scoping. Part of this process focused on the Council discussing the descriptions of each topic and further refining the topic description, if that was needed. Through these discussions, the Council added the following criterion to list above: “is it a responsibility of OCNMS to take action to address the topic?” For example, some important actions could be the responsibility of other agencies or entities, and therefore be scored as a low priority for action by OCNMS. Additionally, the Council discussed the fact that it should not score a particular topic lower just because OCNMS currently performs work related to that topic. Consequently, there was no scoring bias associated with the continuation of current management actions.

For the purposes of this workshop, consensus was defined as agreement of all participants (including voting, non-voting, primary and alternate representatives) including all statements other than formal disagreement (Table 1). If the Council could not reach consensus on a particular topic, there would be a formal vote with only the voting

members allowed to participate, as per the Council Charter. However, this was not necessary because the Council worked solely by consensus throughout the workshop.

**TABLE 1.** Consensus was reached if no Council members (including alternates) formally disagreed with the decision. This table is adapted from “*Facilitator’s Guide to Participatory Decision-Making,*” 1996.

<i>Consensus</i> →			← <i>No Consensus</i>		
<b>Endorse</b>	<b>Endorse with a minor point of contention</b>	<b>Agree with reservations</b>	<b>Abstain</b>	<b>Stand aside</b>	<b>Formal disagreement</b>
<i>“I like it”</i>	<i>“Basically I like it”</i>	<i>“I can live with it”</i>	<i>“I have no opinion”</i>	<i>“I don’t like this but I don’t want to hold up the group”</i>	<i>“I cannot support this”</i>

### III. WORKSHOP RESULTS

The Issue Prioritization Workshop was well-attended, with all but two seats represented (Appendix A). The Council discussed the characterization of each topic to develop a common understanding of its scope. They worked by consensus to score and rank all of the topics, and then agreed to forward their scores and rankings to the Sanctuary Superintendent along with additional recommendations (Appendix B).

At the start of the workshop sanctuary staff provided a synopsis of information in the OCNMS 2008 Condition Report that was relevant to each of the 37 topics raised during the public scoping process. Sanctuary staff wanted to ensure that Council members had reviewed relevant information in the Condition Report, but emphasized that the Condition Report was not the only document upon which the Council should base its topic prioritization decisions. Throughout this discussion, Council members raised concerns about aspects of the Condition Report, including 1) the IPC’s request to be a co-author on the report, which was denied by the Office of National Marine Sanctuaries; 2) the inaccurate characterization that salmon and crab fisheries are not managed using stock assessments; 3) the need to quantify, rather than make generalized inferences about, the impacts of different types of fishing gear on seafloor habitats in the Sanctuary; 4) the use of the term “degraded habitat” when discussing the effects of bottom trawling in the Sanctuary; 5) the need for more information about the effects of climate change on Sanctuary resources; 6) the need to clarify use of the term “ecosystem-based fisheries management”; and 7) the fact that the Condition Report, which is a highly visible public document, did not include meaningful information about the coastal treaty tribes, their relationship with marine resources and the socioeconomic value of these resources to the tribes.

Sanctuary staff then provided a brief overview of the current Sanctuary goals and objectives, as well as thoughts on reviewing the goals and objectives as part of the management plan review process. In particular, sanctuary staff made note of several documents that the Council was asked to consider in preparation for the workshop, including the National Marine Sanctuaries Act purposes and policies, the National Marine Sanctuaries Strategic Plan (2005) and OCNMS' current goals and objectives, which should be used to guide the goals and objectives review and the Council's issue prioritization decisions at the workshop.

After these presentations by sanctuary staff, the Council worked on scoring the topics, working topic-by-topic, reviewing and discussing the initial scores submitted by each seat as part of the homework assignment. First, Council members worked to achieve a common understanding of each topic. In some cases, especially when there was high variation in the scores, members chose to share the rationales for their scores in order to reach this common understanding. This discussion is summarized in Appendix C. Next, each seat was given the opportunity to revise its score. Once individual scores were revised, the scores were averaged across all seats to provide a single score (Table 2). The standard deviation was also indicated to provide a measure of variability in individual scores for each topic.

In some cases, the Council agreed to add clarifying language to a topic title (shown in bold italics in Table 2) in order to convey their interpretation of the topic. For example, the topic "Ecosystem Impacts of Fishing" was limited in scope by the phrase "assessing the impacts of" to distinguish between assessing impacts and taking management action and to remove management actions from consideration during the scoring. Also, the Council requested that "Fisheries Stock Assessment" be separated into two topics - one that focused on formal stock assessment, and one that focused on research to support formal stock assessment.

The Council agreed not to score the topic "Administration – Sanctuary Goals and Objectives" because it recommended reviewing these goals and objectives as an essential step in the management plan review process.

During the second part of the workshop, Council members primarily focused on ranking topics, and where appropriate, grouping related topics (Table 2). Topics were grouped together if they were sufficiently similar to allow consideration by a single working group or if they possessed other important commonalities. The Council used a color-coding process (Appendix B) to rank the highest priority topics (green), second tier priority topics (blue), topics that should be combined or "lumped" with other topics (yellow), and topics that were perceived as beyond the scope of the current management plan review process (pink). Additionally, there were two topics (Invasive Species and Administration – Infrastructure) that were left unresolved and were colored gray.

**TABLE 2.** Topic descriptions, the OCNMS Advisory Council’s average score (with standard deviation), and an explanation of the Council’s ranking

Highest Priority Topics	Description of Topic and Explanation of Ranking
<p>TREATY TRUST RESPONSIBILITY</p> <p>Average Score: 4.8 Standard Deviation: 0.5</p>	<p><b>Description:</b> Tribal treaties along with associated federal statutes, Executive Orders, and court rulings have established a unique legal relationship, an overarching federal trust responsibility of the United States to Indian tribes. This trust responsibility establishes legal obligations of the United States to Indian tribes, including the protection of treaty fishing rights. OCNMS must honor its treaty trust responsibilities.</p> <p><b>Council Ranking:</b> The Council agreed that the topic of treaty trust responsibility is of the utmost importance to everything that OCNMS does, and the topic needs to be considered throughout the management plan and management plan review process.</p>
<p>COLLABORATIVE &amp; COORDINATED MANAGEMENT</p> <p>Average Score: 4.8 Standard Deviation: 0.5</p>	<p><b>Description:</b> A collaborative and coordinated approach is essential to effective management of OCNMS. Active partnerships result in more effective resource protection efforts and provide a more transparent and inclusive structure for management of Olympic Coast marine resources within tribal, local, state, federal and international jurisdictions.</p> <p><b>Council Ranking:</b> There was strong agreement among Council members that OCNMS should focus on improving partnerships, collaboration, and coordination in the revised management plan.</p>
<p>RESEARCH FOR <i>COLLABORATIVE ECOSYSTEM-BASED</i> MANAGEMENT</p> <p>Average Score: 4.8 Standard Deviation: 0.4</p>	<p><b>Description:</b> A scientific research program that focuses on ecosystem-level processes, species-habitat associations, and interspecies interactions and is conducted in collaboration with partners is essential.</p> <p><b>Council Ranking:</b> The Council modified the title of this topic to emphasize the importance of 1) collaborating on research projects and sharing data/results and 2) ecosystem-based management as a driver of research. Council members ranked this topic as a high priority because there is a great need for increased research in the Sanctuary and because research to support collaborative ecosystem-based management will help to inform future ecosystem protection measures. There was a general recommendation to combine Habitat Characterization, Living Resource Monitoring, Water Quality Monitoring, Climate Change, Ecosystem Impacts of Fishing (assessing the impacts) and Fisheries Stock Assessment (research to support) into this topic because these efforts all are closely related, collaborative in nature, and inform ecosystem-based management.</p>

Highest Priority Topics	Description of Topic and Explanation of Ranking
<p>HABITAT CHARACTERIZATION</p> <p>Average Score: 4.7 Standard Deviation: 0.5</p>	<p><b>Description:</b> OCNMS and its partners have made progress mapping habitats in the Sanctuary, but much work remains to be done. There is a need to complete characterization of seafloor habitats and identify species-habitat associations to effectively inform management decisions.</p> <p><b>Council Ranking:</b> The Council made this a high priority because so little of the Sanctuary has been mapped. Moreover, these data would support the work of many governments, agencies and non-governmental organizations, as well as inform management decisions. The Council recommended grouping Habitat Characterization under Research for <i>Collaborative Ecosystem-Based</i> Management because the topics are closely connected and should be considered by the same work group.</p>
<p>LIVING RESOURCES MONITORING</p> <p>Average Score: 4.7 Standard Deviation: 0.5</p>	<p><b>Description:</b> Long-term monitoring of biological resources is critical to the successful management of the Sanctuary. Long-term and collaborative monitoring is required to assess the current status (abundance) and condition (health) of key species in the Sanctuary, as well as seasonal and multi-year trends.</p> <p><b>Council Ranking:</b> The Council strongly supported addressing this topic in the revised management plan. As with Habitat Characterization, the Council recommended grouping Living Resource Monitoring under the topic Research for <i>Collaborative Ecosystem-Based</i> Management because the topics are closely connected and should be considered by the same work group.</p>
<p>SPILL PREVENTION, PLANNING &amp; RESPONSE</p> <p>Average Score: 4.6 Standard Deviation: 0.7</p>	<p><b>Description:</b> The potential for a catastrophic spill remains a significant threat to marine resources in the Sanctuary. Involvement in regional planning efforts to strengthen prevention and response capabilities, including evaluating impacts of alternative response technologies, encouragement of equipment deployment drills off the outer coast, training staff, and protection of cultural resources and shoreline habitats are all important aspects of sanctuary management.</p> <p><b>Council Ranking:</b> The Council ranked this topic high given the risk that the Sanctuary faces from oil spills and the importance of oil spill prevention and response activities.</p>

Highest Priority Topics	Description of Topic and Explanation of Ranking
<p>WATER QUALITY MONITORING (<i>water column properties</i>)</p> <p>Average Score: 4.4 Standard Deviation: 0.9</p>	<p><b>Description:</b> Biological resources and their dependent uses, as well as human health, can be impacted by degraded water quality. Water quality monitoring off the Washington coast should involve collaborative efforts that should focus on improving understanding of physical and chemical processes, assessing potential degradation of water quality, monitoring ecological impacts, and improving data sharing.</p> <p><b>Council Ranking:</b> The Council strongly supported addressing this topic in the revised management plan because maintaining water quality is essential to protecting Sanctuary resources. The title was modified to ensure that a broad suite of monitoring parameters were included. The Council recommended grouping Water Quality Monitoring under the topic Research for <i>Collaborative Ecosystem-Based Management</i> because the topics are closely connected and should be considered by the same work group.</p>
<p>CLIMATE CHANGE</p> <p>Average Score: 4.3 Standard Deviation: 0.6</p>	<p><b>Description:</b> Ongoing changes to the climate and marine ecosystem have been documented, yet there is considerable uncertainty about current and future consequences at local, ecosystem and oceanic scales. Increased coordination and cooperation among resource management agencies would improve planning, monitoring and adaptive management to address this phenomenon.</p> <p><b>Council Ranking:</b> The Council agreed that the issue of climate change and its potential effects on Sanctuary ecosystems are important and should be addressed in the revised management plan. The Council recommended grouping Climate Change under the topic Research for <i>Collaborative Ecosystem-Based Management</i> because much of the work related to climate change would be monitoring, the topics are closely connected, and both topics should be considered by the same work group.</p>
<p>OCEAN LITERACY</p> <p>Average Score: 4.2 Standard Deviation: 1.0</p>	<p><b>Description:</b> Enhancing the public’s awareness and appreciation of natural and cultural resources is a cornerstone of OCNMS’ mission. Ocean literacy, broadly defined, is an understanding of the ocean’s influence on you, and your influence on the ocean.</p> <p><b>Council Ranking:</b> The Council agreed that Ocean Literacy is a high priority for OCNMS. Council members recommended grouping the topics of Community Outreach and Visitor Services under Ocean Literacy because Ocean Literacy encompasses these topics in addition to formal education programs.</p>

Second Tier Priority Topics	Description of Topic and Explanation of Ranking
<p><b>ADMINISTRATION - REGULATIONS, PERMITTING &amp; ENFORCEMENT</b></p> <p>Average Score: 3.2 Standard Deviation: 1.1</p>	<p><b>Description:</b> When OCNMS was designated in 1994, NOAA promulgated regulations to protect Sanctuary resources. These regulations outline the requirements of OCNMS’ permitting program, through which permits can be issued to conduct an otherwise prohibited activity for a limited number of reasons. The responsibility for enforcing these regulations falls primarily to NOAA’s Office of Law Enforcement. Potential improvements to OCNMS regulations, permitting process, and enforcement program should be considered.</p> <p><b>Council Ranking:</b> Council members varied in their opinions of this topic. Some supported addressing certain aspects of this category, such as OCNMS’ permitting process or improving the enforcement program. Others supported the topic but viewed it as something to be considered within the context of each priority issue. Others viewed it as a high priority because it is a core function of OCNMS. Consequently, the Council recommended that this topic be considered a second-tier priority.</p>
<p><b>PUBLIC &amp; PRIVATE RESOURCE USE - SOCIOECONOMIC VALUES</b></p> <p>Average Score: 4.0 Standard Deviation: 1.0</p>	<p><b>Description:</b> Resource management should support socioeconomic values and human use, and value human beings as part of Washington’s coastal and marine ecosystems. Protection of living resources, habitats and water quality, as well as sustainable use that supports local economies and cultures should be management priorities.</p> <p><b>Council Ranking:</b> In general, the Council felt that this was an important issue, but ranked it as a second-tier priority. The Council recommended grouping Public &amp; Private Resource Use – Commercial Development, Public &amp; Private Resource Use – Compatibility Analysis and Public &amp; Private Resource Use – Recreational Opportunities under this topic because all three are related to protecting local economies and valuing the socioeconomic importance of Sanctuary resources.</p>
<p><b>MARINE DEBRIS – ABANDONED SUBMERGED EQUIPMENT</b></p> <p>Average Score: 3.7 Standard Deviation: 0.8</p>	<p><b>Description:</b> Marine debris in subtidal areas injures wildlife and marine habitats, and is a persistent problem for which removal and reduction efforts are necessary.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but viewed it more as a resource protection tool than as a topic in and of itself. The Council recommended grouping it under the topic of Living Resource Conservation.</p>

Second Tier Priority Topics	Description of Topic and Explanation of Ranking
<p>MARINE DEBRIS – SHORELINE CLEAN-UP</p> <p>Average Score: 3.7 Standard Deviation: 0.8</p>	<p><b>Description:</b> Marine debris on the shore injures wildlife and marine habitats, degrades the wilderness aesthetic of outer coast beaches, and is a persistent problem for which removal and reduction efforts are necessary.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but viewed it more as a resource protection tool than as a topic in and of itself. The Council recommended grouping it under the topic of Living Resource Conservation, but emphasized that OCNMS’ participation in the Washington Coast Clean-Up should continue (this project could be included under Ocean Literacy or Community Outreach).</p>
<p>LIVING RESOURCE CONSERVATION</p> <p>Average Score: 3.5 Standard Deviation: 1.2</p>	<p><b>Description:</b> OCNMS hosts abundant and diverse wildlife communities that are threatened by an array of human activities. OCNMS should be proactive in promoting wildlife conservation and mitigating the numerous activities (e.g., recreational, commercial, military etc.) that can impact wildlife.</p> <p><b>Council Ranking:</b> The Council ranked this topic as a second-tier priority because it felt the emphasis of the management plan in regards to living resource, water quality and habitat protection should be on research and monitoring (gathering information) and not on enacting protection measures (particularly regulations). While supportive of protection issues, some members expressed concern that, at this time, there is not enough available information to justify/support OCNMS making the types of regulatory changes proposed by the public during scoping. The Council recommended grouping the topics of Habitat Protection and Water Quality Protection under Living Resources Conservation because they all relate to resource protection.</p>

Grouped Topics	Description of Topic and Explanation of Ranking
<p>FISHERIES STOCK ASSESSMENT (<i>research to support</i>)</p> <p>Average Score: 4.0 Standard Deviation: 0.7</p>	<p><b>Description:</b> Stock assessments provide important information about the health of fish populations and serve as the foundation for many fisheries management decisions. Some believe that current assessments of groundfish stocks off Washington are inadequate for management of groundfish on a regional basis, and that improved fisheries stock assessments for the Washington coast will assist fisheries management decisions.</p> <p><b>Council Ranking:</b> The Council agreed that stock assessments are important and need to be improved, but clarified that NOAA Fisheries conducts fisheries stock assessments already and OCNMS' role should be to conduct research that will support these stock assessments. The Council recommended grouping this topic under the topic Research for <i>Collaborative Ecosystem-Based</i> Management because the topics are closely connected and should be considered by the same work group.</p>
<p>LOCAL AND CUSTOMARY KNOWLEDGE</p> <p>Average Score: 3.9 Standard Deviation: 0.7</p>	<p><b>Description:</b> OCNMS needs to develop a holistic, ecosystem-based management approach that incorporates tribal and non-tribal knowledge about the ecology of sanctuary resources. OCNMS needs to work with tribal and non-tribal communities to catalogue this knowledge and use it to inform management decisions.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important to include in the management plan, but felt that it related closely to and should be addressed within the context of Ocean Literacy and Research for <i>Collaborative Ecosystem-Based</i> Management.</p>
<p>WATER QUALITY PROTECTION</p> <p>Average Score: 3.9 Standard Deviation: 1.0</p>	<p><b>Description:</b> Unimpaired water quality is essential to the health of the marine ecosystem. Protecting/maintaining water quality is important when seeking to balance human use of the Sanctuary with conservation goals.</p> <p><b>Council Ranking:</b> Council member opinions on this topic varied. Some felt that it was very important. Others felt that it was important, but that there was not enough information available to know whether it should be a high priority for this management plan. The Council felt that this topic was closely related to the other protection topics and recommended grouping it under Living Resource Conservation.</p>
<p>COMMUNITY OUTREACH</p> <p>Average Score: 3.9 Standard Deviation: 0.9</p>	<p><b>Description:</b> Involvement of local and regional communities in OCNMS programs is vital. It is important that people on the Olympic Peninsula and in the region are aware of the Sanctuary's presence and management goals, and have meaningful opportunities to be involved in sanctuary programs. This will foster a sense of marine stewardship</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but recommended grouping it with Ocean Literacy because community outreach activities are rooted in the effort to improve ocean literacy.</p>

Grouped Topics	Description of Topic and Explanation of Ranking
<p>HABITAT PROTECTION</p> <p>Average Score: 3.9 Standard Deviation: 1.3</p>	<p><b>Description:</b> In seeking to balance human use of the Sanctuary with conservation goals, habitat protection should be a priority. OCNMS needs to develop a holistic approach to conservation and management of the marine ecosystem(s) within its boundaries, including a plan to protect seabed, water column, and biogenic habitats and habitats that support marine mammals and seabirds.</p> <p><b>Council Ranking:</b> Council member opinions on this topic varied. Some felt that it was important – especially as it relates to protecting the Sanctuary from oil spills. Others felt that the topic was important, but that there was not enough evidence of habitat impacts in the Sanctuary to justify a high ranking (i.e., the emphasis over the next 5 to 10 years should be on gathering information on habitat impacts, not implementing protection actions such as regulations). In the end, the Council felt that this topic was closely related to the other protection topics and recommended grouping it under Living Resource Conservation.</p>
<p>MARITIME HERITAGE - LIVING CULTURES</p> <p>Average Score: 3.8 Standard Deviation: 0.8</p>	<p><b>Description:</b> Within the Sanctuary system OCNMS is unique in that it is entirely encompassed by the usual and accustomed fishing areas of the Hoh, Makah, and Quileute tribes and the Quinault Indian Nation. OCNMS needs to expand its knowledge of and improve its communication messages about both the Native American cultures that have lived along Washington’s Outer Coast for thousands of years, as well as the more recent history of non-tribal residents and fishers.</p> <p><b>Council Ranking:</b> The Council agreed that this was an important topic, but felt that it was best addressed within the context of (i.e., grouped under) Ocean Literacy. Additionally, there was a suggestion that the public comments under this topic related to understanding paleo-shorelines and past human use of the coast be incorporated under the Climate Change topic.</p>
<p>PUBLIC &amp; PRIVATE RESOURCE USE - COMMERCIAL DEVELOPMENT</p> <p>Average Score: 3.8 Standard Deviation: 0.9</p>	<p><b>Description:</b> Commercial development in coastal waters has the potential to harm resources and qualities of OCNMS, yet it often involves technologies for which environmental impacts have not been thoroughly evaluated. Improved understanding of potential environmental impacts of ocean technologies will help OCNMS determine if proposed projects are compatible with sanctuary goals and objectives and existing use.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but recommended grouping it under Public &amp; Private Resource Use – Socioeconomic Values because the commercial development topic is closely related to protecting local economies and valuing the socioeconomic importance of sanctuary resources.</p>

Grouped Topics	Description of Topic and Explanation of Ranking
<p>PUBLIC &amp; PRIVATE RESOURCE USE - COMPATIBILITY ANALYSIS</p> <p>Average Score: 3.7 Standard Deviation: 0.8</p>	<p><b>Description:</b> The National Marine Sanctuaries Act allows for public and private uses of sanctuary resources, as long as those uses are not prohibited by other authorities and are compatible with the primary mandate of resource protection. This makes compatibility determination a key function of sanctuary management.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but recommended grouping it under Public &amp; Private Resource Use – Socioeconomic Values because the compatibility analysis topic is closely related to protecting local economies and valuing the socioeconomic importance of sanctuary resources.</p>
<p>VISITOR SERVICES</p> <p>Average Score: 3.4 Standard Deviation: 0.8</p>	<p><b>Description:</b> The sanctuary visitor experience could be enhanced through more interpretive signage and experiential, field-based interpretive programs on the outer coast. Modern outreach technology can be used to engage the public and inform a wider audience about the Sanctuary.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but recommended grouping it with Ocean Literacy because visitor services are rooted in the effort to improve ocean literacy.</p>
<p>PUBLIC &amp; PRIVATE RESOURCE USE - RECREATIONAL OPPORTUNITIES</p> <p>Average Score: 3.3 Standard Deviation: 1.1</p>	<p><b>Description:</b> Recreational opportunities in OCNMS need to be maintained and enhanced. The living resources that recreational users come to see and enjoy need to be protected.</p> <p><b>Council Ranking:</b> The Council agreed that this topic was important, but recommended grouping it under Public &amp; Private Resource Use – Socioeconomic Values because the recreational opportunities topic is closely related to protecting local economies and valuing the socioeconomic importance of sanctuary resources.</p>
<p>NON-POINT SOURCE POLLUTION</p> <p>Average Score: 2.9 Standard Deviation: 1.4</p>	<p><b>Description:</b> Runoff from upland sites may contain pollutants, including toxins and pathogens. Understanding of the types and sources of non-point source pollution is essential to OCNMS’ ability to address potential impacts to sanctuary resources.</p> <p><b>Council Ranking:</b> The Council agreed that non-point source pollution was an important topic, but there was concern about OCNMS becoming involved in monitoring upland runoff when other agencies already have this responsibility. It was agreed that non-point source pollution of many kinds may affect the Sanctuary and that this topic should be grouped under Water Quality Monitoring. It was also recommended that OCNMS should only conduct monitoring in the marine environment (not in upland areas).</p>

Grouped Topics	Description of Topic and Explanation of Ranking
<p>MARITIME &amp; ENVIRONMENTAL SAFETY – WEATHER FORECASTING</p> <p>Average Score: 2.8 Standard Deviation: 1.4</p>	<p><b>Description:</b> Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Large portions of the Washington outer coast do not have National Weather Service doppler radar coverage. Expanded radar coverage would improve marine safety on the outer Washington coast.</p> <p><b>Council Ranking:</b> The Council agreed that OCNMS should support improvements to the weather monitoring infrastructure on the Outer Coast. The Council recommended grouping this topic under Maritime &amp; Environmental Safety - Vessel Management because a primary goal of both topics is to improve vessel management and safety. However, the vessel management topic ended up being ranked as a topic not to be addressed in the management plan.</p>
<p>MARITIME &amp; ENVIRONMENTAL SAFETY – NAVIGATION</p> <p>Average Score: 2.8 Standard Deviation: 1.0</p>	<p><b>Description:</b> Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Improvements to navigational aids and nautical charts can improve marine safety and reduce the risk of environmental impacts from oil spills.</p> <p><b>Council Ranking:</b> The Council recommended grouping this topic under Spill Prevention, Planning &amp; Response because the issue of navigation in the Sanctuary is most important within the context of preventing and responding to spills. However, there was some disagreement as to the extent that navigation should be a concern of OCNMS.</p>
<p>ECOSYSTEM IMPACTS OF FISHING (<i>assessing the impacts</i>)</p> <p>Average Score: 2.6 Standard Deviation: 1.5</p>	<p><b>Description:</b> Uncertainty exists related to ecosystem-level impacts from physical disturbance to seafloor habitats and effects of biomass removal from fishing within the sanctuary area. An ecosystem-based management approach that considers potential impacts of fishing can promote sustainable fisheries.</p> <p><b>Council Ranking:</b> There was significant discussion about this topic, the public’s comments on this topic, and the implications of how this topic is characterized (either as focused on assessment or management). Eventually, the group agreed to modify the title with the phrase ‘assessing the impacts’. Among those who voiced opinions, there was general agreement that OCNMS should not engage in management or regulation related to the ecosystem impacts of fishing, but that research to support management decisions by other entities with regulatory authority constitutes an appropriate role for OCNMS. Given the focus on assessment, the Council recommended that this topic be grouped under Research for <i>Collaborative Ecosystem-Based</i> Management.</p>

Topics Not to Include in Management Plan	Description of Topic and Explanation of Ranking
<p>MARITIME &amp; ENVIRONMENTAL SAFETY - VESSEL MANAGEMENT</p> <p>Average Score: 3.3 Standard Deviation: 1.1</p>	<p><b>Description:</b> OCNMS is co-located with the entrance to the inland water ports of Seattle, Tacoma and Vancouver, British Columbia, and the marine route to major regional oil refining facilities. Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region.</p> <p><b>Council Ranking:</b> The Council agreed that this topic is important but that it is the primary responsibility of other agencies and should not be a high priority for OCNMS to address in its revised management plan. However, the Council stressed that OCNMS should continue working with the U.S. Coast Guard to maintain the Area to be Avoided program and recommended that this activity be captured under the Spills Prevention, Planning and Response topic.</p>
<p>MARITIME HERITAGE - CULTURAL RESOURCE MANAGEMENT</p> <p>Average Score: 3.3 Standard Deviation: 0.9</p>	<p><b>Description:</b> Characterizing and protecting maritime archaeological and cultural resources is an important role of OCNMS. Currently, these resources are inadequately characterized within the Sanctuary.</p> <p><b>Council Ranking:</b> The Council ranked this topic as a low priority for inclusion in the management plan, noting that Native American tribes have the primary responsibility for archeological/cultural sites in the Sanctuary (though they do not necessarily have the lead on shipwrecks).</p>
<p>MILITARY ACTIVITIES</p> <p>Average Score: 3.2 Standard Deviation: 1.4</p>	<p><b>Description:</b> The U. S. Navy conducts operations within OCNMS, with military training, warning and operating areas, as well as equipment research and development in the Quinault Underwater Test Range (QUTR). OCNMS regulations contain a number of exemptions related to these activities. The U.S. Navy is currently conducting environmental analyses of these activities and plans to expand the QUTR as well as increase training and other operations in OCNMS.</p> <p><b>Council Ranking:</b> The Council ranked this topic as a low priority for inclusion in the management plan with minimal discussion. Council members expressed concern that there is little that OCNMS can do about military activities in the Sanctuary and that the management plan was better directed at other, higher priorities.</p>

Topics Not to Include in Management Plan	Description of Topic and Explanation of Ranking
<p>ADMINISTRATION - FLEXIBILITY TO RESPOND TO EMERGING ISSUES</p> <p>Average Score: 3.6 Standard Deviation: 1.2</p>	<p><b>Description:</b> In an era of rapidly advancing technologies, intense human pressures on the regional and global environment, and improved understanding of ecosystem interactions and resiliency, issues are likely to arise that are not anticipated during management plan review. A framework that guides OCNMS’ responses to emerging issues would help to address these issues more thoughtfully and effectively.</p> <p><b>Council Ranking:</b> The Council agreed that OCNMS’ ability to respond to emerging issues and be adaptive in its management strategies is important. However, the Council felt that such flexibility is an intrinsic element of all of OCNMS’ programs, and that the topic did not need to be addressed in isolation. Rather, the flexibility to respond to emerging issues should be a principle upon which the management plan is constructed.</p>
<p>MARITIME &amp; ENVIRONMENTAL SAFETY - HARBORS REFUGE</p> <p>Average Score: 2.0 Standard Deviation: 0.8</p>	<p><b>Description:</b> Maintaining both maritime and environmental safety is a common goal of marine industry and governments with authority in the region. Harbors of refuge are areas where disabled vessels can shelter while repairs are made. The lack of such harbors along the Olympic Coast was identified as a concern.</p> <p><b>Council Ranking:</b> The Council ranked this topic as a low priority for inclusion in the management plan, with minimal discussion. Members felt that there are no places within the Sanctuary that would be suitable for a harbor of refuge and that OCNMS should not consider this topic in its revised management plan.</p>
<p>BOUNDARY ADJUSTMENT</p> <p>Average Score: 1.7 Standard Deviation: 1.1</p>	<p><b>Description:</b> The current boundaries of the Sanctuary were determined during the designation process to represent a distinct ecosystem, informed by the best available science at the time. Adjustment of sanctuary boundaries could be considered during the management plan review process.</p> <p><b>Council Ranking:</b> The Council ranked this topic as a low priority for inclusion in the management plan. There was little support for OCNMS exploring boundary adjustments. Several Council members stated that there was no justification for changing the Sanctuary boundaries.</p>

Topics Not to Include in Management Plan	Description of Topic and Explanation of Ranking
<p>FISHERIES STOCK ASSESSMENT <i>(formal stock assessment)</i></p> <p>Average Score: 1.6 Standard Deviation: 1.0</p>	<p><b>Description:</b> Stock assessments provide important information about the health of fish populations and serve as the foundation for many fisheries management decisions. Some believe that current assessments of groundfish stocks off Washington are inadequate for management of groundfish on a regional basis, and that improved fisheries stock assessments for the Washington coast will assist fisheries management decisions.</p> <p><b>Council Ranking:</b> The Council split this topic into two separate topics: one that addressed research to support stock assessments and one that addressed formal stock assessments. The Council did not think that OCNMS should be conducting formal stock assessments, but did think that OCNMS should conduct research to support stock assessments. Thus, the Council ranked the Fisheries Stock Assessment (formal stock assessment) topic as a low priority for inclusion in the management plan, but ranked the Fisheries Stock Assessment (research to support) higher.</p>
No resolution	Description of Topic and Explanation of Ranking
<p>ADMINISTRATION – INFRASTRUCTURE</p> <p>Average Score: 3.2 Standard Deviation: 1.0</p>	<p><b>Description:</b> Expanding OCNMS operations and programs with additional funding and infrastructure would improve sanctuary staff’s abilities to meet the current and future research, education, outreach and resource protection needs. OCNMS operations and programs need to be expanded and supported with appropriate funding and infrastructure.</p> <p><b>Council Ranking:</b> The Council was not able to reach a resolution on the ranking of this topic. It was agreed that replacing the R/V Tatoosh is a critical need.</p>
<p>INVASIVE SPECIES</p> <p>Average Score: 3.0 Standard Deviation: 0.9</p>	<p><b>Description:</b> While invasive species are not currently known to cause significant harm in the Sanctuary, there are ecological and socioeconomic risks, often severe, associated with a compromised ecosystem if invasive species are introduced and spread over wide areas. Monitoring for introductions of non-native and invasive species should be proactive and routine to mitigate or prevent establishment of invasive species.</p> <p><b>Council Ranking:</b> The Council was not able to reach a resolution on this topic. Members seemed to agree that exotic, invasive species are important to consider. However, they felt that there was not enough information available about the risk of a non-native species invasion in the Sanctuary to know how to rank the topic. Several members suggested grouping this topic under Administration - Flexibility to Respond to Emerging Issues or under Living Resources Monitoring.</p>

In addition to providing its scoring, ranking, and comments on each topic, the Council provided these additional findings to the Sanctuary Superintendent:

- The Council recommended that OCNMS hold an annual meeting between the Council and the IPC.
- Treaty trust responsibility is inherent in everything done throughout MPR and the management plan.
- The Sanctuary goals and objectives should be reviewed as part of the management plan review process.

The Council also discussed the six preliminary priority topics developed by the IPC and Sanctuary (provided below). These preliminary priority topics were identified in the Federal Register Notice, dated September 15, 2008, that initiated the management plan review process. The Council recognized a high degree of agreement between the IPC priority topics and the Council's high priority topics.

1. **Improved Partnerships** - Recent initiatives for regional ocean management, including the formation of the Olympic Coast Intergovernmental Policy Council (IPC), the Washington Ocean Action Plan and the West Coast Governors Agreement on Ocean Health, provide the sanctuary with new opportunities to strengthen partnerships, particularly with the four coastal treaty tribes and the state of Washington in their role as governments. The sanctuary will work in active partnership to provide a more transparent, cooperative and coordinated management structure of Olympic Coast marine resources within tribal, state and federal jurisdictions.
2. **Characterization and Monitoring** - There is a need to develop an understanding of baseline conditions of marine resources within the sanctuary, ecosystem functions, and status and trends of biological and socioeconomic resources to effectively inform management. OCNMS in conjunction with IPC and other entities will work to resolve these needs.
3. **Spill Prevention, Contingency Planning and Response** - The risk from vessel traffic and other hazards remains a significant threat to marine resources. The potential for a catastrophic oil spill remains a primary concern and while advances in maritime safety have been made since the sanctuary was designated, better coordination is needed for response to these threats. Oil spills cause immediate and potentially long term harm to marine resources as well as socioeconomic impacts to coastal communities.
4. **Climate Change** - Climate change is widely acknowledged, yet there is considerable uncertainty about current and future consequences at local, ecosystem and oceanic scales. Increased coordination and cooperation between resource management agencies are required to improve planning, monitoring and adaptive management to address this phenomenon.
5. **Ocean Literacy** - Enhancing the public's awareness and appreciation of marine, socio-economic, and cultural resources is a cornerstone of the

sanctuary's mission. Recent regional initiatives offer opportunities for the sanctuary, in conjunction with IPC and other entities, to expand educational contributions and reach a larger audience.

- 6. Marine Debris** - Coastal marine debris is a persistent and poorly diagnosed problem within the sanctuary that negatively impacts natural and socioeconomic resources and qualities.

The Council concluded the workshop with agreement by consensus that the Sanctuary Superintendent should advance the Council's topic scoring and ranking to the IPC for review and comment at its February 6, 2009 meeting. The Council's agreements and recommendations are captured in a letter to the Sanctuary Superintendent and are included in this report section as Appendix B.

#### **IV. PUBLIC COMMENTS**

The workshop was open to the public with two informal 15-minute public comment periods each day. Four members of the public provided comments. The public comments addressed protection of rockfish populations, promoting watchable wildlife, the Neah Bay tug, the structure of the Scoping Summary document, oil spill prevention, and recreational fishing opportunity.

Fred Felleman, representing the Northwest Office of Friends of the Earth, noted that they had over 500 members provide scoping comments. About half of these were from Washington state and the rest were scattered throughout the country. He felt that the number of commenters on a given topic should have been represented somewhere in the *Scoping Summary*.

Mr. Felleman was also concerned about the lack of engagement of communities in the management plan review process. He would like to see the documentation include more about what people said and to see these comments treated with great respect.

Mr. Felleman also commented that counting oil spills does not tell the story of threats. You need information on near misses and other events that may not lead to a spill but better characterizes the real risk of oil spills. He expressed disappointment that OCNMS does not comment to the Washington State Legislature on issues, such as support for the Neah Bay rescue tug.

David Jennings, a private citizen from Olympia and diver experienced with the Reef Environmental Education Foundation (REEF) surveys, noted that the rockfish populations in the Strait of Juan de Fuca have virtually disappeared due to overharvesting. He recommended changes to State recreational fishing regulations to prevent overfishing. He would like to see the sanctuary designate the area as a "no take" area (to serve as a watchable wildlife area).

Dan Leiman, Clerk/Treasurer for the City of Forks, who works with the Pacific Fisheries Management Council and currently serves on the WDFW Marine Sport Fishing Advisory group, commented on fishing issues. He voiced support for topic #6 (Collaborative and

Coordinated Management). Mr. Leiman noted that topic #7 (Community Outreach) is important. He noted that topic #8 (Ecosystem Impacts of Fishing) promotes sustainable fisheries, and stressed that all fisheries are important to the coastal communities, including tribal communities. He voiced support for topic #9 (Fisheries Stock Assessment) because limitations imposed by depleted species (such as yelloweye rockfish) restrict where people are able to fish. He stated that Washington waters should not be combined together with the entire (west) coast for population estimates. He stated that #13 (Living Resource Conservation) is important, but that local residents need somewhere to fish. He stated that #29 (Recreational Opportunities) is very important to local communities. He also wanted to stress the importance of the United States Coast Guard's Station Quillayute River. He stated that Forks strongly supports #34 (Treaty Trust Responsibility) and treaty rights.

Mayor Nedra Reed of Forks, Washington attended a portion of the workshop on Friday, January 30. She took the opportunity to welcome the Advisory Council to Forks and stated that the City of Forks was pleased to have the Sanctuary as a neighbor.

## **V. NEXT STEPS**

Following the workshop, the Advisory Council Chair formally forwarded to the Sanctuary Superintendent the results of the workshop along with additional recommendations and guidance from the Advisory Council (Appendix B). The Superintendent then forwarded this information to the Olympic Coast Intergovernmental Policy Council (IPC) for review and discussion at its meeting on February 6, 2009. The IPC will review and comment on the Advisory Council recommendations and will provide the Sanctuary Superintendent with its recommendations on the priority issues to be addressed in the revised management plan.

While the Advisory Council and IPC are both advisory bodies, the IPC is fundamentally different from the Advisory Council in that its members are all sovereign governments (the Hoh, Makah, and Quileute Tribes, the Quinault Indian Nation, and the state of Washington) that have co-management authority over fishery resources and fishing activities in the Sanctuary. The Sanctuary is entirely encompassed by the Usual and Accustomed fishing areas of the coastal treaty tribes. Thus, the Sanctuary's interaction with the IPC occurs on a more formal, governmental level. The IPC provides a regional forum for resource managers to exchange information, coordinate policies, and develop recommendations for resource management within OCNMS.

Sanctuary staff, taking into consideration the public's comments, the recommendations of the IPC and Council, and the policies and legislative mandates that guide ONMS, will work in consultation with the Council and IPC to finalize a list of priority issues to be addressed in the revised management plan. Sanctuary staff will produce a *Priority Issue Work Plan* that details:

- the priority issues that the Sanctuary has chosen to address in its revised management plan;
- the formation of expert work groups to address these priority issues;

- how action plans and strategies will be developed for these priority issues over the next six to twelve months.

The *Priority Issue Work Plan* is the fourth and final document to be produced as part of the scoping phase of *Navigating the Future*. Once the *Priority Issue Work Plan* is published, the next phase of *Navigating the Future* begins - Action Plan Development. Action plans form the backbone of sanctuary management plans. Usually comprised of a series of specific strategies and activities, action plans detail the work that a sanctuary intends to do on its priority issues over the next 5 to 10 years. Action plans contain specific tasks, estimated budgets and timelines for conducting work, as well as performance measures for assessing success.

## APPENDIX A

**List of current Advisory Council primary and alternate members.  
Those whose names are in bold font attended one or both days of the workshop.**

<i>Seat</i>	<i>Status</i>	<i>Primary</i>	<i>Alternate</i>
Citizen-at-large	Voting	<b>Roy Morris</b>	<b>Bob Boekelheide</b>
Education	Voting	<b>Ellen Matheny</b>	<b>Gene Woodwick</b>
Research (Chair)	Voting	<b>Terrie Klinger</b>	<b>John Calambokidis</b>
Conservation	Voting	<b>Fan Tsao</b>	<b>Jody Kennedy</b>
Chamber of Commerce/Tourism	Voting	<b>Meredith Parker</b>	Mike Gurling
Marine Industry (Vice Chair)	Voting	<b>Bob Bohlman</b>	Frank E. Holmes
Commercial Fishing	Voting	<b>Doug Fricke</b>	Vacant
Hoh Tribe	Voting	<b>David Hudson</b>	<b>Joe Gilbertson</b>
Makah Tribe	Voting	<b>Steve Joner, Micah McCarty*</b>	Vacant
Quileute Tribe	Voting	<b>Mel Moon</b>	Katie Krueger**
Quinault Indian Nation	Voting	Ed Johnstone	<b>Joe Schumacker</b>
Local Counties	Voting	Al Carter	Phil Johnson, Mike Doherty
WA Dept. of Ecology	Voting	<b>Chip Boothe</b>	<b>Diane Butorac</b> , Rebecca Post
WA Dept. of Natural Resources	Voting	<b>Brady Scott</b>	David Roberts
WA Dept. of Fish and Wildlife	Voting	<b>Teresa Scott</b>	Vacant
Northwest Straits Commission	Non-voting	Ginny Broadhurst	Vacant
U.S. Coast Guard	Non-voting	<b>Capt. Bill Devereaux</b>	Capt. Scott Pollock
National Park Service	Non-voting	Karen Gustin	<b>Steve Fradkin</b>
U.S. Fish and Wildlife Service	Non-voting	<b>Kevin Ryan</b>	Lorenz Sollmann
U.S. Navy*	Non-voting	George Hart***	John Miller
National Marine Fisheries Service	Non-voting	<b>Steve Cops</b>	Janet Sears

\*Micah McCarty, Vice Chair for the Makah Tribe participated as the Makah representative

\*\*Jennifer Hagan, marine biologist for the Quileute Tribe, attended the workshop in Katie Krueger's place.

\*\*\* The U.S. Navy submitted the workshop homework assignment but was unable to attend the workshop.

**APPENDIX B**  
**Advisory Council recommendations to Sanctuary Superintendent**

**SANCTUARY  
ADVISORY  
COUNCIL**



**Dr. Terrie Klinger, Chair**  
**Bob Bohlman, Vice-Chair**  
**Teresa Scott, Secretary**

January 30, 2009

*Representation*

*Citizen-At-Large*  
*Conservation*  
*Tourism/Economic Development*  
*Commercial Fishing*  
*Marine Business*  
*Education*  
*Research*  
*Hoh Tribe*  
*Makah Tribe*  
*Quileute Tribe*  
*Quinault Indian Nation*  
*Clallam County*  
*Jefferson County*  
*Grays Harbor County*  
*Washington State:*  
*Dept. of Ecology*  
*Dept. of Fish and Wildlife*  
*Dept. of Natural Resources*  
*Olympic National Park*  
*U.S. Fish and Wildlife Service*  
*NOAA Fisheries*  
*U.S. Coast Guard*  
*U.S. Navy*  
*Northwest Straits Commission*

Carol Bernthal, Superintendent  
Olympic Coast National Marine Sanctuary  
115 E. Railroad Avenue, Suite 301  
Port Angeles, WA 98362

RE: Topic Recommendations for OCNMS Management Plan Review

Dear Superintendent Bernthal:

On January 29 and 30, 2009 the Olympic Coast National Marine Sanctuary (OCNMS) Advisory Council (AC) held a workshop at the Olympic Natural Resources Center in Forks, WA. The primary goals of the workshop were to understand and discuss the topics identified through the scoping process and then to provide the Sanctuary Superintendent with advice on scoring and ranking for each topic. This memo and attachments provide the results of that process, including a list of recommendations and topic scorings and rankings to serve as tools for OCNMS management plan review (MPR).

Over the first half of the workshop, the AC scored and worked to better define and clarify the 37 topics that arose out of the 2008 MPR public comment process. Ultimately, Council members were able to develop a common level of understanding and successfully clarified their rationale for developing scores on each topic.

*Artwork: David Sones*

On the second day of the workshop, the AC primarily focused on the ranking and – where the AC thought appropriate – the grouping of topics that were deemed to be similar. This process built upon the AC’s scoring discussion and efforts to understand the ideas and concepts behind each of the 37 topics, and ultimately led to a ranking of the revised and grouped topics considered to be MPR priorities.

**OLYMPIC COAST NATIONAL MARINE SANCTUARY**  
115 East Railroad Ave., Suite 301 Port Angeles, WA 98362  
360/457-6622· 360/457-8496 fax  
<http://ocnms.nos.noaa.gov/>

From this thoughtful, consensus-based process, the AC brings forward the following:

**Grouping and ranking process and results:**

- The AC went through an extensive scoring, grouping, and ranking process. A more detailed description of the process is provided below.

**Additional findings:**

- The AC discussed and agreed to recommend to the Sanctuary Superintendent to hold an annual coordination meeting between the AC and IPC.
- Treaty trust responsibility is inherent in everything done in the MPR and the management plan.

Closely tied to and accompanying our findings, please find the attached work products:

- Attachment 1: Scoring Worksheet – This spreadsheet contains the final scores that individual AC member representatives both developed prior to the workshop and, occasionally, modified during the workshop scoring discussions, based on the following criteria:
  - Benefits to the resource;
  - Urgency of the topic;
  - The sanctuary is suited to carry out the efforts surrounding this topic area;
  - The topic meets sanctuary mission and goals; and
  - It is a duty of the sanctuary to carry out the topic.
- Attachment 2: Ranking Worksheet – This spreadsheet represents the product of the AC's discussions during the post-rating grouping exercise, as well as the final ranking dialogue. This attachment provides our recommendations for sanctuary staff as they continue to refine the priority topics for the continued management of OCNMS. We reorganized the 37 topics into various color schemes:
  - *Green*: we support forwarding this topic as the highest management priority.
  - *Blue*: we believe this to be important but considered it a second-tier priority.
  - *Yellow*: we have chosen to group together these topics and linked them to associated topics that were considered high (green) or secondary (blue) priorities.
  - *Red*: these were not seen as topics to be prioritized for further review.
  - *Gray*: these topics were unresolved.

In addition, we often provided specific comments and recommendations associated with each topic that sanctuary staff should review and incorporate as appropriate into the next steps of the MPR process.

During the course of the workshop, AC members also discussed the six priority topics identified by the Intergovernmental Policy Council (IPC) and sanctuary that were included in the Federal Register Notice dated September 15, 2008. The AC recognizes a high degree of consensus with the IPC priority topics and the AC priority topics. The AC concluded the meeting with agreement by consensus that the Sanctuary Superintendent advance the AC

topic rankings to the IPC for review and comment at their upcoming February 6, 2009 meeting.

On behalf of the members of the Advisory Council, I am happy to provide our work to you and sanctuary staff as you move forward with the OCNMS management plan review.

Sincerely,

A handwritten signature in black ink, appearing to read 'TK', is positioned to the left of a vertical blue line.

Terrie Klinger, Chair  
OCNMS Advisory Council

Attachments

OCNMS Management Plan Review  
Advisory Council Issue Prioritization Workshop  
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**Attachment 1. AC Scores for Topics Raised During Public Scoping** *(in descending order based upon average score)*

**Note:** The text in red italics was added by Advisory Council members during the course of the workshop. Additionally, the Advisory Council split some topics in two; in these cases, both topics retain the original topic number, but one is denoted with a lowercase 'a' (e.g., #8 and #8a).

Topic No.	AC Seat Score Topic	AC Seat Score																			Average (scale 1-5)	Standard deviation		
		Citizen-at-large	Education	Research	Conservation	Tourism	Industry	Fishing	USCG	Navy	ONP	USFWS	NMFS	WA Ecology	WA DNR	WDFW	Hoh	Makah	Quileute	Quinault				
34	Treaty Trust Responsibility	5	5	5	5	5	5	5	5	4	3	5	5	5	4	5	5.0	5	5	5	5	5	4.8	0.5
6	Collaborative & Coordinated Management	5	5	4	5	5	5	4	5	4	5	5	5	4	4.5	5.0	5	5	5	5	5	5	4.8	0.4
32	Research for <i>Collaborative Ecosystem-Based</i> Management	5	4	4	5	5	5	5	4	5	5	5	5	4	5	5.0	4	5	5	4	4	4	4.7	0.5
10	Habitat Characterization	4	4	4	5	4	5	5	4	5	5	4	5	5	5	5.0	5	5	5	5	5	5	4.7	0.5
14	Living Resources Monitoring	4	5	5	5	5	5	4	3	3	5	5	5	4	5	3.5	5	5	5	5	5	5	4.6	0.7
33	Spill Prevention, Planning & Response	5	5	5	4	5	3	3	4	5	5	4	4	5	5	5.0	5	5	2	5	5	5	4.4	0.9
36	Water Quality Monitoring (water column properties)	4	5	4	4	4	5	5	4	3	5	5	5	4	4.5	3.5	5	4	4	4	4	4	4.3	0.6
5	Climate Change	3	5	4	5	4	3	5	2	5	5	4	5	5	5	4.0	5	3	3	5	5	5	4.2	1.0
26	Ocean Literacy	5	4	4	5	5	5	4	2	2	5	5	5	4	4	4.0	5	3	3	3	3	3	4.1	1.0
9a	Fisheries Stock Assessment <i>(research to support)</i>	4	5	4	4	4	4	5	4		3		5	4	4	2.0	4	4	4	4	4	4	4.0	0.7
30	Public & Private Resource Use - Socioeconomic Values	4	5	3	4	2	5	5	3	3	3	4		3	3.5		5	5	5	5	5	5	4.0	1.0
15	Local and Customary Knowledge	4	5	4	4	4	3	5	3	3	4	4	4	3	3.5	3.3	4	5	4	5	5	5	3.9	0.7
37	Water Quality Protection	5	5	4	4	3	3	2	4	3	5	5		3	4	4.5	4	5	2	5	5	5	3.9	1.0
7	Community Outreach	5	3	4	4	5	5	5	3	2	5	4	4	4	4	3.8	3	3	3	4	4	4	3.9	0.9
11	Habitat Protection	5	5	5	5	4	5	1	5	3	4	5	1	4	3	4.5	4	4	3	3	3	3	3.9	1.3

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Topic No.	Topic	AC Seat Score																				
		Citizen-at-large	Education	Research	Conservation	Tourism	Industry	Fishing	USCG	Navy	ONP	USFWS	NMFS	WA Ecology	WA DNR	WDFW	Hoh	Makah	Quileute	Quinault	Average (scale 1-5)	Standard deviation
23	Maritime Heritage - Living Cultures	4	5	4	3	4	3	3	4	2	5	5		3	3.5	3.3	4	4	4	4	<b>3.8</b>	0.8
27	Public & Private Resource Use - Commercial Development	4	5	4	4	3	5	5	3	3	4	5	4	3	3	4.5	3	3	2	4	<b>3.8</b>	0.9
28	Public & Private Resource Use - Compatibility Analysis	4	4	4	4	3	5	5	4	3	4	5	4	3	3		3	3	3	3	<b>3.7</b>	0.8
16	Marine Debris - Abandoned Submerged Equipment	2	4	4	4	4	4	3	3	2	4	5	4	4	4	4.5	3	4	3	4	<b>3.7</b>	0.8
17	Marine Debris - Shoreline Clean-Up	4	2	3	5	4	3	4	4	2	4	4	4	3	4	4.5	4	4	3	4	<b>3.7</b>	0.8
1	Administration - Flexibility to Respond to Emerging Issues	3	4	4	4	4	5	3	2	1	4	5	5	1	4	3.5	4	3	5	3	<b>3.6</b>	1.2
13	Living Resource Conservation	3	5	4	5	2	5	2	2	4	5	5		4	3	4.5	2	3	2	3	<b>3.5</b>	1.2
35	Visitor Services	5	2	3	3	4	4	3	4	4	4	4	4	4	3	4.0	3	2	3	2	<b>3.4</b>	0.8
20	Maritime & Environmental Safety - Vessel Management	5	4	3	4	3	4	2	4	2	4	5		3	4	2.0	3	3	1	4	<b>3.3</b>	1.1
29	Public & Private Resource Use - Recreational Opportunities	4	2	3	3	3	5	5	4	4	4	3	4	2	1.5	4.0	3	3	1	4	<b>3.3</b>	1.1
22	Maritime Heritage - Cultural Resource Management	4	5	4	3	3	3	3	3	2	5	3	4	2	2	2.8	4	3	3	3	<b>3.3</b>	0.9
24	Military Activities	3	4	4	3	3	3	4	1	5	4	5	5	3	3	5.0	1	2	1	2	<b>3.2</b>	1.4
2	Administration - Infrastructure	5	3	4	3	2	4	2	2	1	4	4		3	3	3.0	4	3	3	4	<b>3.2</b>	1.0
31	<i>Administration</i> - Regulations, Permitting & Enforcement	4	3	4	3	2	5	3	3	2	4	4	1	3	3	1.0	3	4	5	3	<b>3.2</b>	1.1
12	Invasive Species	3	2	4	3	2	3	3	4	1	4	3		3	4	3.5	3	3	1.5	4	<b>3.0</b>	0.9

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Topic No.	Topic	AC Seat Score																					
		Citizen-at-large	Education	Research	Conservation	Tourism	Industry	Fishing	USCG	Navy	ONP	USFWS	NMFS	WA Ecology	WA DNR	WDFW	Hoh	Makah	Quileute	Quinault	Average (scale 1-5)	Standard deviation	
25	Non-point Source Pollution	3	4	2	5	2	5	5	5	1	3	3		2	2.5	1.5	2	3	1	3	<b>2.9</b>	1.4	
21	Maritime & Environmental Safety - Weather	1	2	2	3	1	4	5	1	3	4	4		1	4	2.0	5	3	1	4	<b>2.8</b>	1.4	
19	Maritime & Environmental Safety - Navigation	2	4	2	3	2	3	3	4	2	3	3		1	2	4.5	3	3	1	4	<b>2.8</b>	1.0	
8a	Ecosystem Impacts of Fishing <i>(assessing the impacts)</i>	5	1	3	3	2	4	1	4		5		1	4	4	2.0	1	2	1	2	<b>2.6</b>	1.5	
18	Maritime & Environmental Safety - Harbors Refuge	3	2	2	3	1	3	2	3	1	3	2		1	1	2.0	2	2	1	2	<b>2.0</b>	0.8	
4	Boundary Adjustment	1	4	1	3	2	1	1	1	1	4	2		3	1	2.0	1	1	1	1	<b>1.7</b>	1.1	
9	Fisheries Stock Assessment <i>(formal stock assessment)</i>	1	1	1	1	0.5	2	1	2	4	3	4	1	1	2	2.0	1	1	1	1	<b>1.6</b>	1.0	
3	Administration - Sanctuary Goals & Objectives	The AC recommends that the Sanctuary goals and objectives be revised as part of the Management Plan Review process; therefore, this topic does not need to be scored or ranked.																					

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**Attachment 2. AC Rankings for Topics Raised During Public Scoping**

Note: The text in red italics was added by Advisory Council members during the course of the workshop. Additionally, the Advisory Council split some topics in two; in these cases, both topics retain the original topic number, but one is denoted with a lowercase 'a' (e.g., #8 and #8a).

Topic No.	AC Seat Score		Comments
	Topic	Average (scale 1-5) Standard deviation	
3	<b>Administration - Sanctuary Goals &amp; Objectives</b>		The AC chose not to score and rank this topic. The AC decided that the sanctuary goals and objectives should automatically be reviewed as part of the management plan review process
34	Treaty Trust Responsibility	4.8 0.5	
6	Collaborative & Coordinated Management	4.8 0.4	
32	Research for <i>Collaborative Ecosystem-Based Management</i>	4.7 0.5	
10	Habitat Characterization	4.7 0.5	* Propose lumping with #32
14	Living Resources Monitoring	4.6 0.7	* Propose lumping with #32
33	Spill Prevention, Planning & Response	4.4 0.9	
36	Water Quality Monitoring (water column properties)	4.3 0.6	* Propose lumping with #32
5	Climate Change	4.2 1.0	
26	Ocean Literacy	4.1 1.0	
31	<i>Administration</i> - Regulations, Permitting & Enforcement	3.2 1.1	
30	Public & Private Resource Use - Socioeconomic Values	4.0 1.0	
16	Marine Debris – Abandoned Submerged Equipment	3.7 0.8	*The AC sees this as a resource protection tool or function; propose lumping with Living Resource Conservation (#13)
17	Marine Debris – Shoreline Clean-Up	3.7 0.8	*The AC sees this as a resource protection tool or function; propose lumping with Living Resource Conservation (#13) *WA Coast Clean-Up participation should continue as part of Ocean Literacy (#26) and Community Outreach (#7)
13	Living Resource Conservation	3.5 1.2	
9a	Fisheries Stock Assessment ( <i>research to support</i> )	4.0 0.7	*Propose lumping with Research for Collaborative Ecosystem-Based Management (#32)
15	Local and Customary Knowledge	3.9 0.7	*Propose splitting/lumping/linking with Ocean Literacy (#26) *Propose splitting/lumping/linking with Research for Collaborative Ecosystem-Based Management (#32)
37	Water Quality Protection	3.9 1.0	*Propose lumping with Living Resource Conservation (#13) *If the three protection topics are going to be lumped, let them all be lumped under Living Resource Conservation (#13)
7	Community Outreach	3.9 0.9	*Propose lumping with Ocean Literacy (#26)
11	Habitat Protection	3.9 1.3	*Propose lumping with Living Resource Conservation (#13)
23	Maritime Heritage - Living Cultures	3.8 0.8	*Propose lumping with Ocean Literacy (#26) *Propose lumping comments related to paleo-shorelines with Climate Change (#5)
27	Public & Private Resource Use - Commercial Development	3.8 0.9	* Propose lumping with Public & Private Resource Use - Socioeconomic Values (#30)

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Topic No.	Topic	AC Seat Score		Comments
		Average (scale 1-5)	Standard deviation	
28	Public & Private Resource Use - Compatibility Analysis	3.7	0.8	* Propose lumping with Public & Private Resource Use - Socioeconomic Values (#30)
35	Visitor Services	3.4	0.8	* Propose lumping with #26 (Ocean Literacy)
29	Public & Private Resource Use - Recreational Opportunities	3.3	1.1	* Propose lumping with Public & Private Resource Use - Socioeconomic Values (#30)
25	Non-point Source Pollution	2.9	1.4	* Propose lumping with Water Quality Monitoring (#36); but the Sanctuary should only conduct this monitoring in the marine environment (not in upland environments)
21	Maritime & Environmental Safety - Weather	2.8	1.4	*Sanctuary should support infrastructure improvements *Propose lumping together Maritime & Environmental Safety - Vessel Management, Weather, and Navigation topics (#19, #20 and #21)
19	Maritime & Environmental Safety - Navigation	2.8	1.0	*Propose lumping with Spill Prevention, Planning & Response (#33) *There was consensus on the ranking for this topic, but some AC members stated that they were only going along with the ranking because they didn't want to hold the group up.
8a	Ecosystem Impacts of Fishing ( <i>assessing the impacts</i> )	2.6	1.5	* Propose lumping with Research for Collaborative Ecosystem-Based Management (#32)
20	Maritime & Environmental Safety - Vessel Management	3.3	1.1	*This topic can be colored as red (i.e., not a priority) as long as the Area To Be Avoided (Maritime & Environmental Safety - Navigation, #33) is recognized as an important function of sanctuary
22	Maritime Heritage - Cultural Resource Management	3.3	0.9	*Note that tribes have the lead on archeological/cultural sites but not necessarily shipwrecks
24	Military Activities	3.2	1.4	
1	Administration - Flexibility to Respond to Emerging Issues	3.6	1.2	*Ability to respond to emerging issues is important but no working group is necessary *Management plan needs to be adaptive and flexible
18	Maritime & Environmental Safety - Harbors Refuge	2.0	0.8	
4	Boundary Adjustment	1.7	1.1	
9	Fisheries Stock Assessment ( <i>formal stock assessment</i> )	1.6	1.0	
2	Administration - Infrastructure	3.2	1.0	*AC feels that replacement of the RV Tatoosh is critical
12	Invasive Species	3.0	0.9	*Propose lumping with Administration - Flexibility to Respond to Emerging Issues (#1) *Propose lumping with Living Resources Monitoring (#14)

**Key:**

Green = the AC supports forwarding this topic as the highest management priorities

Blue = the AC considered this to be important, but considered it a second-tier priority

Yellow = the AC chose to group together these topics and link them to associated topics that were considered high (green) or secondary (blue) priorities

Red = these were not seen as topics to be prioritized for further review.

Gray = these topics were unresolved.

**APPENDIX C**  
**Rationales for individual topic scores.**

The Council's recommendations, along with its topic scores and rankings (see Table 2 and Appendix B), were the result of two days of intensive discussion. It is difficult to summarize this lengthy discussion or capture all the details of Council members' ideas on each topic, especially when not every member chose to express his/her thoughts on every topic. However, to provide context for the individual topic scores it is helpful to summarize comments *where members shared their rationale* for choosing a particular score. These comments, excerpted from the workshop notes and tapes, are summarized in bulleted format here. The comments are organized by topic and the topics are presented in the same order as Table 2.

Administration – Sanctuary Goals & Objectives (Topic #3)

- Teresa Scott (WDFW) expressed concern about prioritizing topics and issues prior to the revision of the Sanctuary goals and objectives.
- The Council agreed not to score the topic “Administration – Sanctuary Goals and Objectives”. Instead, it recommended reviewing the Sanctuary goals and objectives as an essential action to be completed during the management plan review process.

Treaty Trust Responsibility (Topic #34)

- Micah McCarty (Makah Tribe) said this topic cannot be taken for granted. Public education has been less than adequate.
- Mel Moon (Quileute Tribe) said there is a need to incorporate this information about the relationship into the MPR. He suggested that a workgroup put this information together. He stated that there is a sense of the need to improve relationships and to define how to move forward from here on these relationships.

Collaborative and Coordinated Management (Topic #6)

- Teresa Scott (Washington Department of Fish and Wildlife (WDFW)) was concerned that the term “management” could be interpreted to mean joint management where authority doesn't exist.
- Micah McCarty (Makah Tribe) noted that differing authorities and expertise when combined provide beneficial results, particularly with good coordination.

Research to Support *Collaborative Ecosystem-Based* Management (Topic # 32)

- Steve Copps (NOAA Fisheries Service) noted that collaborative ecosystem based management is a core function of the sanctuary and one that the NOAA Fisheries Service scored very high (5). He also expressed that, while the NOAA Fisheries Service is extremely supportive of OCNMS research, the agency is concerned that this research be coordinated within the larger context of the California current.

- Micah McCarty (Makah Tribe) said that the Makah scored this very high with the notion that there would be a collaborative approach to research.
- Jody Kennedy and Fan Tsao (Conservation seat) stated that research to support collaborative ecosystem-based management will help to inform future ecosystem protection measures.

#### Habitat Characterization (Topic # 10)

- Micah McCarty (Makah Tribe) stated that the Makah Tribe's score was based on a collaborative approach to habitat characterization.

#### Living Resources Monitoring (Topic # 14)

- No Council members provided specific rationales for scores.

#### Spill Prevention, Planning and Response (Topic # 33)

- Roy Morris (Citizen at Large) initially scored this low based on the assumption that other agencies or entities have this authority and responsibility. The Citizen-at-Large seat adjusted its score following discussion on the role sanctuary staff plays in planning, prevention and response.
- Brady Scott (Washington Department of Natural Resources (DNR)) scored this as a 5 based on the fact that spills are one of the biggest threats to all sanctuary resources (the DNR factored in the importance of the Neah Bay tug when scoring this topic as a 5).

#### Water Quality Monitoring (Topic # 36)

- Douglas Fricke (Commercial Fishing) scored this topic based on the assumption that monitoring efforts would be collaborative and not duplicative.
- Micah McCarty (Makah Tribe) and Mel Moon (Quileute Tribe) both stated that their scores were based on the Sanctuary taking a collaborative approach.
- Terrie Klinger (Research seat) noted that other research entities (even within NOAA) are interested in pursuing water quality monitoring in the Sanctuary, so if the Council calls this topic out as important, it might actually attract resources from other agencies and entities. Council members seemed to view this point as an important reason for scoring this topic high.

#### Climate Change (Topic # 5)

- While no members stated specific rationales for their scores, it seemed evident from the discussion that those who scored this topic high did so because 1) research and monitoring to address climate change could require a different design than current monitoring efforts, 2) emerging issues such as ocean acidification are not captured in current monitoring efforts and 3) new funding could become available to support climate change research in the Sanctuary.

#### Ocean Literacy (Topic # 26)

- No Council members provided specific rationales for scores.

**Administration - Regulations, Permitting & Enforcement (Topic #31)**

- Steve Copps (NOAA Fisheries Service) stated that this topic is a core function (regulations and permitting are core management tools), but scored it low because regulations, permitting and enforcement are an outcome of management. If the process related to this topic is procedural, then that is different and NOAA Fisheries Service might score it higher.
- Teresa Scott (WDFW) stated that there was no clear statement of a problem associated with this topic. Thus, she gave it a low score to reflect that there was no problem related to this topic that would cause it to be a high priority.
- Brady Scott (DNR) emphasized the enforcement piece of this topic, which could be lacking. DNR also thought this was a core function and asked why this should be a topic.
- John Calambokidis (Research) said his high score was based on the fact that he thought the enforcement program could be stronger.
- Micah McCarty and Steve Joner (Makah Tribe) stated that they scored this topic high because there is a need both to improve the permitting process and to have further discussion on the permitting process.

**Public and Private Resource Use – Socioeconomic Values & Human Use (Topic #30)**

- Joe Schumacker (Quinault Indian Nation) said that the Quinault Indian Nation scored this with the understanding that the tribal perspective was included.

**Marine Debris – Abandoned Submerged Equipment (Topic # 16)**

- No Council members provided specific rationales for scores.

**Marine Debris - Shoreline Clean-Up (Topic # 17)**

- No Council members provided specific rationales for scores.

**Living Resource Conservation Topic # 13)**

- No Council members provided specific rationales for scores.

**Fisheries Stock Assessment (*formal*); Fisheries Stock Assessment (*research to support*) (Topic #9)**

- Steve Copps (NOAA Fisheries Service) emphasized that the NOAA Fisheries Service believes stock assessments to be of critical importance but scored this topic low because the Sanctuary does not have a historic role in performing fisheries stock assessments.
- Terrie Klinger (Research) scored this topic low because stock assessments and related research are performed by other entities.
- Steve Joner (Makah Tribe) said the Makah would support and score higher Sanctuary involvement in research if it addressed issues such as stock structure and larval distribution.
- Joe Gilbertson (Hoh Tribe) stated that the Hoh Tribe defined this topic broadly and gave it a high score.

- Mel Moon (Quileute Tribe) emphasized that any research should be done with partners.

#### Local and Customary Knowledge (Topic # 15)

- Doug Fricke (Commercial Fishing) said that his high score is based on a desire to see the Sanctuary get local information from the fishing industry.
- Micah McCarty (Makah Tribe) stated that the Makah Tribe scored this topic high because the tribes have a lot of experiential information, especially related to fishing, which would help to inform peoples' understanding of fishing impacts.
- Jody Kennedy (Conservation seat) noted that her seat's score was initially based upon the thinking that this topic would be a part of Collaborative and Coordinated Management. But they saw the topic differently after the discussion and increased their score.
- Jennifer Hagan and Mel Moon (Quileute Tribe) said that the Quileute Tribe based its score (4) on the importance of evaluating the Tribes in their 21<sup>st</sup> Century context as fisheries co-managers that have their own technical, policy and legal staffs. The portrayal of tribal usage and customs during treaty time is valuable from a cultural standpoint but should not stand alone.

#### Water Quality Protection (Topic #37)

- Capt. Bill Devereaux (U.S. Coast Guard (USCG)) said that the USCG gave this a high score because it viewed non-point source pollution issues (excluding oil) as significant.
- Steve Copps (NOAA Fisheries Service) said there was not any assessment available as the basis for scoring.
- Brady Scott (DNR) gave this topic a low score because he did not know what is being protected.
- Joe Schumacker (Quinault Indian Nation) said within the existing Sanctuary this topic is a high priority; hence it was given a high score.

#### Community Outreach (Topic #7)

- Douglas Fricke (Commercial Fishing) scored this high because he would like to see more community involvement in projects that occur in the Sanctuary (i.e., wave energy, cable-laying, etc.)

#### Habitat Protection (Topic #11)

- Steve Copps (NOAA Fisheries Service) was not comfortable scoring this topic because the condition of habitats in the sanctuary and relative threats have not been assessed. He stated that his discomfort with the Condition Report (and the discomfort he heard expressed during the Condition Report presentation at the start of the workshop) led him to think that the Sanctuary is not ready to address this topic. He believes that habitat protection is a fundamental role of the Sanctuary but that an assessment would be necessary to determine if regulatory or other intervention is appropriate to consider. Thus he scored the topic low.

- Doug Fricke (Commercial Fishing) was concerned about sponge and coral protection. The fishing community feels there should be some preservation of coral and sponge habitat but does not want to see overreaction that leads to the demise of fishing.
- John Calambokidis and Terrie Klinger (Research seat) gave this a high rating because it is consistent with the mission of the Sanctuary.
- Mel Moon (Quileute Tribe) stated that the Quileute Tribe initially gave this topic a high rating, but had concerns about how this issue would be addressed and as a result adjusted its score to a 3.
- Micah McCarty (Makah Tribe) scored this topic in the context of environmental protection. The Sanctuary needs to be an ally in oil spill response and other marine hazards. The original support of the Makah Tribe for Sanctuary designation was to prevent oil exploration.
- Brady Scott (DNR) sees habitat characterization as important but did not understand that specific habitats were threatened, so he gave it a moderate score.

Maritime Heritage – Living Cultures (Topic #23)

- No Council members provided specific rationales for scores.

Public & Private Resource Use – Commercial Development (Topic #27)

- No Council members provided specific rationales for scores.

Public & Private Resource Use – Compatibility Analysis (Topic #28)

- Kevin Ryan (USFWS) recommended development of a formal compatibility analysis process for the Sanctuary (it was inferred that this was the rationale for his score).

Visitor Services (Topic #35)

- No Council members provided specific rationales for scores.

Public and Private Resource Use – Recreational Opportunities (Topic #29)

- No Council members provided specific rationales for scores.

Non-point Source Pollution (Topic #25)

- Capt. Bill Devereaux (USCG) scored this high because there is no place where anyone in the maritime world is studying this. Because non-point pollution sources are fairly low in the Sanctuary area, it could be an important research site.
- Chip Boothe (Washington Department of Ecology) stated that his agency scored this low because it does not think addressing non-point source pollution is the Sanctuary's role.
- Jennifer Hagan (Quileute Tribe) agreed and indicated that the Quileute Tribe's score reflected the fact that the topic is important, but there are other agencies working on it.

#### Maritime and Environmental Safety – Weather Forecasting (Topic #21)

- Captain Devereaux (USCG) acknowledged that this is important but thought current efforts were good, so his rating was low.
- Doug Fricke (Commercial Fishing) said this topic is a high priority for the fishing community.
- Brady Scott (DNR) stated that he scored this topic high because of the need for Doppler radar coverage of the southern coast, which was identified as a high priority in the Washington Ocean Action Plan.

#### Maritime and Environmental Safety – Navigation (Topic #19)

- No Council members provided specific rationales for scores.

#### Ecosystem Impacts of Fishing (*assessing the impacts*) (Topic 8)

- Steve Copps (NOAA Fisheries Service or NMFS) explained the NMFS score by saying that the category seems overly narrow by focusing on only one type of impact. NMFS is fully supportive of OCNMS assessing the full spectrum of anthropogenic impacts, including fishing, and would encourage a holistic perspective in ecosystem assessments.
- Micah McCarty stated that the Makah Tribe's score was based on monitoring and characterization of ecosystem impacts of fishing. Micah McCarty stated that there needs to be ground-truthing to establish a baseline and quantify the resilience of the system.
- Mel Moon (Quileute Tribe) said that the Quileute Tribe's score reflected the fact that this topic should not be a lead theme for the Sanctuary, but that the topic should be noted as a collaborative research and monitoring effort.

#### Maritime and Environmental Safety – Vessel Management (Topic #20)

- Kevin Ryan (USFWS) scored this high because of the success of the Area to be Avoided (ATBA) program.
- Captain Bill Devereaux (USCG) said others already do this work but noted poor vessel monitoring in the southern sanctuary.
- Terrie Klinger (Research seat) linked this topic with oil spill prevention.

#### Maritime Heritage – Cultural Resource Management (Topic #22)

- No Council members provided specific rationales for scores.

#### Military Activities (Topic #24)

- The U.S. Navy was not able to attend the workshop but did submit the topic scoring homework exercise. The Navy scored this topic as a 5 and said that, “We must be on the same page. The Navy in their DEIS/OEIS explains how the Navy will continue to do the same exercises they have done in the past, just more of those types of exercises. Keyport wants to expand the area they do their work in but it is the same type of work they have been doing all along.”

Administration – Flexibility to Respond to Emerging Issues (Topic #1)

- Chip Boothe and Diane Butorac (Washington Department of Ecology) scored this topic low for the reason stated above: this topic is an inherent part of all Sanctuary programs, not a stand-alone topic.
- John Calambokidis (Research seat) thought that responding to emerging issues is integral to the Sanctuary’s work and found it difficult to score, in comparison with issue-oriented topics.

Maritime and Environmental Safety – Harbors of refuge (Topic #18)

- No Council members provided specific rationales for scores.

Boundary Adjustment (Topic #4)

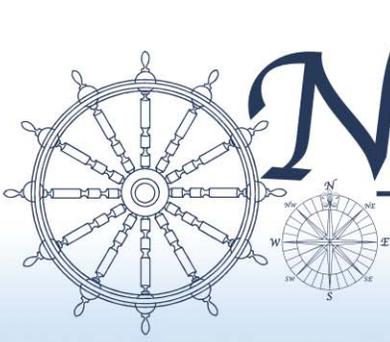
- Steve Fradkin (National Park Service (NPS)) stated that the NPS scored this topic high not because it felt the boundaries should definitely be adjusted, but because it wanted to see the boundaries considered during the management plan review process (especially in relation to the deep sea canyons, small portions of which are within current Sanctuary boundaries).

Administration – Infrastructure (Topic #2)

- Steve Copps (NOAA Fisheries Service) commented that an analysis of current infrastructure and infrastructure needs is needed before the Council can say whether this topic is a priority.
- Jennifer Hagan and Mel Moon (Quileute Tribe) stated that their rationale for their score was the same as Mr. Copps’.

Invasive Species (Topic # 12)

- Steve Copps (NOAA Fisheries Service) said he would like to see a risk assessment before providing a score for this topic.



# *Navigating the Future*

Management Plan Review



## **DRAFT FOR ADVISORY COUNCIL DISCUSSION**

16 MARCH 2009

Agenda Item E.1.b  
Attachment 5  
April 2009

### PUBLIC SCOPING AND ISSUES ANALYSIS

### PART 4: **PRIORITY ISSUE WORK PLAN**



**MARCH 2009**

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## I. PURPOSE AND INTRODUCTION

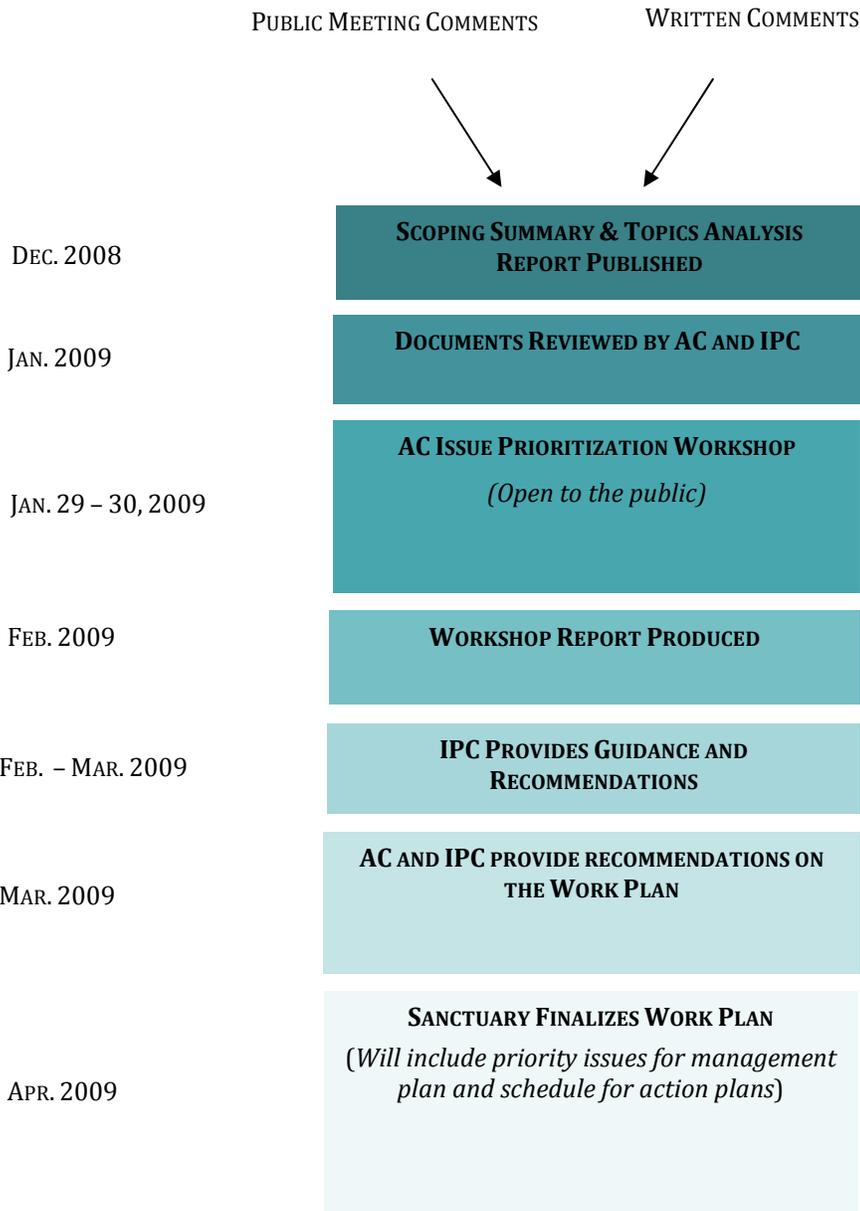
This work plan is the fourth in the series of documents produced as part of the Public Scoping and Issues Analysis (scoping) phase of Olympic Coast National Marine Sanctuary's (OCNMS) *Navigating the Future* - management plan review – process (Figure 1). Comments received during the public scoping period (September 15 – November 14, 2008) were summarized and analyzed, respectively, in the first two documents: a *Scoping Summary* and a *Topics Analysis Report*. Results from an issues prioritization workshop held by OCNMS Advisory Council (AC) were summarized in the third document, *Issue Prioritization Workshop Report*.

The purpose of this document is to:

1. Present and characterize the priority issues that will be addressed in OCNMS' draft management plan, and where necessary refine the issue descriptions from previous reports;
2. Outline a strategy for development of working groups, teams, or workshops to address priority issues in greater detail over the next 6 – 12 months;
3. Provide recommendations for participation in working groups, and brief recommendations for how working groups, teams or workshops will be structured and supported, when these groups will meet, and what these groups will be asked to do;
4. Explain how the outcomes of the working groups, teams, and workshops will be used to develop Action Plans and OCNMS' Draft Management Plan; and
5. Describe how the public can follow this work and become involved in issue-based workshops and working groups.

Following this Purpose and Introduction, Section II provides background information on OCNMS *Navigating the Future* process. Section III briefly describes how OCNMS used the results of the public scoping process to develop a set of priority management issues and then outlines these priority issues. Section IV, which is the core of the work plan, outlines the recommended approach for addressing the priority issues through work groups and workshops. Finally, this work plan concludes with a description of how the public can follow and be involved with the work groups and workshops (Section V) and the next steps in *Navigating the Future* (Section VI). Appendix A provides an explanation of how the original 37 topics identified during the public scoping process fit into the proposed priority management needs and the work plan structure. Appendix B is a glossary that is intended to enhance the consistency of interpretation by individual readers.

NOTE: As of March 16, 2009, OCNMS has not received funds to support work groups and workshops identified in this work plan because the U.S. Congress has not finalized the budget for this fiscal year. Much of the work outlined here is dependent on additions to OCNMS' base budget, allocations that are made by the Office of National Marine Sanctuaries (ONMS) from funds available to all sanctuaries on a competitive basis. Until this funding amount is determined, OCNMS can not commit to the effort and schedule outlined in this draft work plan.



**FIGURE 1.** Diagram showing activities for remainder of the *Navigating the Future* Public Scoping & Issues Analysis phase at OCNMS.

## II. BACKGROUND

OCNMS initiated *Navigating the Future* in September 2008 with a 60-day public comment period that included seven public meetings around the Olympic Peninsula and western Washington. Since the close of the public comment period in November 2008, OCNMS has been working with its AC and the Olympic Coast Intergovernmental Policy Council (IPC) to review public comments and develop a final list of priority issues to address in its revised management plan.

Identifying and characterizing these priority issues has been a challenging process. A broad suite of ideas and issues were raised during the public comment period, not all of which can or should be addressed by OCNMS within the next five to 10 years. The AC, IPC, and OCNMS staff agreed that many issues raised during through public comment were high priorities that should be addressed in the management plan. Some of this discussion is provided in the *Issue Prioritization Workshop Report*. Other issues raised during the scoping process were not identified as priorities but may still appear in the management plan with less emphasis and/or within the context of other issues. Several issues will not be addressed in the revised management plan because they were not considered high priorities or because they are the responsibility of other authorities.

A primary function of the management plan is to describe OCNMS management, which currently is staffed by 11 full-time government employees, 3 full-time contractors, and 5 part-time contractors. OCNMS has been level-funded for the past few years, which, given yearly increases in operating costs, amounts to a net decrease in funding each year. The management plan, which will contain specific performance measures, must outline what is achievable given current staffing and funding levels. However, given the public's interest in more accomplishments and the five to ten year timeline for implementing the new management plan, OCNMS staff also would like the management plan to identify areas for growth.

Moving into action plan development, the Advisory Council and OCNMS will convene working groups and workshops to consider identified priority issues. As part of their deliberations, these groups will assess ongoing OCNMS management efforts and identify new strategies to respond to priority issues. OCNMS staff will use advice and recommendations from these groups to draft a series of action plans that will form the major elements of the draft management plan. Action plans detail the actions OCNMS staff will take to address priority issues.

## III. PRIORITY ISSUE DEVELOPMENT

OCNMS staff, the AC, and the IPC undertook a comprehensive process to acquire and analyze public comments and develop the final list of priority issues identified in this document. Prior to public comment, the IPC and OCNMS staff identified six "preliminary priority issues" to inform the public and encourage comment during scoping. After public comment ended in November 2008, OCNMS staff analyzed the comments received and produced two documents: a *Scoping Summary* and a *Topics Analysis Report*, which categorized each of the public comments under 37 topics.

In January 2009, AC members convened for a two-day Issue Prioritization Workshop during which the 37 topics were used as a basis for recommending priority issues for the revised management plan. The results of the workshop are detailed in the *Issue Prioritization Workshop Report*. The AC assigned one of five rankings to each of the 37 topics, which includes the following issue ranking definitions:

- Ranking 1: These topics are the **highest management priorities**.
- Ranking 2: These topics are important, but are **second-tier priorities**.
- Ranking 3: These topics should be **grouped** under associated topics that were considered high or second-tier priorities.
- Ranking 4: These were **not seen as topics to be prioritized**.
- Ranking 5: These topics were **unresolved** (i.e., prioritization or grouping).

Using AC and IPC recommendations, OCNMS staff began the process of selecting a final list of priority issues to be addressed in the revised management plan. OCNMS staff agreed that the AC's highest management priorities and IPC-OCNMS preliminary priority topics should be addressed in the revised management plan.

OCNMS staff then met repeatedly over a period of three weeks to discuss the AC's suggested topic groupings, unresolved topics, and lower priority topics (rankings 2, 3, 4 and 5). OCNMS staff considered grouping recommendations made by the AC, yet felt it necessary to revise or re-conceptualize some groupings. It is important to note that certain issues scored as second tier or lower by the AC may reflect mandated purposes or policies of the National Marine Sanctuaries Act (NMSA) and as such, will be addressed in the revised management plan. Taking into consideration mandates of the NMSA, AC and IPC recommendations, and public comments, OCNMS staff developed a revised list of high priority issues and issue groupings.

As a result, the nature of the work that OCNMS should conduct over the next five to 10 years has been reorganized under seven priority management needs. Each was expressed repeatedly throughout the scoping process, and each corresponds to one or more of the highest ranked issues.

These priority management needs are:

1. Review Sanctuary Goals and Objectives
2. Enhance Understanding of Sanctuary Ecosystems
3. Improve Ocean Literacy
4. Assess and Reduce Threats to Sanctuary Resources
5. Understand the Sanctuary's Cultural, Historical and Socioeconomic Significance
6. Achieve Effective Collaborative and Coordinated Management
7. Achieve Effective Sanctuary Operations

OCNMS staff has structured this work plan around these priority management needs, has clustered related issues under priority management needs and has developed working groups or workshops to address each. Below is a brief outline of issues associated with each priority management need. Recommended actions to address each of these issues will be developed through working groups, teams, or workshops. More extensive discussion of each issue is provided Section IV of this document.

**Priority Management Need 1: Review of Sanctuary Goals and Objectives**

1A Advisory Council Subcommittee: Goals and Objectives Review

**Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems**

2A Working group: Habitat Characterization

2B Working group: Living Resource Monitoring

2C Working group: Oceanographic Processes and Water Quality Monitoring

2D Working group: Climate Change

**Priority Management Need 3: Improve Ocean Literacy**

3A Workshop: Improve Ocean Literacy

**Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources**

4A Working group: Living Resources Conservation

4B Working group: Oil Spill Planning, Prevention and Response

**Priority Management Need 5: Understand the Sanctuary's Cultural, Historical and Socioeconomic Significance**

5A Workshop: Maritime Heritage

5B Workshop: Socioeconomic Value of Sanctuary Resources

**Priority Management Need 6: Achieve Effective Collaborative and Coordinated Management**

Staff work with other agencies and governments (includes consultations on treaty trust responsibility)

**Priority Management Need 7: Achieve Effective Sanctuary Operations**

Staff work with AC guidance and IPC consultation

In some cases, it is clear where the original 37 topics from scoping ended up in the list of priority management needs and their related working groups and workshops. In other cases, original topics were re-grouped and re-titled, making it challenging to identify where certain topics will be addressed. To track these decisions, a brief explanation of the status of each of the original 37 topics is provided in Appendix A. In Section IV of this work plan, a description of each priority management need and the specific focus of each working group and workshop are provided.

**IV. WORKING GROUPS AND SCHEDULES**

A description of each priority management need is provided below, along with descriptions of the methods proposed to address each priority management need. The working group and workshop descriptions include a statement of purpose, list of proposed participants, OCNMS staff lead, timeline, suggestions for topics to consider, and proposed outcomes.

The Advisory Council will be directly involved in efforts to address priority management needs 1 through 5, which will be addressed through working groups and workshops. Advisory Council members will be asked to be involved in planning, leadership, and participation aspects of working groups and workshops.

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**PRIORITY MANAGEMENT NEED 1:  
REVIEW SANCTUARY GOALS AND OBJECTIVES**

OCNMS' current goals and objectives date from the 1993 OCNMS management plan and have not been revised since they were drafted over 15 years ago. Review and possible revision of the goals and objectives is a critical element of *Navigating the Future*, and a recommendation reinforced by the AC, IPC, and public.

**How will this priority management need be addressed?**

Review of goals and objectives will begin as soon as possible so that initial findings can provide guidance to working groups. To initiate this process, OCNMS staff has developed a draft mission statement and a revised (draft) set of goals and objectives to be considered alongside the current goals and objectives. OCNMS staff worked to make these draft goals and objectives consistent with the goals of the 1993 management plan, the purposes and policies of the National Marine Sanctuaries Act, and the draft work products developed by the IPC in 2008.

A subcommittee of the AC will be formed to review and make recommendations on the current and updated draft goals and objectives between March and May 2009. The Sanctuary Superintendent will also seek guidance on revising the goals and objectives from the IPC during this time. OCNMS staff will then work with the AC and IPC to incorporate changes into a single set of draft goals and objectives. The aim is for the AC, IPC and OCNMS to agree on a draft set of goals and objectives by June 2009 so that they can be provided as guidance to all of the working groups, workshops and internal teams.

In 2010, the AC, IPC and OCNMS staff will review these draft goals and objectives again, taking into consideration the results of the working groups and workshops. It is important to note that the goals and objectives will be in draft form until the Final Management Plan is published.

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**1A. SANCTUARY GOALS AND OBJECTIVES – Advisory Council Subcommittee:** This subcommittee will review the current and draft OCNMS goals and objectives and work with OCNMS and the IPC to develop a single set of draft goals and objectives to guide OCNMS' work for the next five to ten years.

**Subcommittee Chair:**

**OCNMS Staff Lead:** George Galasso

**Proposed Participants:**

**Timeline:** March-May 2009; spring 2010

**Questions/Topics to Consider:**

- Are there major elements missing from the current and/or draft goals and objectives?
- How can the goals and objectives be harmonized with OCNMS’ treaty trust responsibility?
- How do we create clear linkages between the goals and objectives, the priority management needs and the strategies developed by the working groups and workshops?

**Desired Outcomes/Proposed Products:**

- Revised goals and objectives, initially used during action plan development (March-May 2009)
- Re-evaluation of goals and objectives for consistency with draft action plans (spring 2010)

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**PRIORITY MANAGEMENT NEED 2:  
ENHANCE UNDERSTANDING OF SANCTUARY ECOSYSTEMS**

The OCNMS 2008 Condition Report, along with the comments received during scoping, emphasized the importance of data to inform management decisions, and also identified significant data gaps related to our understanding of some of the natural resources and ecosystem processes within the Sanctuary. When insufficient data exist, a precautionary approach to management decisions may be appropriate. An improved understanding of ecosystem processes, components, and their functions will facilitate informed ecosystem-based management and improve efforts to understand the effects of climate change on the marine ecosystem.

To maximize effectiveness of its efforts, OCNMS places a strong emphasis on maintaining and further developing collaborative scientific research and monitoring programs that address diverse aspects of habitat characterization, living resources monitoring, oceanographic and water quality monitoring, and climate change. Some monitoring and research efforts are led by OCNMS. In other cases, OCNMS may be a partner, providing technical assistance in the field, advocating for ship time or funding, or providing technical assistance with data analysis.

Climate change is widely acknowledged as a fundamental concern at the global scale that can impact local ecosystems and economies. Whereas there is considerable uncertainty about current and future consequences at local, ecosystem, and oceanic scales, it is likely that humans and marine life will experience consequences in our lifetimes and beyond. Given the magnitude and rapid emergence of this issue, OCNMS is using this management plan review as an opportunity to evaluate research and monitoring programs through the filter of climate change to determine best to understand changes to the local marine ecosystem resulting from this global pressure.

**How will this priority management need be addressed?**

Four working groups will be established, focused on habitat characterization, living resource monitoring, monitoring of oceanographic processes and water quality, and climate change. Working groups will be led by an Advisory Council member, consist of a few (e.g., 2-6) individuals, and meet one or more times, as necessary. To the extent practical, meetings will use electronic technology (i.e., emails, conference calls, internet conferencing) to facilitate scheduling and minimize transportation costs. The climate change working group will meet after the other three working groups have met, to enable use of their findings and recommendations for development of an action plan relevant specific to climate change.

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**2A. HABITAT CHARACTERIZATION – Working Group:** Identify strategies for characterization and improved understand of the Sanctuary’s seafloor habitats to support ecosystem-based management efforts.

**Working Group Chair:**

**Sanctuary Staff Lead:** Nancy Wright

**Proposed Participants:**

**Timeline:** June-October 2009

**Questions/Topics to Consider:**

- Are the current priorities of OCNMS’ habitat characterization program appropriate for future efforts?
- Three elements of habitat characterization were identified during scoping: mapping seafloor habitats, species-habitat associations, and the condition of physical and biogenic habitats – each of these topics should be considered.
- Is OCNMS’ work, or to what extent should it be, consistent with strategies developed at WA Seafloor Mapping Workshop and its subsequent Strategic Plan?
- What is recommended for substrate and/or habitat characterization for areas for which high resolution acoustic data are not yet available?
- How can habitat characterization efforts best support fishery management needs, such as improved understanding of species-habitat associations and fishing impacts to seafloor habitats?
- To what extent do threats and identified impacts to seafloor habitats influence the prioritization of habitat characterization efforts?
- How can habitat characterization efforts help OCNMS and other managers move toward a comprehensive ecosystem-based management approach?
- How to integrate OCNMS efforts with those of Northwest Fisheries Science Center to better understand essential fish habitat?

**Desired Outcomes/Proposed Products:**

- Strategies targeted at mapping the entire Sanctuary.
- Strategies to maximize the benefits of collaborative efforts
- Prioritization of habitat types and/or species for habitat-species association research

- Identification of mapping products useful for resource managers
- Identification of mechanisms for data sharing
- Clarification of ways habitat characterization can support fisheries management needs
- Elements of habitat characterization efforts that assess seafloor habitat condition

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**2B. LIVING RESOURCE MONITORING – Working Group:** Develop a prioritized list of monitoring strategies that OCNMS can pursue in order to build a more comprehensive and complete understanding of Sanctuary ecosystem components and processes. Consider all research and monitoring activities within the context of larger-scale efforts to promote ecosystem-based management and improve understanding of climate change effects.

**Working Group Chair:**

**Sanctuary Staff Lead:** Ed Bowlby

**Proposed Participants:**

**Timeline:** June-October 2009

**Questions/Topics to Consider:**

- Are key species identified in the 2008 Condition Report suitable choices for the purpose of living resource monitoring in the Sanctuary?
- How can living resource monitoring be designed to focus on abundance (status) and health (condition) of key species?
- How should ongoing long-term monitoring programs be modified to make best use of technology and address current science needs, including climate change research?
- What are the gaps in living resource monitoring and where should OCNMS focus efforts to provide critical data not collected by OCNMS or other agencies?
- Living resource monitoring during winter months is currently very limited. How can OCNMS and its partners address the need for monitoring data that covers the entire year?
- What are opportunities for maximizing collaborative efforts?
- How can natural resource monitoring support elements of ecosystem-based management, such as biodiversity, critical habitats, life history characterization and trophic interactions?
- How should monitoring for non-indigenous or invasive species be prioritized?

**Desired Outcomes/Proposed Products:**

- Identification of key species and the Sanctuary’s role in monitoring them.
- Strategies to support and modify ongoing long term monitoring efforts conducted by OCNMS and its partners
- Identification of opportunities to expand or re-focus monitoring conducted by OCNMS and its partners to focus on climate change research.
- Recommendations for improving data sharing

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**2C. OCEANOGRAPHIC PROCESSES AND WATER QUALITY MONITORING – Working Group:** Develop a prioritized list of monitoring strategies that OCNMS can pursue in order to build a more comprehensive and complete understanding of water quality (physical, chemical, and biological) properties and oceanographic processes. Consider how to establish OCNMS as a sentinel site that attracts monitoring efforts, including climate change research from all segments of government.

**Working Group Chair:**

**Sanctuary Staff Lead:** Mary Sue Brancato

**Proposed Participants:**

**Timeline:** June-October 2009

**Questions/Topics to Consider:**

- Discuss the state of knowledge of oceanographic processes in OCNMS.
- How does the Sanctuary’s ongoing nearshore water quality monitoring program contribute to and augment similar efforts in the California Current?
- What is the unique role for OCNMS in oceanographic monitoring?
- How can oceanographic monitoring be improved to address our emergent need to understand effects of climate change, such as ocean acidification?
- How should OCNMS fit into the larger Integrated Ocean Observing System (IOOS) system and investments being made by NOAA and others in IOOS?
- Do existing programs, such as IOOS, WCO and SIMoN, provide sufficient opportunities for data sharing, and how should OCNMS work with these groups to share data?
- The most significant water quality issues identified in the 2008 OCNMS Condition Report are impacts of harmful algal blooms on animal health (including humans) and hypoxia. How can OCNMS best focus its efforts to address these issues?
- Where does the “Big Eddy” fit into ongoing monitoring and research efforts?
- Where does the Columbia River plume and potential advection from Hecata Banks fit into ongoing monitoring and research efforts?
- What monitoring should OCNMS or others conduct to assess potential degradation of water quality?

**Desired Outcomes/Proposed Products:**

- Strategies for improving nearshore water quality monitoring conducted by OCNMS
- Strategies for maximizing collaborative efforts and OCNMS’ contributions to water quality and oceanographic monitoring
- Strategies for addressing hypoxia and climate change monitoring
- Strategies for addressing offshore oceanographic monitoring and continuity with California Current ecosystem monitoring
- Recommendation for critical monitoring parameters

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**2D. CLIMATE CHANGE – Working Group:** Consider recommendations and strategies developed by habitat characterization, living resource monitoring, and oceanographic working groups to define strategies that OCNMS should pursue to establish the Sanctuary as a sentential site for climate change research that attracts funding from all segments of government.

**Working Group Chair:**  
**Sanctuary Staff Lead:** John Barimo  
**Proposed Participants:**

**Timeline:** October 2009

**Questions/Topics to Consider:**

- How do current research and monitoring efforts support an improved understanding of climate change and its impacts on Sanctuary resources?
- How can existing monitoring programs be adapted to provide data that is relevant to climate change?
- What additional monitoring is recommended?
- What are key partnerships that should be fostered to enhance climate change monitoring?
- What ecosystem-level research questions should be pursued in the context of climate change monitoring?

**Desired Outcomes/Proposed Products:**

- Strategies for climate change monitoring in the Sanctuary

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**PRIORITY MANAGEMENT NEED 3:**  
**IMPROVE OCEAN LITERACY**

Enhancing the public’s awareness and appreciation of natural and cultural resources is a cornerstone of OCNMS’ mission. Over the next five to 10 years, OCNMS, in partnership with the Coastal Treaty Tribes, non-tribal coastal communities, National Park Service, Seattle Aquarium, Feiro Marine Life Center, Ocean Shores Interpretive Center, E3 Washington, and others, proposes to develop education and outreach programs around the concept of ocean literacy.

Ocean literacy, broadly defined, is an enduring understanding of the ocean and people’s influence on the ocean in a manner that encourages lifelong attitudes of stewardship of ocean resources and personal commitment. OCNMS’ ocean literacy program will work collaboratively to convey information about tribal culture, traditions, treaty making and implementation, climate change, cultural uses and socioeconomic values of Sanctuary resources, and ecosystem-based management through education, community outreach and visitor programs.

### **How will this priority management need be addressed?**

One workshop (1 day) will be held with approximately 15-30 participants during which participants will divide into break-out groups to develop strategies for topics that include education programs, community outreach and visitor services.

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**3A. IMPROVE OCEAN LITERACY – Workshop:** Enhance and promote the concept of ocean literacy as it relates to the Sanctuary’s marine resources, and promote stewardship of the marine environment through community outreach, formal education programs, and interpretation efforts.

**Education Programs Break-out Group:** develop a list of recommendations for formal, field-based, hands-on educational opportunities that engage K-12 and adult students in the physical environment, foster a sense of ocean stewardship, and demonstrate the ways in which the ocean and humans are inextricably interconnected.

**Community Outreach Break-out Group:** make recommendations for meaningful involvement of local community members as volunteers and participants in sanctuary programs, as well as ways for OCNMS to support community-based marine education and stewardship efforts.

**Visitor Services Break-out Group:** make recommendations for ways in which the visitor experience of the Sanctuary could be enhanced to promote understanding of the Olympic Coast’s marine ecosystems, cultural heritage, and tribal culture, traditions, and treaty rights.

#### **Workshop Chair:**

**OCNMS Staff Lead:** Robert Steelquist

#### **Proposed Workshop Participants:**

**Timeline:** The workshop will be held in October 2009. After the workshop, staff will ask participants to be involved with review of draft documents.

#### **Questions/Topics to Consider:**

- How can modern outreach technology be used to engage the public and inform a wider audience about the Sanctuary?
- Should and/or how can OCNMS promote and/or develop facilities (visitor centers, education centers, exhibits, interpretive signage, etc.) that enhance ocean literacy opportunities for residents and visitors?
- What is OCNMS’ role in promotion of ecotourism on the Olympic Coast?
- What improvements to visitor services on the Olympic Coast should be undertaken by OCNMS?
- How can local and customary knowledge be gathered and used more effectively in education and outreach efforts?
- What is OCNMS’ role in improved understanding of living cultures and treaty rights in the local communities and for visitors? What are the key messages?
- What audiences and age groups should be the focus of the Sanctuary’s outreach programs?

- What are the most effective ways for OCNMS to promote ocean literacy within its education, outreach and visitor services programs?
- How can outreach programs improve compliance to regulations and promote responsible behavior by visitors and area users?

**Desired Outcomes/Proposed Products:**

- Recommendations for education, community outreach and visitor services programs.

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**PRIORITY MANAGEMENT NEED 4:**

**ASSESS AND REDUCE THREATS TO SANCTUARY RESOURCES**

The primary mandate of the Office of National Marine Sanctuaries is to protect sanctuary resources and reduce threats to their sustainability and condition. OCNMS also has a responsibility to facilitate compatible uses in the Sanctuary in a manner that is consistent with our treaty trust responsibilities, promotes healthy and resilient natural resources and allows human uses to continue in a sustainably manner into the future.

There are a multitude of strategies that OCNMS can use to meet its resource protection mandate, regulations being one. While regulations are an important aspect of fulfilling OCNMS’ obligation to protect resources, they are not always the most effective method to address management needs. Non-regulatory management activities in which OCNMS currently is engaged include the Washington Coast Cleanup, the Coastal Observation and Seabird Survey Team program, the voluntary Area to be Avoided program, and participation in the Pacific Fishery Management Council’s Essential Fish Habitat (EFH) review committee. In collaborating on these projects, OCNMS is seeking to fulfill its role as a steward of the marine environment and fulfill its obligations under the National Marine Sanctuaries Act, including facilitating compatible uses in the Sanctuary. The legal and policy obligations of NOAA’s trust responsibility to the four Coastal Treaty Tribes underscores the necessity of protecting the marine resources and ecosystem of the OCNMS so that they remain healthy and resilient enough to support human uses for future generations.

As indicated in the 2008 OCNMS Condition Report, there are significant data gaps regarding certain threats to Sanctuary resources, such as sea otter pathogens, ocean acidification, invasive species, and impacts of fishing, that make protection of ocean resources challenging. OCNMS believes that working collaboratively with the AC, the IPC, and partner agencies, governments and local communities to improve our understanding of ecosystem functions and to regularly identify, characterize and assess threats to natural and cultural resources will lead to improved management.

### **How will this priority management need be addressed?**

Two working groups will be established to address living resource conservation and oil spill planning, prevention and response. Working groups will be led by an Advisory Council member, consist of a few (e.g., 2-6) individuals, and meet one or more times, as necessary. To the extent practical, meetings will use electronic technology (i.e., emails, conference calls, internet conferencing) to facilitate scheduling and minimize transportation costs.

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**4A. LIVING RESOURCES CONSERVATION – Working Group:** Explore the multitude of threats that currently or may in the near future face OCNMS and develop a prioritized list of recommended activities for OCNMS to pursue in response to these threats. Threats identified through public scoping that the group could address include, but are not limited to, shoreline marine debris, abandoned submerged marine debris, impacts to benthic habitats, cruise ship discharges, underwater noise, and pathogens.

#### **Working Group Chair:**

**OCNMS Staff Lead:** Liam Antrim

#### **Proposed Participants:**

**Timeline:** June-October 2009

#### **Questions/Topics to Consider:**

- What are the threats to Sanctuary resources?
- Does OCNMS have a role in addressing these threats?
- How are these threats currently being addressed by OCNMS or other agencies or governments?
- Is the current work being done to address the threats adequate, and which threats need further assessment?
- Does the information currently collected on fishing activities address ecosystem impacts of fishing within the Sanctuary?
- How can OCNMS and fishery managers collaborate to advance ecosystem-based fishery management and ecosystem-based management within the Sanctuary?

#### **Desired Outcomes/Proposed Products:**

- A prioritized list of activities for OCNMS to undertake with partners in order to assess and reduce threats to Sanctuary resources over the next five to 10 years. Maintaining the status quo or not addressing a threat are both valid recommendations if the working group believes the current work done by OCNMS or other agencies with authority is adequate or does not believe the threat is imminent or a priority to address over the next five to 10 years.

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**4B. OIL SPILL PLANNING, PREVENTION AND RESPONSE – Working Group:** Identify ways in which OCNMS can maintain and expand, where necessary, its oil spill planning, prevention and response activities.

**Working Group Chair:**

**OCNMS Staff Lead:** Bob Pavia (ONMS)

**Proposed Participants:**

**Timeline:** June-October 2009

**Questions/Topics to Consider:**

- Where should OCNMS staff focus their efforts/involvement in regional spill prevention and response forums?
- How can OCNMS staff be prepared to contribute to effective response activities?
- What is OCNMS' role in reviewing and monitoring vessel management measures, including the Area-To-Be-Avoided?
- What actions can OCNMS take to improve capabilities of outer coast trustees (Tribes, state and federal agencies)?
- How can OCNMS work with other NOAA offices to strengthen NOAA's contributions to regional planning, prevention, and response efforts?
- How can OCNMS encourage equipment deployment drills in the Sanctuary?

**Desired Outcomes/Proposed Products:**

- Recommendations/strategies for work that OCNMS should pursue related to oil spills
- Identify any areas for growth in OCNMS programs related to oil spills

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**PRIORITY MANAGEMENT NEED 5:**

**UNDERSTAND THE SANCTUARY'S CULTURAL, HISTORICAL AND SOCIOECONOMIC SIGNIFICANCE**

Characterizing, protecting, and enhancing public awareness of the Sanctuary's maritime heritage (including living cultures, cultural resources, and local and customary knowledge) is an important role of OCNMS. Additionally, facilitating compatible and sustainable human uses of sanctuary resources is also an important role of OCNMS. In many cases, OCNMS does not have a strong understanding of the cultural, historical and socioeconomic significance of its resources. Thus, over the next five years, OCNMS needs to work collaboratively with tribal and non-tribal communities, as well as with experts in archeology, anthropology, history, social sciences and economics to build this understanding and communicate maritime heritage messages effectively to the public.

**How will this priority management need be addressed?** A workshop will be held to address the issue of Maritime Heritage during which participants will divide into break out groups or teams to develop strategies for living cultures, cultural resource management, and local and customary knowledge. A working group will be formed to address Socioeconomic Value of Sanctuary Resources. Working groups will be led by an

Advisory Council member, consist of a few (e.g., 2-6) individuals, and meet one or more times, as necessary. To the extent practical, meetings will use electronic technology (i.e., emails, conference calls, internet conferencing) to facilitate scheduling and minimize transportation costs.

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**5A. MARITIME HERITAGE – Workshop:** Develop a suite of recommended activities for OCNMS to pursue in order to improve understanding of the Sanctuary’s maritime heritage.

**Living Cultures Break-out Group:** Within the Sanctuary system OCNMS is unique in that it is entirely encompassed by the usual and accustomed fishing areas of the Hoh, Makah, and Quileute tribes and the Quinault Indian Nation. This break-out group will identify ways in which OCNMS can work with tribal communities to improve understanding of tribal cultures and disseminate information about tribal cultures and heritage to students, volunteers, community members, visitors and the public at large.

**Cultural Resource Management Break-out Group:** This break-out group will identify ways that OCNMS can enhance mapping, interpretation and protection of cultural resources (including archeological sites, sacred sites and shipwrecks) in the Sanctuary

**Local and Customary Knowledge Break-out Group:** OCNMS needs to develop a ecosystem-based management approach that incorporates tribal and non-tribal knowledge about the ecology of sanctuary resources. Identify ways that OCNMS can work collaboratively to understand the local and customary knowledge of tribal and non-tribal communities and incorporate this knowledge into Sanctuary programs.

**Workshop Chair:**

**OCNMS Staff Lead:** Robert Steelquist

**Proposed Participants:**

**Timeline:** The workshop will be held in November 2009. After the workshop, staff will ask participants to be involved with review of draft documents.

**Questions/Topics to Consider:**

- What are OCNMS’ needs related to the maritime heritage program?
- What policies and protocols should govern “heritage” research activities involving Native Americans?
- How should research and other work efforts related to cultural resource management, living cultures and local and customary knowledge be prioritized?
- How could local and customary knowledge be incorporated into other sanctuary programs?
- How should Sanctuary balance among various maritime heritage “narratives”? (historical vs. prehistoric; Tribal vs. non-tribal legacies; shipwrecks vs. lighthouses; etc.)

**Desired Outcomes/Proposed Products:**

- Develop a comprehensive list of recommended activities for the next five to 10 years related to maritime heritage.

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**5B. SOCIOECONOMIC VALUES OF SANCTUARY RESOURCES – Workshop:** In order both to facilitate compatible uses of resources within the Sanctuary and ensure protection of tribal welfare, OCNMS needs to develop a better understanding of the social and economic values of resources within the Sanctuary to tribal and non-tribal coastal communities. The aim of this workshop is to develop recommendations that outline the steps OCNMS should take over the next five to 10 years to build this understanding.

**Workshop Chair:**

**OCNMS Staff Lead:** to be determined

**Proposed Participants:**

**Timeline:** June–October 2009

**Questions/Topics to Consider:**

- What information about the socioeconomic values of Sanctuary resources currently exists? Where are the data gaps?
- How should socioeconomic research be focused over the next five to 10 years?
- What is OCNMS’ role in promotion of recreational opportunities in the Sanctuary?

**Desired Outcomes/Proposed Products:**

- A set of recommendations or strategies for pursuing socioeconomic research.
- Recommendations on what type of socioeconomic data OCNMS should track.

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**PRIORITY MANAGEMENT NEED 6:**

**ACHIEVE EFFECTIVE COLLABORATIVE AND COORDINATED MANAGEMENT**

The need to achieve effective collaborative and coordinated management of the Sanctuary was emphasized throughout the public scoping process. Active partnerships are essential to achieving effective and productive management. Collaboration and coordination with partners in research, educational programming, and resource protection efforts have enabled OCNMS and its partners to accomplish far more than would have been possible in their absence. Since designation, OCNMS has actively worked to foster partnerships and to coordinate with various government agencies, academic and educational institutions, and communities. This has been and will continue to be a fundamental element of OCNMS’ programming.

Above and beyond these programmatic partnerships, there are several government and management-level relationships that are especially important for OCNMS to focus on and improve over the next five to 10 years. These include relationships with the IPC (includes Coastal Treaty Tribes and Washington state), AC, NOAA Fisheries Service, U.S. Coast Guard, U.S. Navy, Olympic National Park (ONP), and U.S. Fish and Wildlife Service (USFWS). Active consultation with these organizations will provide a more transparent and inclusive structure for management of Olympic Coast marine resources that span tribal, local, state, federal and international jurisdictions.

Additionally, OCNMS needs to develop a programmatic implementation of NOAA's treaty trust responsibility to the four Coastal Treaty Tribes. The significance of the treaty trust responsibility to the management of the OCNMS should be effectively conveyed to the public, stakeholders and to other authorities with jurisdiction in the Sanctuary.

**How will this priority management need be addressed?**

With direction from the Sanctuary Superintendent, OCNMS will initiate consultations with other government agencies with shared or adjacent jurisdiction with the Sanctuary to discuss common interests, challenges, and unmet needs. Where they exist, inter-agency memorandums of agreement (MOA) or understanding (MOU) will be reviewed; where they do not exist, development of MOA/MOUs will be considered. These documents are agreements that record the parties' common goals and objectives and describe how they will work together to achieve them. OCNMS will consult with the IPC and AC to develop strategies for strengthening and improving the effectiveness of these critical relationships. Where appropriate, OCNMS will seek to develop specific actions and strategies to include in the revised management plan.

**Timeline:** June-October 2009

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**PRIORITY MANAGEMENT NEED 7:  
ACHIEVE EFFECTIVE SANCTUARY OPERATIONS**

The successful implementation of the revised management plan will require effective operations, supported by adequate staffing, infrastructure and institutional procedures. Sanctuary operations in the management plan review context includes regulatory, enforcement and permitting programs, infrastructure and staffing, performance evaluations, and the ability to respond to emerging issues.

Management plan review is an opportunity to evaluate existing regulations, permitting and enforcement programs. A revised management plan should reflect the time that staff will spend over the next 5 years processing and reviewing permit applications, commenting on environmental compliance documents that affect Sanctuary resources, enforcing Sanctuary regulations, and evaluating emerging issues.

**How will this priority management need be addressed?**

Three internal teams will be formed to focus on 1) regulations, permitting, and enforcement, 2) infrastructure and staffing, and 3) performance evaluation and emerging issues. Recommendations of these internal teams will be reviewed by the AC and IPC.

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**7A. REGULATIONS, PERMITTING AND ENFORCEMENT – Internal Team:** Review current sanctuary regulations to ensure that they are clearly written, relevant, enforceable and consistent with other sanctuaries (as appropriate). Review current permitting guidelines and enforcement program to see if changes are warranted. Serve as a resource to other working groups that wish to consider changes to regulations, permitting or enforcement as they relate to the other priority management needs.

While OCNMS does not want to restrict the range of activities (including regulatory actions) that this team considers, OCNMS will consider regulatory changes only if there is evidence that the threat is not being adequately addressed by other regulatory authorities or existing OCNMS regulations. Any recommended regulatory changes made by this internal team will be provided to the AC and the IPC seeking their review and guidance.

**Team Lead:** George Galasso

**Proposed Participants:** Mary Sue Brancato, Molly Holt, David Bizot, Helene Scalliet

**Timeline:** October - December 2009

**Questions/Topics to Consider:**

- In the context of updated regulations from other sanctuaries, what changes to OCNMS regulations will result in improved consistency within the Office of National Marine Sanctuaries (ONMS), without changing the original intent of the current OCNMS regulations?
- Are recommendations of the other working groups, workshops and intergovernmental consultations consistent with OCNMS' regulatory authority?
- Are there opportunities to improve permitting procedures and guidelines?
- Discuss current enforcement strategies and provide support to other working groups that are considering enforcement strategies that support the other priority management needs.
- What can we learn from recent ONMS examples of successful section 304(d) consultations?

**Desired Outcomes/Proposed Products:**

- Recommendations for updated regulations that clarify the intent of the original regulations and improve consistency with other sanctuaries.
- Recommendations for regulation changes that support strategies and alternatives suggested from other working groups.
- Develop strategies for the permitting program, including protocols for consultations.
- Develop enforcement strategies.
- Develop a strategy for section 304(d) consultations.

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**7B. INFRASTRUCTURE AND STAFFING – Internal Team:** Assess current infrastructure and staffing within the context of recommendations from other working groups, teams and workshops. Serve as a resource to other working groups.

**Team Lead:** George Galasso

**Proposed Participants:** Carol Bernthal, Allison Maheny, Robert Steelquist

**Timeline:** October - December 2009

**Questions/Topics to Consider:**

- Is current staffing adequate to address action plans outlined in the revised management plan?

- Is existing infrastructure (offices, labs, etc.) sufficient to meet projected needs?
- What changes to infrastructure, including vessels, may be required to address action plans outlined in the revised management plan?

**Desired Outcomes/Proposed Products:**

- Staffing plan that is integrated with proposed action plans and strategies
- Plan for infrastructure (including offices, labs, and vessels) maintenance and expansion

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**7C. PERFORMANCE EVALUATION AND RESPONDING TO EMERGING ISSUES – Internal**

**Team:** Develop a framework for evaluating and communicating OCNMS’ progress in achieving the strategies outlined in the revised management plan. Incorporate in this framework a means for addressing emerging issues, adaptively responding to changing knowledge and situations, and communicating changes in strategies to partners and the public.

**Team Lead:** Matt Brookhart

**Proposed Participants:** George Galasso, Liam Antrim, Lauren Bennett, Helene Scalliet

**Timeline:** October - December 2009

**Questions/Topics to Consider:**

- How will OCNMS report its progress in achieving the management plan strategies to the AC, IPC and public?
- How will OCNMS document changes in priorities identified in the revised management plan caused by the need to address emerging issues?

**Desired Outcomes/Proposed Products:**

- Strategy for providing management plan progress reports.
- Strategy for addressing emerging issues, and documenting their impact on OCNMS’ ability to achieve its management plan objectives.

**V. PUBLIC AWARENESS AND INVOLVEMENT**

Public awareness of and involvement are important to the success and effectiveness of the OCNMS management plan review process. OCNMS is committed to making its management plan review a transparent and inclusive process. While the action plan development phase of *Navigating the Future* does not include a formal written public comment period, there will be multiple ways that members of the public can voice their opinions during the process. These opportunities are outlined here.

- All workshops and working group meetings will be open to the public and will contain at least one public comment period.
- A schedule indicating the timing of workshops and working group meetings will be posted on OCNMS’ *Navigating the Future* website.

- OCNMS Advisory Council members will work to inform constituents about workshops and working group meetings.
- Announcements about workshops and working group meetings will be sent to OCNMS management plan review listserv on a regular basis.
- Meeting summaries from workshops and working group meetings will be posted on OCNMS' *Navigating the Future* website in a timely manner. Additionally, the website will provide regular progress reports.

## **VI. NEXT STEPS**

Once this *Priority Issue Work Plan* is complete, OCNMS staff leads and Advisory Council chairs for each working group and workshop will coordinate to plan meetings, issue invitations to participants, and work with OCNMS' Management Plan Specialist on meeting logistics.

Working groups and workshops participants will be provided with direction, descriptions of the issues, briefing materials, and general guidance on what is expected in terms of a product or recommendation from the group. After the working groups and workshops have finalized their recommendations, these recommendations will be reviewed and approved by the Advisory Council and forwarded to the Sanctuary Superintendent.

OCNMS will draft action plans using these recommendations. OCNMS' draft management plan will to be structured around action plans developed for the priority management needs identified in this work plan. Before completion of the draft management plan, the Advisory Council will be provided an initial opportunity to comment on action plans. After necessary revisions, the draft action plans will be provided to the Intergovernmental Policy Council for review and comment.

A preliminary draft management plan will be provided to the IPC for review and comment, followed by government-to-government consultations with the Native American Tribes/Nations, Washington state, and other federal agencies. After addressing comments received during the consultation process, OCNMS will complete a draft management plan that will be released for public review and comment.

APPENDIX A.

Explanation of how the original 37 topics identified during the public scoping process fit into the proposed priority management needs and the work plan structure. Topics are listed in descending order based upon the average score they were given by the Advisory Council at its Issue Prioritization Workshop in January 2009. Text in *bold italics* was developed by the Advisory Council during its workshop.

<i>Topic</i>	<i>Relationship to Priority Management Need List</i>
Administration – Sanctuary Goals and Objectives	Now <b>Priority Management Need 1: Review Sanctuary Goals and Objectives</b>
Treaty Trust Responsibility	Will be addressed by staff, the coastal treaty tribes and the IPC under <b>Priority Management Need 6: Achieve Effective Collaborative and Coordinated Management.</b>
Collaborative and Coordinated Management	Now <b>Priority Management Need 6: Achieve Effective Collaborative and Coordinated Management.</b>
Research for <i>Collaborative Ecosystem-Based</i> Management	As recommended by the AC, this issue should encompass all of the research- and monitoring-related topics, which were grouped as <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems.</b>
Habitat Characterization	This topic will be addressed by the Habitat Characterization working group under <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems.</b>
Living Resource Monitoring	This topic will be addressed by a Living Resource Monitoring working group under <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems.</b>
Spill Prevention, Planning and Response	This topic will be addressed by an Oil Spill Planning, Prevention and Response working group under <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources.</b>
Water Quality Monitoring ( <i>water column properties</i> )	This topic will be addressed by an Oceanographic Processes and Water Quality Monitoring working group under <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems.</b>
Climate Change	This topic will be addressed by a Climate Change working group under <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems.</b>
Ocean Literacy	Now <b>Priority Management Need 3: Improve Ocean Literacy.</b>

<i>Topic</i>	<i>Relationship to Priority Management Need List</i>
Fisheries Stock Assessment ( <i>research to support</i> )	Enhanced research to support fisheries stock assessments was repeatedly requested in public comments. Staff agrees with the AC that OCNMS' contribution to stock assessments is best provided through research related to habitat-species associations and will be addressed by the Habitat Characterization working group under <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems.</b>
Public and Private Resource Use - Socioeconomic Values	This topic will be addressed by a working group, Socioeconomic Value of Sanctuary Resources, under <b>Priority Management Need 5: Understand the Sanctuary's Cultural, Historical and Socioeconomic Significance.</b>
Local and Customary Knowledge	A break-out group will address this topic during the Maritime Heritage workshop ( <b>Priority Management Need 5: Understand the Sanctuary's Cultural, Historical and Socioeconomic Significance</b> ).
Water Quality Protection	As recommended by the AC, this topic has been grouped under the umbrella of Living Resources Conservation, which will be a working group under <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources.</b> While the AC ranked the resource protection-related topics as second-tier priorities, resource protection is a primary objective of the NMSA and must be addressed in the revised management plan. Staff understands the concerns raised about these topics at the AC workshop and have responded by placing strong emphasis on collaboratively identifying and characterizing threats in the description of this priority management need.
Community Outreach	As recommended by the AC, this topic is now under <b>Priority Management Need 3: Improve Ocean Literacy.</b> This topic will be addressed by a break-out group during the Improve Ocean Literacy workshop.
Habitat Protection	As recommended by the AC, this topic has been grouped under the umbrella of Living Resources Conservation, which will be addressed by a working group under <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources.</b> While the AC ranked the resource protection-related topics as second-tier priorities, resource protection is a primary objective of the NMSA and must be addressed in the revised management plan. Staff understands the concerns raised about these topics at the AC workshop and have responded by placing strong emphasis on collaboratively identifying and characterizing threats in the description of this priority management need.

<i>Topic</i>	<i>Relationship to Priority Management Need List</i>
Maritime Heritage - Living Cultures	This topic will be addressed by a break-out group during the Maritime Heritage Workshop ( <b>Priority Management Need 5: Understand the Sanctuary’s Cultural, Historical and Socioeconomic Significance</b> ).
Public and Private Resource Use - Commercial Development	As recommended by the AC, commercial development issues will be addressed by the Socioeconomic Value of Sanctuary Resources workshop (under <b>Priority Management Need 5: Understand the Sanctuary’s Cultural, Historical and Socioeconomic Significance</b> ). The emphasis of this analysis, however, will be on improved understanding of the socioeconomic values of various (including commercial) uses.
Public and Private Resource Use - Compatibility Analysis	As recommended by the AC, issues related to compatibility analysis can be considered by the Socioeconomic Value of Sanctuary Resources workshop (under <b>Priority Management Need 5: Understand the Sanctuary’s Cultural, Historical and Socioeconomic Significance</b> ). The emphasis of this analysis, however, will be on improved understanding of the socioeconomic values of various uses (which may inform decisions about compatibility). Additionally, this topic could be considered by the Regulations, Permitting and Enforcement Internal Team (under <b>Priority Management Need 7: Achieve Effective Sanctuary Operations</b> ).
Marine Debris – Abandoned Submerged Equipment	One AC member suggested that marine debris removal is a resource protection tool. Staff agrees with this interpretation and would like the Living Resources Conservation working group ( <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources</b> ) to consider development of strategies for addressing abandoned submerged equipment.
Marine Debris – Shoreline Clean-Up	One AC member suggested that marine debris removal is a resource protection tool. Staff agrees with this interpretation and would like the Living Resources Conservation working group ( <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources</b> ) to consider shoreline cleanup strategies, including OCNMS’ continued participation in the Washington Coast Cleanup.
Administration - Flexibility to Respond to Emerging Issues	While this topic was not highly ranked by the AC, OCNMS staff spends a significant amount of their time responding to unanticipated issues. The revised management plan should allow for adaptive management and the flexibility to alter strategies in response to emerging issues or changing information. An internal team for Performance Evaluation and Emerging Issues will address this issue ( <b>Priority Management Need 7: Achieving Effective Sanctuary Operations</b> ).

<i>Topic</i>	<i>Relationship to Priority Management Need List</i>
Living Resource Conservation	This topic will be addressed by a Living Resources Conservation working group (which includes the Habitat and Water Quality Protection groups) under <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources</b> . While the AC ranked the resource protection-related topics as second-tier priorities, resource protection is a primary objective of the NMSA and must be addressed in the revised management plan. Staff understands the concerns raised about these topics at the AC workshop and have responded by placing strong emphasis on collaboratively identifying and characterizing threats in the description of this priority management need.
Visitor Services	As recommended by the AC, this topic will be addressed under the Ocean Literacy topic (now <b>Priority Management Need 3: Improve Ocean Literacy</b> ). A break-out group will address visitor services during the Improve Ocean Literacy workshop
Maritime and Environmental Safety - Vessel Management	Vessel management, with a heavy focus on the Area To Be Avoided monitoring program, will be considered by the Oil Spill Planning, Prevention and Response working group under <b>Priority Management Need 4: Assess and Reduce Threats to Resources</b> .
Public and Private Resource Use - Recreational Opportunities	As recommended by the AC, some issues related to recreational opportunities will be considered by the Socioeconomic Values working group under <b>Priority Management Need 5: Understand the Sanctuary's Cultural, Historical and Socioeconomic Significance</b> . The emphasis will be on improved understanding of the socioeconomic values of recreational activities. Additionally, staff will provide some of the public comments related to this topic to the Visitor Services break-out group.
Maritime Heritage - Cultural Resource Management	While not considered a high priority by the AC, one of the goals of the NMSA is to characterize, protect and improve public awareness of cultural resources. This topic will be considered by a Cultural Resource Management break-out group during the Maritime Heritage Workshop ( <b>Priority Management Need 5: Understand the Sanctuary's Cultural, Historical and Socioeconomic Significance</b> ).

<i>Topic</i>	<i>Relationship to Priority Management Need List</i>
Military Activities	While assessing military activities was not considered a high priority by the AC, the Council did note that coordinating with the military is important. Significant staff time is spent periodically reviewing military environmental impact assessments; and staff feels that improved collaboration with the military is possible and a more clear understanding of military activities and their potential impact on sanctuary resources is desirable. Thus, improving coordination with the U.S. Navy will be considered under <b>Priority Management Need 6: Achieve Effective Collaborative and Coordinated Management.</b>
Administration – Infrastructure	While not considered a high priority by the AC, it is likely that one or more working groups and workshops will recommend increases to staffing and infrastructure. After all of the working groups and workshops are finished, OCNMS staff will work to prioritize and integrate these recommendations (under <b>Priority Management Need 7: Achieve Effective Sanctuary Operations</b> ).
<i>Administration - Regulations, Permitting and Enforcement</i>	Significant OCNMS staff time is spent addressing these mandated activities and they must be considered in the revised management plan. OCNMS staff will work to address Regulations, Permitting and Enforcement as part of <b>Priority Management Need 7: Achieving Effective Sanctuary Operations.</b>
Invasive Species	While OCNMS does not currently have a significant or identified problem with exotic invasive species, there are known sightings of invasive species nearby. The Living Resource Monitoring working group ( <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems</b> ) will be asked to consider strategies to address invasive species as part of future monitoring efforts.
Non-point Source Pollution	The Oceanographic Processes and Water Quality Monitoring working group ( <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems</b> ) can consider this topic during their discussions.
Maritime and Environmental Safety - Weather	While comments received during scoping related to this topic are important, they will be forwarded to the National Weather Service, which is a more appropriate agency to address the comments. This topic will not be addressed further during the management plan review process.

<i>Topic</i>	<i>Relationship to Priority Management Need List</i>
Maritime and Environmental Safety – Navigation	While comments received during scoping related to this topic are important, they will be forwarded to the U.S. Coast Guard, which is a more appropriate agency to address the comments. This topic will not be addressed further during the management plan review process.
Ecosystem Impacts of Fishing ( <i>assessing the impacts</i> )	OCNMS staff agrees with the AC that the focus of the ecosystem impacts of fishing topic should be on assessment and characterization. Staff recommends that this topic, with a focus on seafloor condition, be considered by the Habitat Characterization working group under <b>Priority Management Need 2: Enhance Understanding of Sanctuary Ecosystems</b> . The Living Resources Conservation working group ( <b>Priority Management Need 4: Assess and Reduce Threats to Sanctuary Resources</b> ) could also choose to address this topic, though the results of the two working groups would need to be closely coordinated.
Maritime and Environmental Safety - Harbors of Refuge	As recommended by the AC, this topic will not be considered further during the management plan review process.
Boundary Adjustment	As recommended by the AC, this topic will not be considered further during the management plan review process.
Fisheries Stock Assessment (formal stock assessment)	As recommended by the AC, this topic will not be considered further during the management plan review process.

## APPENDIX B

### GLOSSARY

**Action Plans** – a major section of a management plan containing strategies and activities designed to address a specific issue or function.

**Advisory Council Subcommittee** – a group composed solely of Olympic Coast National Marine Sanctuary Advisory Council (AC) members designated by the AC and operating under the AC charter. The Sanctuary Superintendent has the right to approve or disapprove the creation of subcommittees.

**Goal** – broad statements characterizing the general management responsibilities of Olympic Coast National Marine Sanctuary (OCNMS).

**Internal Team** – a group that consists exclusively of OCNMS and Office of National Marine Sanctuaries (ONMS) staff

**Mission** – a long-term projection of the Sanctuary’s overarching intentions; a broad statement answering the question “Why are we here?”

**Objective** – statements that articulate, in fairly general terms, possible means by which a goal can be achieved.

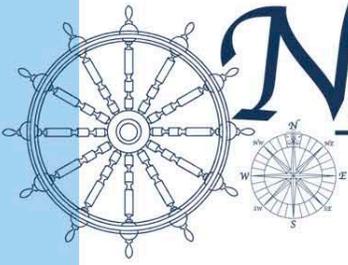
**Performance Measures** – a specific target that demonstrates the effectiveness of a management action in achieving the stated goals and objectives.

**Priority Management Need** – an action-oriented statement, based upon the results of the scoping process, which describes the “big picture” work that the Sanctuary will accomplish over the next 5 – 10 years.

**Strategies** – the principal management actions proposed by OCNMS in the revised management plan.

**Working Group** – a group of two or more people, that may include Advisory Council members, Intergovernmental Policy Council representatives, OCNMS staff, subject area experts, and/or stakeholders designated by the Advisory Council and the Sanctuary Superintendent to address a particular management plan issue.

**Workshop** – a discrete meeting of Advisory Council members, Intergovernmental Policy Council representatives, OCNMS staff, subject area experts, and/or stakeholders to address a particular management plan issue.



# OLYMPIC COAST NATIONAL MARINE SANCTUARY

# *Navigating the Future*

## Management Plan Review



### OLYMPIC COAST NATIONAL MARINE SANCTUARY MANAGEMENT PLAN REVIEW UPDATE

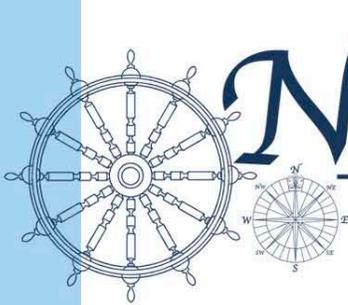
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#### STATUS

Olympic Coast National Marine Sanctuary's last presentation to PFMC on the *Navigating the Future* (management plan review) process occurred in April 2008. At that time, OCNMS was in the process of completing its 2008 Condition Report, which was to be published in advance of the *Navigating the Future* public scoping period scheduled for the fall. OCNMS published its 2008 Condition Report and officially began the public scoping process in September 2008. Thus far, OCNMS has completed the formal public scoping period and is almost done with the issue prioritization process. Staff recently completed a Draft Priority Issue Work Plan that identifies seven priority management needs to address in the revised management plan. Additionally, the work plan proposes a combination of working groups, workshops and staff work to address these priority issues in greater detail from June to November 2009.

The Draft Priority Issue Work Plan was presented to the Sanctuary Advisory Council (AC) at its March meeting and was also provided to the Olympic Coast Intergovernmental Policy Council (IPC). The AC and IPC will have opportunity to provide comments on the draft work plan through April. OCNMS aims to finalize the Priority Issue Work Plan by the end of April/beginning of May so that implementation of the work plan can begin in June.

The bulk of the working group meetings, workshops and staff work should be completed by October 2009. In November and December staff will integrate recommendations and present them to the AC and IPC for review. In 2010, staff will use the recommendations to develop draft action plans, the draft management plan and any requisite environmental compliance documents. Action plans are a primary component of sanctuary management plans; they describe the work that sanctuary staff will do over the next five to ten years and the performance measures that will be used to evaluate this work.



OLYMPIC COAST NATIONAL MARINE SANCTUARY

# *Navigating the Future*

Management Plan Review



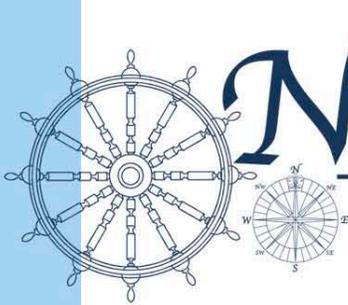
## **TIMELINE**

- SEPTEMBER – NOVEMBER 2008:** Public Scoping Period  
**DECEMBER 2008:** Scoping Summary and Topics Analysis Report published  
**JANUARY 2009:** Advisory Council (AC) Issue Prioritization Workshop  
**FEBRUARY 2009:** IPC technical sub-committee discusses AC recommendations  
**MARCH 2009:** Final Issue Prioritization Workshop Report presented to AC  
**MARCH 2009:** Draft Priority Issue Work Plan presented to AC & IPC  
**APRIL 2009:** *(Anticipated)* Finalization of Priority Issue Work Plan  
**APRIL – JUNE 2009:** *(Anticipated)* Review of Sanctuary goals & objectives  
**JUNE 2009:** *(Anticipated)* Priority issue working groups and workshops begin  
**FALL 2009:** *(Anticipated)* AC & IPC review working group and workshop recommendations  
**WINTER 2010:** *(Anticipated)* Staff begin drafting action plans and draft management plan

## **KEY DOCUMENTS PRODUCED SO FAR**

- 1. OCNMS 2008 CONDITION REPORT** – a NOAA report that assesses the health of marine life and habitats within the Sanctuary (published September 2008)
- 2. SCOPING SUMMARY** – summarizes the approximately 800 public comments received under 37 different topics (published December 2008)
- 3. TOPICS ANALYSIS REPORT** – provides a brief synopsis for each of the 37 topics presented in the Scoping Summary (published December 2008)
- 4. ADVISORY COUNCIL ISSUE PRIORITIZATION WORKSHOP REPORT** – summarizes the results of the AC's two-day Issue Prioritization Workshop, during which the AC scored and ranked each of the 37 topics and provided recommendations to the Sanctuary Superintendent on which issues should be addressed in the revised management plan (not yet finalized)
- 5. DRAFT PRIORITY ISSUE WORK PLAN** – staff's proposal for priority issues to be addressed in the revised management plan along with a list of and schedule for several working groups and workshops to address these priority issues in greater detail (not yet finalized)

As these documents are finalized, they are made available at OCNMS' Navigating the Future website: [HTTP://OLYMPICCOAST.NOAA.GOV/PROTECTION/MPR/WELCOME.HTML](http://olympiccoast.noaa.gov/protection/MPR/WELCOME.HTML)



OLYMPIC COAST NATIONAL MARINE SANCTUARY

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## **PRIORITY MANAGEMENT NEEDS**

In determining priorities to address in its revised management plan, OCNMS staff looked closely both at the AC scoring and ranking decisions made at its Issue Prioritization Workshop, as well as recommendations received from the IPC. Staff also considered National Marine Sanctuaries Act policies and mandates and the National Marine Sanctuary Program goals, objectives and guidelines.

### **PRIORITY MANAGEMENT NEED 1: REVIEW SANCTUARY GOALS AND OBJECTIVES**

Staff proposes that the AC form a sub-committee to review the Sanctuary's goals and objectives from May – June 2009. Staff will also ask the IPC to review the goals and objectives during this time.

### **PRIORITY MANAGEMENT NEED 2: ENHANCE UNDERSTANDING OF SANCTUARY ECOSYSTEMS**

Staff proposes that the AC establish several working groups to address topics related to this priority management need, including habitat characterization, living resource monitoring, climate change and oceanographic processes and water quality monitoring.

### **PRIORITY MANAGEMENT NEED 3: IMPROVE OCEAN LITERACY**

Staff proposes that this priority management need be addressed with a day-long workshop, during which break-out groups will address relevant topics such as community outreach, visitor services and education programs.

### **PRIORITY MANAGEMENT NEED 4: ASSESS AND REDUCE THREATS TO SANCTUARY RESOURCES**

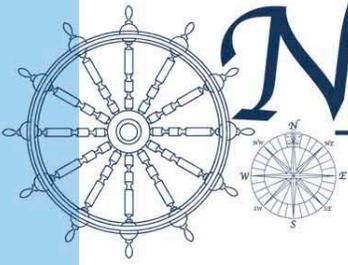
Staff proposes that the AC establish two working groups to address two topics related to this priority management need: living resources conservation and oil spill planning, prevention and response.

### **PRIORITY MANAGEMENT NEED 5: UNDERSTAND THE SANCTUARY'S CULTURAL, HISTORICAL AND SOCIOECONOMIC SIGNIFICANCE**

Staff proposes that this priority management need be addressed with two day-long workshops, one to address the topic of maritime heritage and one to address the topic of the socioeconomic value of Sanctuary resources.

### **PRIORITY MANAGEMENT NEED 6: ACHIEVE EFFECTIVE COLLABORATIVE AND COORDINATED MANAGEMENT**

Staff proposes that this priority management need be addressed internally by staff working with key governments and agencies. Staff will address the topic of treaty trust responsibility with the coastal treaty tribes and IPC, and will address the need to improve coordination and collaboration with the IPC, U.S. Navy, NOAA Fisheries Service, and other key high-level partners.



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**PRIORITY MANAGEMENT NEED 7: ACHIEVE EFFECTIVE SANCTUARY OPERATIONS**

Staff proposes that this priority management need be addressed by staff. Topics addressed will include 1) evaluating OCNMS' regulatory, permitting & enforcement programs, 2) evaluating OCNMS' infrastructure needs, and 3) establishing a performance evaluation process in the revised management plan.

**POTENTIAL AREAS FOR COLLABORATION WITH PFMC**

OCNMS anticipates that several recommendations from the working groups, workshops and staff may be of interest to PFMC. OCNMS would like to request the opportunity to brief PFMC on any relevant recommendations and, where appropriate, request that PFMC comment on these recommendations when they are completed in fall 2009. Staff anticipates that recommendations relevant to PFMC may concern topics such as habitat characterization, research to support fisheries stock assessments, implementing ecosystem-based management in the Sanctuary, living resource conservation, and improving collaborative and coordinated management of sanctuary resources.

HABITAT COMMITTEE REPORT ON UPDATE ON  
OLYMPIC COAST NATIONAL MARINE SANCTUARY (OCNMS)  
MANAGEMENT PLAN REVIEW PROCESS

The Habitat Committee (HC) received a status update on the Olympic Coast National Marine Sanctuary's (OCNMS) Management Plan Review (MPR) process from Mr. Liam Antrim, resource protection coordinator of the OCNMS. Mr. Antrim presented an overall update of the MPR process and timeline, and noted the Scoping Report, Topics Analysis Report, Advisory Council Issue Prioritization Workshop Report, and Prioritization Issue Work Plan in the briefing book. The OCNMS is seeking advice from the Council on how best to collaborate in addressing prioritized issues of the MPR of mutual interest and shared management responsibility, such as collaborative and coordinated management, research and monitoring, habitat characterization (e.g. seafloor mapping), and living resources monitoring and conservation.

The HC recommends the Council remain engaged with the MPR process and seek out opportunities for productive collaborations on those issues of mutual interest. It may be appropriate for the HC or other Council Advisory Bodies to engage with the OCNMS on specific MPR items and seeks Council guidance on how best to proceed.

In addition, the HC discussed availability of Navy data to inform the MPR and discovered that the restriction on Navy data had been lifted in December 2008. This development should allow for habitat research in areas that were previously unavailable and will allow existing University data to be released. This data will be useful for the five-year review of essential fish habitat.

PFMC  
04/04/09

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON THE  
UPDATE ON OLYMPIC COAST NATIONAL MARINE SANCTUARY (OCNMS)  
MANAGEMENT PLAN REVIEW PROCESS

Mr. Liam Antrim, Olympic Coast National Marine Sanctuary (OCNMS), updated the Scientific and Statistical Committee (SSC) on the sanctuary management plan review process. Dr. Lisa Wooninck, Monterey Bay National Marine Sanctuary, also participated in the discussion.

The SSC found the OCNMS documentation of its management plan review process to be thorough and well organized. Communication with the Council at these early stages of Work Plan development is very helpful. The Sanctuary considers the Council as a management partner, but the Council is directly interested in only a subset of the Sanctuary activities. From the list of priority needs identified by the Sanctuary these are: (1) enhance understanding of Sanctuary ecosystems, (2) assess and reduce threats to Sanctuary resources, and (3) achieve effective collaborative and coordinated management. These represent "Priority Management Needs" 2, 4, and 6, respectively, in Agenda Item E.1.b, Attachment 6. There are opportunities for Sanctuary research to complement Council management needs, especially in the areas of research to improve stock assessments and essential fish habitat definition through seafloor and biogenic habitat mapping.

We discussed the idea of having formal SSC representation on each of the Sanctuary Research Advisory Panels and agreed this was not appropriate. However, SSC members acting in an independent capacity may act as technical advisers and assist in coordinating Sanctuary and Council-related activities

All of the Sanctuaries will now be producing Condition Reports on the same schedule. To facilitate Council review of these reports we agreed that the issues of interest to the Council would be compiled from all the Sanctuaries and presented in a single report. This should begin with the next five-year review cycle and could be facilitated by the SSC Ecosystem-based Management Subcommittee.