UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF NATIONAL MARINE SANCTUARIES
Olympic Coast National Marine Sanctuary
115 East Railroad Avenue, Suite 301
Port Angeles, WA 98362-2925

June 3, 2013

Mr. Keith Phillips
Senior Energy and Environmental Policy Advisor
Office of the Governor
PO Box 40002
Olympia, WA 98504

Dear Mr. Phillips:

Ocean acidification has the potential to seriously threaten the future health of Washington's oceans and the significant economic benefits they provide. I am writing to forward recommendations from an Ocean Acidification Working Group established, in part, to review recommendations of the Washington State Blue Ribbon Panel on Ocean Acidification Report and identify recommendations most relevant to the outer coast of the Olympic Peninsula. Our hope is by providing you with these prioritized recommendations. it will influence implementation priorities and support the need for Washington state funds to implement key priorities as soon as possible.

Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) is located off the outer coast of Washington state, covering about 2,400 square nautical miles along 135 miles of shoreline between Cape Flattery and the Copalis River and extending from the intertidal to between 25 and 40 nautical miles offshore. Approximately 17% of OCNMS is located within State of Washington waters. This federally designated marine protected area recognizes Washington's outer coast as a unique area, rich in natural resources relatively uncompromised by human activities. The biological productivity of the area supports recreational and commercial fisheries as well as other recreational activities, which contribute significantly to the regional economy.

The Coastal Treaty Tribes have treaty-protected fishing rights and share co-management responsibilities for fishing activities within the sanctuary with the State of Washington and federal government. These common interests and joint authorities led the Coastal Treaty Tribes, the State of Washington and NOAA to create the Olympic Coast Intergovernmental Policy Council (IPC) in 2007. The first of its kind in the nation, the IPC provides a regional forum for resource managers to exchange information, coordinate policies, and develop recommendations for resource management within the sanctuary.

Sanctuary management also relies on community and stakeholder involvement. In addition to working with the IPC, OCNMS works closely with the OCNMS 21-seat Advisory Council (SAC). The SAC, established in 1996, consists of representatives from four Coastal Treaty Tribes, nine state and federal agencies, local governments, and a variety of local user and interest groups who provide advice to the Sanctuary Superintendent.

Ocean acidification has been a topic of ongoing concern and discussion for both the IPC and SAC. In 2009 Olympic Coast National Marine Sanctuary's Advisory Council passed a resolution that read "The Advisory council of the Olympic Coast National Marine Sanctuary recognizes ocean acidification and associated stressors as substantial threats to the long-term persistence of sanctuary resources and qualities..."

In 2013 the SAC and the IPC formed a joint Ocean Acidification Working Group to review recommendations of the Washington State Blue Ribbon Panel Report on Ocean Acidification, identify those recommendations most relevant to the outer coast of the Olympic Peninsula and provide advice on potential responses and actions for consideration by OCNMS, the SAC, IPC and other authorities on the outer Olympic Coast.

The joint IPC - SAC working group identified eight actions from the Washington State Blue Ribbon Panel on Ocean Acidification, and prioritized them for immediate implementation along the outer coast of Washington. At the 17 May, 2013 meeting, the SAC voted unanimously to support the recommendations from the IPC-SAC working group. Attached is the SAC letter outlining their resolution and rationale.

In light of these joint IPC-SAC working group recommendations and the common interests and joint authorities of the Coastal Treaty Tribes, in recognition of the State of Washington's Executive Order 12-07 regarding Washington's response to ocean acidification, I'd like to strongly support Section 4 of the Executive Order which states, "In implementing this Executive Order, the state and its agencies shall invite consultation, on a government-to-government basis, with affected and interested Indian Tribes and Nations in Washington State."

The Blue Ribbon Panel on Ocean Acidification has played a crucial role in acknowledging this important issue and has identified potential actions that may help to avoid significant and possibly irreversible losses to our marine environment and all it supports. Thank you for your continued support in addressing ocean acidification along the outer coast and all of Washington's waters. Please don't hesitate to contact me if I can provide further clarification on our interest and I look forward to ongoing dialogue.

Sincerely,

Carol Bernthal

Carol Bernthal
Sanctuary Superintendent

Enclosure
cc: Honorable Kevin Ranker, Washington State Senator
Jay Manning, Former Co-Chair of the WA Blue Ribbon Panel
Bill Ruckleshaus, Former Co-Chair of the WA Blue Ribbon Panel
Lisa J. Graumlich, Dean, UW College of the Environment
Maia Bellon, Director, WA State Department of Ecology
Peter Goldmark, Commissioner of Public Lands, WA State Department of Natural Resources

SANCTUARY ADVISORY COUNCIL

May 17, 2013

Dear Superintendent Bernthal:

Olympic Coast National Marine Sanctuary (OCNMS) formed a joint Intergovernmental Policy Council (IPC) and Sanctuary Advisory Council (SAC) Ocean Acidification Working Group in 2013. The working group was established to review recommendations of the Washington State Blue Ribbon Panel on Ocean Acidification (OA), identify recommendations most relevant to the outer coast of the Olympic Peninsula and provide advice on potential responses and actions for consideration by OCNMS, the SAC, IPC and other authorities on the outer Olympic Coast.

The working group prioritized selected Actions within two tiers. Tier One Actions have been identified as "Key Early Actions" by the Washington State Blue Ribbon Panel on Ocean Acidification, while Tier Two Actions have been identified as "Near Term Actions". **The OA Working Group has identified the following eight Actions, in order of highest priority, for immediate implementation along the outer coast of Washington.**

Tier One

1. **Action 7.1.1**: Establish an expanded and sustained ocean acidification monitoring network to measure trends in local acidification conditions and related biological responses.

   Recommendation: The outer coast should be a high priority for OA monitoring. With appropriate monitoring, corrosive waters that appear seasonally due to upwelling could be identified along the outer coast prior to appearing in Puget Sound. Some monitoring capacity exists along the outer coast via the OCNMS oceanographic mooring program and others. However, this capacity should be enhanced to better monitor OA.

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2. **Action 9.1.2**: Create an ocean acidification science coordination team to promote scientific collaboration across agencies and organizations and connect ocean acidification science to policy and program needs.

   Recommendation: The outer coast should be adequately represented on this science coordination team. Both the IPC and SAC have membership or staff with expertise to contribute to such a team, and it is critical that both the IPC and SAC be represented.

3. **Action 7.3.2**: Conduct laboratory studies to assess the direct effects of ocean acidification, alone and in combination with other stressors, on local species and ecosystems.

   -AND-

   Action 7.3.3: Conduct field studies to characterize the effects of ocean acidification, alone and in combination with other stressors, on local species.

   Recommendation: Laboratory and field studies need to be conducted for the outer coast. There is capacity (Tribal/Coastal labs) along the coast to help implement these studies.

4. **Action 8.1.2**: Increase understanding of ocean acidification among key stakeholders, target audiences, and local communities to help implement the Panel's recommendations.

Tier Two

1. **Action 7.1.3**: Support development of new technologies for monitoring ocean acidification.

2. **Action 7.4.3**: Enhance the ability to model the response of organisms and populations to ocean acidification to improve our understanding of biological responses.

3. **Action 7.1.2**: Develop predictive relationships for indicators of ocean acidification (pH and aragonite saturation state).

We ask you to please share our recommendations to encourage support for outer coast implementation of the identified actions of the Washington Blue Ribbon Panel on Ocean Acidification.

As the OCNMS AC, we represent a diverse group of constituencies that have a strong interest in sanctuary and marine resource management in the Olympic Coast region. Our role is to advise the OCNMS Superintendent on sanctuary management topics and concerns. We volunteer our time to assist OCNMS in maintaining a transparent, interdisciplinary, and comprehensive management structure for the sanctuary.

The council is an advisory board to the Sanctuary Superintendent. The opinions and findings of this letter do not necessarily reflect the position of Olympic Coast National Marine Sanctuary and National Oceanic and Atmospheric Administration.

Sincerely,

Brady Scott
Vice-Chair, Olympic Coast National Marine Sanctuary Advisory Council
Chair, Joint IPC-SAC Ocean Acidification Working Group

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IPC / SAC OA Working Group
Interim Report

Ocean acidification is caused by the ocean's uptake of carbon dioxide, which converts to carbonic acid in seawater, decreasing the water's pH. The world's oceans have served as a sink for up to 30% of all anthropogenic CO_2 produced since the Industrial Revolution, and this overload of atmospheric carbon dioxide is slowly changing ocean chemistry by increasing the dissolved carbon dioxide concentration and reducing the concentration of carbonate ions in seawater[1]. Ocean acidification has the potential to seriously threaten the future health of Washington's oceans and the significant economic benefits they provide.

Marine calcifiers, organisms that build calcium carbonate shells and skeletons, will likely be the most vulnerable to the impacts of ocean acidification. Examples of economically and ecologically important marine calcifiers include shellfish, sea urchins, and calcareous plankton[2] (e.g., pteropods, which are integral to the survival of pink salmon in their first year of life). Other marine calcifiers, such as deep sea corals, will need to be assessed for vulnerability to ocean acidification and those results evaluated in a risk assessment.[1] Corrosive seawater has the potential to severely disrupt the marine food chain by decreasing the overall health and increasing mortality of essential components of the food systems and physical environment[3]. Observations along the Pacific Northwest coast, including sites within Olympic Coast National Marine Sanctuary (OCNMS), suggest that the coastal ecosystem is seasonally exposed to corrosive waters (i.e., lower pH and reduced availability of carbonate ions) primarily due to upwelling. Model projections suggest that corrosive waters will expand in both spatial and temporal extent over the coming century[2].

The communities of the outer Washington Coast share much in common: they are located far from the central core of urban development in Washington and they have maintained an unusually high level of dependence on marine resources[4]. The marine-based economy of the outer coast includes important commercial fisheries as evidenced by the 1,093 active coastal commercial fishing licenses issued by the Washington Department of Fish and Wildlife in 2012 (razor clam, salmon, crab pots, shrimp, baitfish, etc.)[4]. There are several commercial fisheries that operate on the west coast and the ex-vessel value from just one of these, the state coastal commercial Dungeness crab fishery, averaged approximately 30 million dollars in revenue between 2007 and 2011. The coastal communities of Grays Harbor, Neah Bay, La Push and Ilwaco are dependent on the financial benefit from the operation of this fishery, and others, via income from not only the ex-vessel value, but additional income and jobs produced from fish processing, housing, food, fuel etc. In addition, you cannot address coastal dependence on marine resources without including popular recreational activities such as fishing and razor clamming, both of which are vital to coastal economies.

Four Tribes with treaty-reserved fishing rights have lived on the outer coast since time immemorial. The ocean and its fishery resources are important to the cultures of their people, contribute to the subsistence and survival of their communities, and are significant drivers of local economies on the coast. One of those four Coastal Treaty Tribes, the Quinault Indian Nation, has averaged 2.7 million pounds of Dungeness crab between 2007-2011, with more

being harvested by the Quileute and Makah Tribes. Razor clams are also harvested by the Coastal Treaty Tribes including a significant commercial fishery conducted by Quinault on the beaches north of Grays Harbor.

In 2009 the Olympic Coast National Marine Sanctuary's Sanctuary Advisory Council (SAC) passed a resolution that read "The Advisory council of the Olympic Coast National Marine Sanctuary recognizes ocean acidification and associated stressors as substantial threats to the long-term persistence of sanctuary resources and qualities..." In 2013 they and the Intergovernmental Policy Council (IPC) formed a joint Ocean Acidification Working Group to review recommendations of the Washington State Blue Ribbon Panel on Ocean Acidification, identify recommendations most relevant to the outer coast of the Olympic Peninsula and provide advice on potential responses and actions for consideration by OCNMS, the SAC, IPC and other authorities on the outer Olympic Coast.

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[1] NOAA Ocean Acidification Steering Committee (2010): NOAA Ocean and Great Lakes Acidification Research Plan, NOAA Special Report, 143 pp.

[2] Miller, I.M., Shishido, C., Antrim, L, and Bowlby, C.E. 2013. Climate Change and the Olympic Coast National Marine Sanctuary: Interpreting Potential Futures. Marine Sanctuaries Conservation Series ONMS-13-01. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 238 pp.

[3] University of Washington Environmental management Certificate Program Keystone Project (2013): Washington's Working Coast – An Analysis of the Washington Pacific Coast Marine Resource-Based Economy. 94pp.

[4] Brooks, Rebekah, Miranda Wecker, and Keven Bennett. 2012. Washington's Working coast: Phase 1 Compilation of Information. University of Washington Olympic Natural Resources Center. 67pp.