

The Coastal Program in Puget Sound: Adapting to a Changing Landscape

BY GINGER PHALEN

Puget Sound, the second largest estuary in the United States, supports a productive and rare biodiversity. Since 1991, the Puget Sound Coastal Program has worked with partners and stakeholders to identify and better understand how the Puget Sound ecosystem functions, the negative impacts experienced by the ecosystem, and what needs to be done to ameliorate them.

The U.S. Environmental Protection Agency (EPA) designated Puget Sound, Washington, as an Estuary of National Significance in 1991. That same year, the U.S. Fish and Wildlife Service (FWS) expanded its Coastal Program to include the Puget Sound Coastal Program. Since the inception of the Puget Sound Coastal Program, the conservation landscape of Puget Sound has changed. Along with its partners, the Puget Sound Coastal Program has developed expertise and adapted program activities to address these changes. Scientific studies, assessments, and analyses have led to increased knowledge and understanding about the Sound, including threats to its ecosystem and opportunities for its restoration and recovery.

The Puget Sound Ecosystem

As the second largest estuary in the United States, Puget Sound supports a productive and rare biological diversity, including many species of fish, wildlife, marine invertebrates, and plants (USGS 2007). Puget Sound represents the southern portion of a large inland sea, shared with British Columbia, Canada, and numerous Native American Tribes and First Nations. The entire ecosystem is called the Puget Sound-Georgia Basin Ecosystem and encompasses Puget Sound, the Straits of Juan de Fuca, the nearby Georgia, Rosario, and Haro Straits, as well as the lands and rivers that drain into these coastal waters. Historically, the Puget Sound-Georgia Basin Ecosystem was known as the Salish Sea, the traditional name for the inland waterway extending from Puget Sound up to Johnstone Strait. Humans have inhabited the Salish Sea for over 10,000 years. Today, we continue to reap the benefits of its marine, freshwater, and forest resources and recognize the high economic and environmental value the ecosystem has to offer.

The Sound is a complex ecosystem. It encompasses 1.6 mil-

lion acres of land and water, with 2,500 miles of shoreline. Fourteen major river systems provide freshwater flow to Puget Sound. The underwater topography of Puget Sound varies greatly, ranging in depth from 930 feet to an average of 430 feet, including underwater sills and deepwater habitat. Puget Sound habitats include productive nearshore areas of beaches, mudflats, bluffs, kelp and eelgrass beds, salt marshes, large and small river deltas, estuaries, and deepwater habitat. The geology, climate, and nutrient-rich waters of Puget Sound provide habitat for over 200 species of fish, 26 marine mammals, 100 seabirds, and thousands of marine invertebrates and plants (Puget Sound Partnership 2007). The coastal wetlands of Puget Sound support over 175 species, with 63 different species of salt marsh plants. More than one-third of Washington's threatened or endangered species require healthy near-shore ecosystems for survival. Unfortunately, a number of factors threaten the area's biodiversity.

Threats to the Puget Sound Ecosystem

In 1991, information about threats to the ecosystem was limited. The Puget Sound Coastal Program has worked with partners and stakeholders to identify and better understand how the Puget Sound ecosystem functions, the negative impacts that the ecosystem has experienced, and what needs to be done to ameliorate these impacts. This work has helped us to define our role in the conservation community.

Human Population Growth and Urbanization

One of the largest threats to the Sound is population growth and urbanization. In 1990, the human population of Puget Sound was approximately 2.7 million people (King County 2000). Today, approximately 3.5 million people live in the area, and its population is expected to increase to 5.2 million people by the year 2025 (Puget Sound Partnership 2007). In addition to habitat loss, population growth and increased development has resulted in:

- extensive land development and conversion;
- changes to the flow of water, sediments, nutrients, and contaminants;
- over 800 miles of shoreline armoring;
- the loss of approximately 70% of tidally influenced wetlands in the greater Puget Sound Basin;

Ginger Phalen is the Team Leader and Coordinator for the Puget Sound Coastal Program at the U.S. Fish and Wildlife Service's Western Washington Fish and Wildlife Office in Lacey, Washington. She would like to extend her thanks to Curtis Tanner and Mary Mahaffy. They established the basis and framework for the Puget Sound Coastal Program, and the program would not be what it is today without their participation and leadership. This article benefits from their shared information and experience.

- a 47% decline in marine bird populations over the last 20 years;
- declines in salmon, trout, and marine mammal populations, some of which have led to listings under the Endangered Species Act; and
- declines in forage and groundfish production (Puget Sound Partnership, 2007).

Invasive Species

After habitat loss, non-native invasive species are the second highest threat to the biodiversity of Puget Sound (Puget Sound Partnership 2007a). Invasive non-native species impact the environment and the economy by out-competing native species for food and space, increasing predation and diseases, altering critical habitats for native species, and cross-breeding with native species. A study commissioned by the Puget Sound Action Team in 2004 found 54 permanently established non-native species in the area and documented sightings for an additional 23 species (Puget Sound Partnership 2007a). Invasive species of concern include the Chinese mitten crab, European green crab, *Spartina*, knotweed, nutria, and tunicates. Each of these non-native species impacts different parts of the ecosystem. For example, *Spartina*, a non-native salt marsh cordgrass, poses a major threat to nearshore habitats, migratory shorebirds, coastal wetlands, and the shellfish industry in Puget Sound.

Environmental Contaminants

As cities grow, human activities increasingly discharge toxic compounds into the water. These contaminants become bound to sediments, are spread to other areas, and contaminate the food web. Puget Sound is not immune to this reality. The release of contaminants into Puget Sound and its watershed has damaged its ecosystem and has created serious health risks to humans and harm to marine plants and animals.

Finding and Expanding Our Niche

Early actions of the FWS Puget Sound Coastal Program were directly tied to the Puget Sound National Estuary Program, which was managed by the Washington state Puget Sound Water Quality Authority (now the Puget Sound Action Team). FWS staff had specific areas of involvement in both programs and worked closely with the state's Puget Sound Ambient Monitoring Program (PSAMP).

Puget Sound Coastal Program staff monitored seabird populations and contaminant levels in seabirds and eagles and conducted outreach and education with area schools and watershed groups. The program was limited by a small budget, so program staff found creative ways to increase participation in coastal wetland restoration and to complement ongoing efforts of Washington state and EPA. This led to opportunities to work with other federal, state, and tribal partners to identify, implement, and monitor restoration projects in Elliott Bay and the Duwamish River through the National Oceanic and Atmospheric Administration's Natural Resources Damage Assessment process.

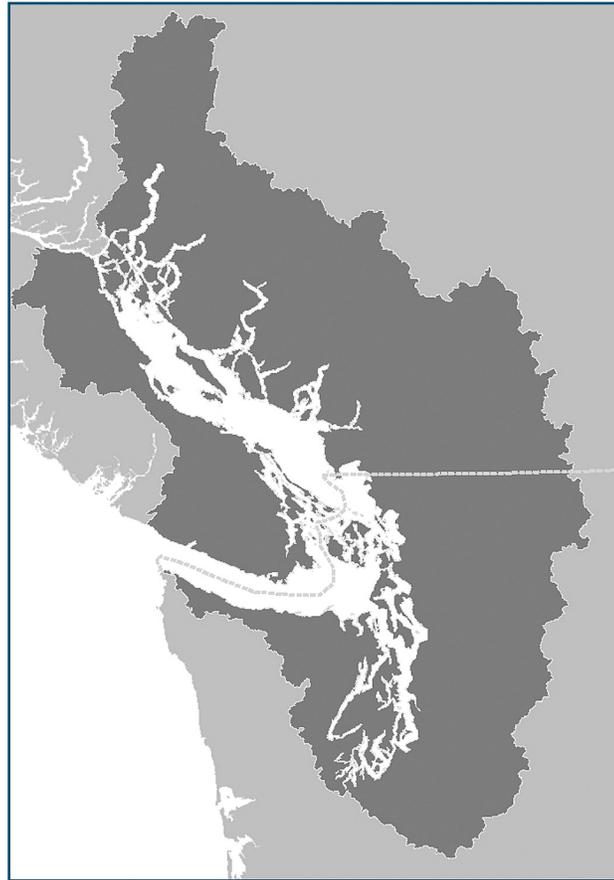
This experience helped to build the staff's experience with restoration, and by taking full advantage of increased funding, the program's focus on coastal wetlands restoration grew.

Conservation activities in the Pacific Northwest changed substantially in the 1990s. The listing of the northern spotted owl in 1990 and the development of the Northwest Forest Plan in 1993, along with changes to Washington State Forest Practices Rules, led to greater emphasis on the impacts of forest management on Pacific Northwest watersheds. Washington state and the federal government conducted watershed analyses with locally based stakeholder groups, resulting in a greater understanding of the connections between forest management and impacts to freshwater ecosystems. Increased funding for watershed restoration programs soon followed, supporting local watershed-based groups and allowing them to improve their

skills in restoration project identification, design, implementation, and monitoring.

In the mid-1990s, Puget Sound Coastal Program staff collaborated with PSAMP and EPA to identify potential negative impacts from non-native invasive species and undertook strategic planning and project implementation to address the issue. As non-native invasive species began to emerge as a statewide issue, program staff collaborated with partners in Puget Sound and the outer Washington coast. Additionally, the program initiated internal coordination with the Division of Listing and Recovery in the FWS' Western Washington Fish and Wildlife Office, and it increased efforts to restore coastal upland habitat to benefit species listed under the Endangered Species Act.

In 1999, the federal government listed the coastal and Puget



The dark grey area shows the Puget Sound-Georgia Basin watershed boundary. The dotted line is the U.S.-Canadian border. Image courtesy of Carol Langston, U.S. FWS.

Sound bull trout and Puget Sound Chinook salmon as threatened species under the Endangered Species Act. Bull trout and Chinook salmon are wide ranging species that use many different habitat types in the Puget Sound Basin. The listings focused the region's attention on restoration and recovery. Local stakeholders expanded the formation of local watershed-based groups and refined their approach to restoration and recovery, eventually producing a locally based regional recovery plan for Puget Sound Chinook salmon. The plan includes a chapter that identifies nearshore and coastal wetland restoration needs across Puget Sound. The recovery plan also includes chapters that identify priority areas for watershed restoration and acquisition. The recovery plan was finalized and adopted by the National Marine Fisheries Service in 2007 (NMFS 2006), and local groups are moving forward with implementation.

Also in the late 1990s, we expanded our internal coordination with staff from other locally managed FWS restoration programs and the Western Washington Fish and Wildlife Office's Division of Listing and Recovery. We also increased coordination with National Wildlife Refuge staff in western Washington. Staff from all FWS programs have built working relationships and continue to successfully collaborate with one another to accomplish more strategic restoration and recovery actions for listed species. We also continue to coordinate technical assistance and funding for the planning and implementation of coastal wetland and estuary restoration.

In 2000, the Western Washington Fish and Wildlife Office's restoration programs initiated a joint notification of funding availability to all of our partners, thereby integrating all FWS restoration programs operating in Puget Sound. Jointly, the programs collaborate with partners and use information from a variety of sources to identify and implement priority projects. This useful tool helps us to strategically use program funding, build both internal and external partnerships, and maximize conservation benefits.

The Puget Sound Coastal Program has continually redefined and expanded its role, including increased collaboration with local

groups to provide technical support and funding for priority projects. It has expanded its geographic scope as well as its involvement in coastal wetland restoration and post-project monitoring. With demonstrated staff experience and expertise, the program was invited to participate in large-scale, coastal wetland restoration partnerships. Partners continue to recognize program staff for bringing the benefit of prior on-the-ground experience to the project development process. In some cases, we believe partners have found the staff's technical expertise to be more valuable than the funding the program had to offer.

Strategic Planning

In 2005, the National Coastal Program began developing a nationwide strategic plan. In 2006 and 2007, using guidance from the *Strategic Plan—The Coastal Program: Stewardship of Fish and Wildlife through Voluntary Conservation*, the Puget Sound Coastal Program worked with partners within Puget Sound and along the coast of Washington to identify geographic focus areas and develop local step-down implementation plans. Using information from partners, recovery plans, and other relevant state, federal, or local strategies and planning documents, three geographic focus areas for the program were identified: North Puget Sound and the Eastern Strait of Juan de Fuca; South Puget Sound and Hood Canal; and Willapa Bay along the Washington Coast. Each of these focus areas have specific objectives and accomplishment goals. We have longstanding partnerships in these focus areas and will continue to grow and expand those partnerships through implementation of our strategic plan. The strategic plan will further direct us to use program funding effectively, build partnerships, and maximize conservation benefits.

Leadership

Over the years, program roles have changed and program staff have become local leaders in nearshore and coastal wetland restoration planning and implementation. Today, the Puget Sound Coastal Program provides leadership to a number of local and national programs and projects including the Puget Sound Nearshore Ecosystem Restoration Project, the Puget Sound Partnership, and the National Coastal Wetland Conservation Grant Program.

The Puget Sound Nearshore Ecosystem Restoration Project

The U.S. Army Corps of Engineers created the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) General Investigation Study in 2002. A Nearshore Science Team was established to provide science and technical support to PSNERP. Staff from the Puget Sound Coastal Program was invited to participate and bring nearshore restoration expertise and experience to the Nearshore Science Team. The program's expertise and leadership resulted in a higher level of partnership between the Washington Department of Fish and Wildlife (WDFW), the FWS, and the Corps. When the need arose for a local project manager for the study, the Puget Sound Coastal Program partnered with the WDFW and the Corps, with both agreeing to share staff and funding and to jointly support the local project manager position. Since 2004, this jointly funded position has resulted in increased coordination and partner-



Threats to Puget Sound: urban development on the fringes of a diked coastal wetland in central Puget Sound. Restoration will include dike removal and stream re-connection. Photo courtesy of Ginger Phalen, U.S. FWS.



Triple Creek Farm Conservation Easement: This photograph shows southern Puget Sound and a totem pole marking the location of an archaeological site of national historic significance. The property continues to produce artifacts and evidence of historic use by indigenous peoples, including a Native American village and fishing grounds of great importance to tribal peoples, archaeologists, and historians nationwide. A 200-person, 1,000-year-old Squaxin village was located on the northwestern shoreline of the project area. Protection of the property will directly benefit the cultural and historical attributes of Washington state as well as local and national historic and archeological communities. A conservation easement on this site will maintain permanent access by the Squaxin Island Tribe to this site of their ancestral heritage. Photo taken by Rich Carlson, U.S. FWS. See page 16 for more information about the Triple Creek Farm Conservation Easement.

ship across state and federal agencies. The program's participation in PSNERP will provide a comprehensive understanding of Puget Sound nearshore habitat restoration priorities. Working with other conservation partners from the same PSNERP study will increase the overall effectiveness of actions and help target limited restoration resources toward common priorities.

The Puget Sound Partnership

In December 2005, the Governor of Washington created a coalition of tribes, nongovernmental organizations, and state, federal, and local government agencies to develop a *2020 Action Agenda* for a clean and healthy Puget Sound. In May 2007, the Washington state legislature created a new entity, the Puget Sound Partnership, as the lead state agency to protect and restore Puget Sound and to create the action agenda. The agenda will prioritize tasks and identify agencies responsible for implementing those tasks. The Partnership is governed by a Leadership Council of independent citizens from around the Sound. An Ecosystem Coordination Board advises the Leadership Council in carrying out its responsibilities. Recently, the FWS was nominated as a candidate for one of three federal member positions on the board. Puget Sound Coastal Program staff are also active participants in discussions on prioritizing Puget Sound restoration and protection actions. They have also helped lead the establishment of the Puget Sound Federal Caucus, which is designed to better integrate, organize, and focus federal efforts in Puget Sound.

The National Coastal Wetland Conservation Grant Program

The FWS National Coastal Wetland Conservation Grant Program is an important funding source for coastal wetland conservation. Since 1992, the Puget Sound Coastal Program has conserved and restored over 21,284 acres of coastal wetlands in Washington State through this grant program. We recently began discussions with the Pacific Coast Joint Venture Washington Steering Committee to develop a more strategic approach to coastal wetland conservation to secure future funding under the grant program. Our

goals for this strategic approach are to understand what we have accomplished, use information from larger planning efforts, and maximize conservation benefits by effectively matching state and federal funding.

Conclusion

Since 1991, the Puget Sound Coastal Program has been working with nonprofit organizations and state, federal, tribal, county, and local governments to restore nearshore and coastal wetland habitat, monitor and assess populations, and conduct outreach and education to the public on emerging issues. We have learned to adapt to the changing conservation landscape of Puget Sound and have become leaders within the coastal conservation community. We look forward to the future where we will continue to coordinate and cooperate with our existing partners, develop new partnerships, and seek out new opportunities to improve and grow the program. ■

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