

The Puget Sound Partnership Presents: Draft Action Area Profiles

An important part of the Puget Sound Partnership's work is connecting with citizens, watershed groups and local governments. The legislation that created the Partnership established seven geographic action areas around the Sound to address and tackle problems specific to those areas.

Each of the seven action areas plays a unique role in sustaining the Puget Sound ecosystem. Distinct natural features and ecological process, urban and rural centers, wildlife populations, economics and history, and stressors on the environment characterize the different areas. In an effort to broadly describe the individual areas and ultimately develop tailored solutions to problems, the Partnership compiled information about each action area into an informative overview. The profiles are not meant to be detailed summaries of each action area; rather they are guided tours of what gives it a sense of place and the unique role in the ecosystem. The profiles will be refined to reflect the management actions needed to address threats in each area and be included in the Action Agenda.

The profiles are made up of three sections: the narrative, the action area map, and the action area concept diagram.

- Narrative
 - physical characteristics, demographics, land use, ecosystem characteristics and assets, and threats/stressors
- Action area map
 - base map for each action area, the incorporated and urban growth areas, public lands, tribal reservations, and major landmarks that are described in the text, and points of interest
- Action area concept diagram
 - graphic representation of the narrative related to ecosystem services and stressors

Please take some time to read through these action area profiles and familiarize yourself with an area you may or may not know much about. This is an opportunity to gain some insight and understanding as to how each action area is unique and why it needs attention.

The Puget Sound Partnership Presents: Strait of Juan de Fuca Action Area Profile

Physical Description

Few rivers run north in the continental United States, but on the north Olympic Peninsula, the rivers and streams flow directly north into the Strait of Juan de Fuca. The Elwha and Dungeness are the largest river systems flowing into the Strait. The rivers and “feeder bluffs” along the Strait have contributed material to the large sand spits—Ediz Hook, which protects the Port Angeles harbor, and Dungeness Spit, the longest natural sand spit in the world. Significant streams east of the Dungeness include Jimmycomelately and Salmon/Snow creeks that flow into Sequim and Discovery bays respectively, the largest bays along the Strait. Sizeable streams west of the Elwha include the Sekiu, Hoko, and Pysht Rivers that flow primarily through public and private commercial forest. The “West End” rivers on the Peninsula receive no glacial input, little snowpack, and have a hydrology dominated by rainfall. The north Olympic Peninsula is known for its wide range of annual precipitation. Westerly portions of the Strait area receive as much as 130 inches, while the eastern “rainshadow” portion from Sequim to Port Townsend gets only 15 to 20 inches per year. High elevations in the Olympic Mountains receive 240 inches of precipitation annually, mostly as snow, and Mount Olympus at 7,965 feet has a year-round glacier. The mountainous landscape plummets to sea level on the Strait of Juan de Fuca coast, dropping from the 6,454 foot top of Mount Angeles, for example, to Ediz Hook at sea level in only ten miles.

Providing an essential “bridge” between inner Puget Sound and the Pacific Ocean environment, the Strait of Juan de Fuca is the pathway for the exchange of incoming cool, dense, saltwater and the circulation of freshwater runoff from Puget Sound and Georgia Basin rivers. This exchange, assisted by strong ocean currents in the western Strait and intense tidal action in the eastern end, prevents the marine waters of Puget Sound from becoming stagnant. An underwater sill at Admiralty Head, near Port Townsend, inhibits some of the water circulation to Hood Canal and inner Puget Sound. Freshwater runoff makes up about seven percent of the water volume in the Strait of Juan de Fuca and is primarily derived from the Fraser River in Canada. Surface flow in the Strait is primarily seaward, except for easterly flow along the shoreline between Port Angeles and Dungeness Spit. From Cape Flattery to Point Wilson, the Strait has a rugged and diverse shoreline of 217 linear miles.

Land Use, Population, and Economy

The Strait Action Area is primarily forested, with most of the upper watersheds in federal, state and private parks, forest or timberland. Commercial timber harvest, which was intensive from the 1920s to the 1980s, remains an important economic sector. Over three-quarters of the private land west of the Elwha watershed is zoned for commercial forest, and portions of the western Strait are in the third rotation for timber harvest. Pulp, paper, and lumber mills are located in Port Angeles and Port Townsend. Agriculture is also part of the rural landscape along

the Strait, with approximately 5,000 acres of irrigated farmland in the dry Sequim-Dungeness Valley. Smaller scale agriculture occurs in other scattered areas, particularly the Salt Creek area west of Port Angeles, and in the Discovery Bay watershed. Many other economic activities in the Strait also depend directly on the Puget Sound ecosystem, and include ship building/repair, marinas, shellfish culture and harvest, commercial and recreational fishing, and tourism. A large retirement population, drawn by the relatively dry climate, scenic environment, and other community features, has shifted the eastern Strait economy toward more service-based activities. Marine transportation is hugely reliant on the Strait of Juan de Fuca, as almost all the vessels entering or leaving the seaports of Puget Sound and the Georgia Basin pass through the Strait. On an hourly basis, tankers, cargo ships, vessels loaded with grain and timber, and cruise ships transit the shipping lanes in either direction.

The Strait region is the home of the Makah, Lower Elwha Klallam and Jamestown S’Klallam tribal communities. The tribes utilize the area’s natural resources for cultural and subsistence needs, and livelihood. Tribes along the Strait fish for salmon, shellfish and other marine species; hunt; and gather berries, bark and forest products for food, ceremonial clothing, art, and canoe-making. They also work in other area economic sectors including timber, health care, government services, construction, utilities, information technology, education, retail, finance, and tourism.

Unique ecosystem characteristics and assets

The Strait of Juan de Fuca is the migration and transportation corridor between Puget Sound and the Pacific Ocean for many species of fish, marine mammals, bird populations, and humans. The marine shoreline and nearshore contain the majority of Washington’s coastal kelp resources. The Strait has 95 (linear) miles of floating kelp, 161 miles of non-floating kelp, and 75 miles of eelgrass. The kelp forests and eelgrass meadows provide food and cover for outbound and returning runs of salmon from all over Puget Sound, as well as birds, marine mammals, and the species they depend on. The connectivity of kelp and eelgrass habitat in the Strait is essential to the function of the Puget Sound ecosystem. Sheltered bays, beaches and over 22 small “pocket” estuaries at the mouths of the many creeks entering the Strait also support salmon, bull trout, forage fish and shellfish. Regional hydrology is sustained in part by the high portion of timberland in the Strait Action Area. Timberland is viewed as a long term economic and environmental asset by local residents, and timber companies have expressed their intent to continue long term commercial forest management.

Unique populations of raptors, marine birds, Roosevelt elk, black-tailed deer and other mammals, as well as anadromous and resident fish, are found throughout the Strait. Notable bird species include the federally-protected northern spotted owl and marbled murrelet. Olympic National Park recently reintroduced the fisher, a larger relative of the weasel, which has been locally extinct for decades. The population of sea otters that migrates between the outer coast and the Strait has increased from the initial 59 animals reintroduced in 1969-1970 to 800 animals, but is still small enough to be highly vulnerable to a catastrophic event such as

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an oil spill. Protection Island, part of the Dungeness National Wildlife Refuge, is a critically important marine bird rookery for Puget Sound. This island and other portions of the Strait are important haul-out areas for seals and sea lions.

The people who live on the north Olympic Peninsula are closely linked to the natural features of the region. Committed watershed councils, marine resource committees, and volunteer organizations such as Streamkeepers, Baywatchers, Beach Watchers, and others have been formed throughout the Strait Action Area. Numerous hands-on environmental education opportunities are present along the Strait, including marine science labs in Port Angeles and Port Townsend, the Dungeness River Audubon Center, Olympic Park Institute, and visitor/information centers operated by Olympic National Park and Forest. The renowned Makah Museum in Neah Bay illustrates the traditional cultural connection between area tribes and the natural resources of Puget Sound. Olympic Discovery Trail is a popular hike/ bike/ horseback trail that also serves a growing number of bicycle commuters. The trail is the site of athletic events such as the Olympic Discovery Marathon, and will eventually extend from Port Townsend to Lake Crescent and points west. Many miles of hiking and biking trails are located in Olympic National Park and Forest, and other public lands serving as tourist destinations that bolster the local economy.

Ecosystem Stressors:

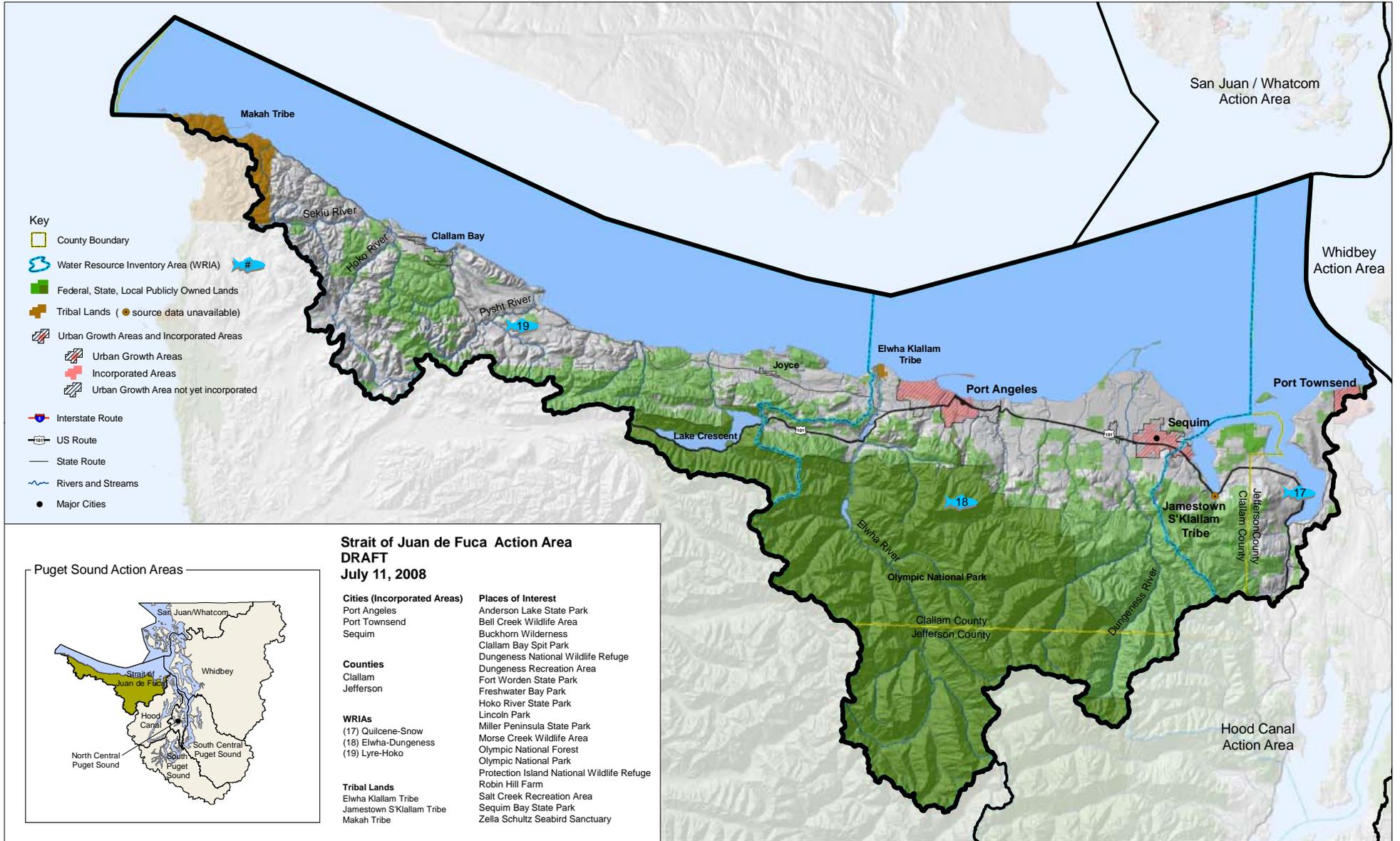
Loss of fish and wildlife habitat and declining numbers of various species have occurred throughout Strait area watersheds and marine ecosystems. The status of many populations of marine birds in the Strait is poor and trends are generally downward. Many populations of salmonids, some listed as threatened under the Endangered Species Act, are declining along with populations of forage fish such as herring. Watersheds are undergoing revised forest management, monitoring, and restoration activities to support key species of fish, birds, and mammals. The Elwha River contains two dams that completely block fish passage to more than 70 miles of pristine mainstem and tributary habitat (95% of the historic habitat for Elwha Chinook), and the dams have impeded water quality, quantity, and sediment transport. Disruption of the sediment supply from the Elwha (and adjacent marine bluffs) has depleted the replenishment of Ediz Hook, and major rock revetments and maintenance by the US Army Corps of Engineers have been necessary to prevent the Hook from eroding. The Dungeness River and delta have been impacted from dikes, other channel modifications and extensive water withdrawals. Many regional rivers, streams, bays, and “pocket” estuaries have been altered by shoreline development, channelization, culverts and other changes. An estimated 14% of the Strait of Juan de Fuca shoreline has been modified by human activities.

Water quality problems have resulted in shellfish closures in Dungeness Bay and a Clean Water District has been formed to implement TMDL plans. Leaking septic systems or agricultural wastes were thought to be the cause of the first ever shellfish closure in Discovery Bay in 2007. Harmful algal blooms (HABs) create health risks such as Paralytic Shellfish Poisoning and Amnesic Shellfish Poisoning along the Strait, resulting in seasonal or occasional shellfish

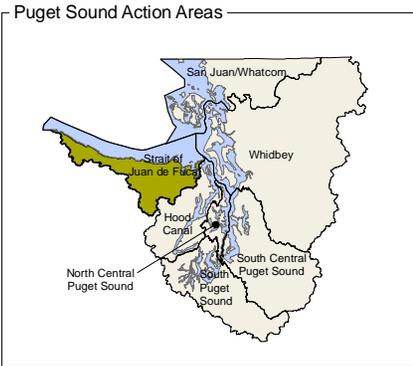
closures. Marine shoreline development has been a contributing factor to fecal coliform contamination and has eliminated or degraded shoreline and estuary habitat, particularly in the eastern end of the action area. As a major shipping transportation corridor for the west coast of North America, and Washington State and British Columbia in particular, the Strait of Juan de Fuca is at risk of major damage from oil spills and other contaminants. Several sites along the Strait contain toxic contaminants including the former Rayonier Mill site in Port Angeles, former military installations on the Makah Reservation, and municipal and tribal dumps/landfills.

The cities of Neah Bay, Port Angeles, and Port Townsend rely entirely on surface flows from area rivers for their domestic water supplies, and for mill operations in Port Townsend and Port Angeles. Neah Bay has had critical water shortages in recent years due to low instream flows in the Waatch River. Rising demand for residential water supply throughout the Strait region has led to the proliferation of permit-exempt wells, particularly in the eastern portion.

Population growth in the eastern portions of the Strait region has also resulted in significant conversion of farmland and woodlots to low-density residential development. Higher-density development is also occurring within urban growth areas driven by the same population increases. A growing voluntary “green building” program is actively being promoted, increasing demand for these innovative building practices and associated products. Local governmental entities report challenges in meeting the need for education, management and enforcement of environmental policies and regulations in the face of declining timber industry and fishing revenues, and the rural tax base.



- Key**
- County Boundary
 - Water Resource Inventory Area (WRIA)
 - Federal, State, Local Publicly Owned Lands
 - Tribal Lands (● source data unavailable)
 - Urban Growth Areas and Incorporated Areas
 - Urban Growth Areas
 - Incorporated Areas
 - Urban Growth Area not yet incorporated
 - Interstate Route
 - US Route
 - State Route
 - Rivers and Streams
 - Major Cities



**Strait of Juan de Fuca Action Area
DRAFT
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Cities (Incorporated Areas)	Places of Interest
Port Angeles	Anderson Lake State Park
Port Townsend	Bell Creek Wildlife Area
Sequim	Buckhorn Wilderness
	Clallam Bay Spit Park
	Dungeness National Wildlife Refuge
	Dungeness Recreation Area
	Fort Worden State Park
	Freshwater Bay Park
	Hoko River State Park
	Lincoln Park
	Miller Peninsula State Park
	Morse Creek Wildlife Area
	Olympic National Forest
	Olympic National Park
	Protection Island National Wildlife Refuge
	Robin Hill Farm
	Salt Creek Recreation Area
	Sequim Bay State Park
	Zella Schultz Seabird Sanctuary
Counties	
Clallam	
Jefferson	
WRIAs	
(17) Quilcene-Snow	
(18) Elwha-Dungeness	
(19) Lyre-Hoko	
Tribal Lands	
Elwha Klallam Tribe	
Jamesstown S'Klallam Tribe	
Makah Tribe	

