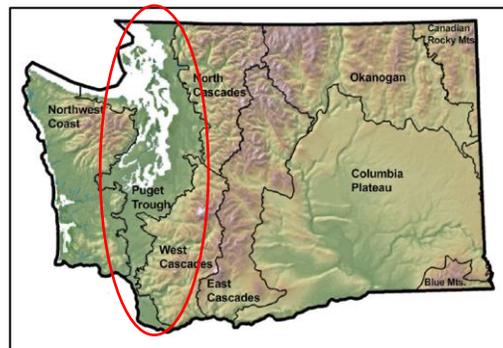


Puget Lowland

“The intimate relationship between the forest and the sea is perhaps demonstrated better in the Puget Trough than in any other region of United States. Although altered and under stress, both the terrestrial and marine environments are still extremely productive.”

-- *Washington Department of Fish and Wildlife. In: Ecoregions: Washington's Ecoregional Conservation Strategy (2005).*

The Puget Lowland, also referred to as the Puget Trough, occupies a north-south depression between the Olympic Mountains and the western slopes of the Cascade Mountains, extending from the Canadian border to the lower Columbia River along the Oregon border. It is the Washington portion of the Willamette Valley-Puget Trough-Georgia Basin Ecoregion that extends from British Columbia to southern Oregon. The Puget Lowland occupies a depressed, glaciated area of moderately dissected tableland covered by Ice Age glacial and lake deposits. Relief in the Puget Lowland is moderate, with elevation ranging from sea level to 1500 ft. (460 m) and seldom exceeding 500 feet (150 m). Most of the soils in this lowland are formed in glacial materials under the influence of coniferous forest.



The ecoregion has a Mediterranean climate, with warm, dry summers, and mild, wet winters. The average annual temperature is 48°F (9°C), with the average summer temperature at 59°F (15°C), and the average winter temperature at 38°F (3.5°C). Average annual precipitation is about 35 inches (900 mm) but can be more than 60 inches (1,530 mm) in the Cascade foothills and less than 20 inches (460 mm) in the rainshadow of the Olympic Mountains. Only a small percentage of this precipitation falls as snow. A dozen major rivers, most with their origins in the Cascade and Olympic mountains, flow through the lowland into Puget Sound. These, along with numerous smaller rivers and streams, contribute a substantial freshwater input to the marine waters of Puget Sound.

The biological diversity of the ecoregion is very high. Puget Sound, at the center of the ecoregion, is a globally important estuary and home to a rich diversity of marine life, including marine mammals, seabirds, hundreds of fish species, and a substantial and productive shellfish and invertebrate fauna. Beaches, tide flats, salt marshes, and other nearshore habitats provide critical habitat for wildlife populations of great biological and economic value.

The terrestrial environment is also diverse. Before Euro-American settlement, most of the Puget Lowland was dominated by dense evergreen coniferous forests made up primarily of Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*). Communities of understory plants, wildlife, invertebrates, fungi, and microbes developed in close association with the coniferous forest environment. Next to the Pacific Coast, this is the most productive of Washington's terrestrial ecosystems. Thanks to temperate winters, evergreen species are able to conduct photosynthesis nearly year-round in much of the ecoregion. Late successional conifer forest, also known as old growth, was the dominant forest type, although forests in all stages of development following disturbance were common across the landscape. Flooding, windstorms, and fire were the predominant natural disturbances. Large-scale stand-replacement fires occurred at intervals of from 100 to more than 500 years, depending on site conditions.



While coniferous forests blanketed most of the pre-settlement landscape, variations in soil moisture, slope and aspect, site history, and other environmental factors result in habitats that, though small in the proportion of land area they occupy, contribute significantly to the region's biodiversity. Pacific madrone (*Arbutus menziesii*) stands occur on drier forested sites, especially along Puget Sound. Puget Sound prairie and Oregon white oak (*Quercus garryana*) woodlands occupy coarse, highly drained soils and have always supported a flora (and, to some extent, a fauna) distinctly different from that of the coniferous forest matrix. Variants of this vegetation type also occur on rocky balds scattered throughout the ecoregion.

As in most landscapes, freshwater streams, wetlands, and their riparian areas constitute a small percentage of the landscape but contribute disproportionately to regional productivity and wildlife habitat. Unlike in the upland forests, deciduous trees and shrubs dominate lowland riparian zones and play an intimate role in food webs and nutrient processing pathways of adjacent aquatic systems.

Five species of Pacific salmon (chinook, coho, sockeye, pink, and chum), along with steelhead utilize the ecoregion's rivers and streams, freshwater wetlands, estuaries, and marine nearshore habitats, effectively linking the physical and biological processes of mountain headwaters with the marine environment.

Conservation Status

The Puget Lowland includes the most densely populated area of Washington. Beginning with the colonial period, vast acreages of formerly natural habitats in the region have been converted to urban, industrial, or agricultural uses. Few sizable blocks of intact natural habitat remain. Most habitats that have not been directly converted have nevertheless been significantly altered in terms of their ecological structure and function. Patterns of development have usually left even these remnants as disconnected fragments surrounded by urbanization and agriculture. Industrial forestry has eliminated all but a few small patches of the once vast old growth coniferous forest, although second- and third-growth forestlands remain. Puget Sound prairie and oak woodland habitats, once maintained by native people's frequent burning, have been highly degraded due to fire suppression and the introduction of invasive species, among other factors. They are considered one of the most imperiled ecosystems in the United States. Marine and freshwater habitats have also been extensively appropriated for human use such that few lowland stream reaches, wetlands, or shorelines remain functionally intact. Fisheries, especially Pacific salmon, have been dramatically reduced by overfishing and habitat loss or alteration, and vital nutrient exchange pathways associated with anadromous fish have subsequently been drastically impaired or, in some cases, severed. Puget Sound chinook salmon and steelhead and Hood Canal chum salmon populations are federally listed as Threatened, and Puget Sound coho salmon is a federal Species of Concern.

Only a small proportion of the natural communities in the ecoregion have been formally protected for conservation. Opportunities for conservation and restoration do exist. Threatened and endangered species listings for wild salmonids drives considerable current efforts to restore riparian and wetland areas, with potential benefits for a wide range of associated species. Techniques are available to accelerate the recovery of old-growth characteristics in coniferous forests. The region is one of the fastest growing areas in the United States, and the substantial increase in urbanization that is projected over the coming decades presents an enormous challenge for the conservation community.



This brief is based on the following sources:

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