WASHINGTON STATE DEPARTMENT OF **Natural Resources** | Caring for your natural resources ... now and forever

AQUATIC LANDS HABITAT CONSERVATION PLAN — **Species Spotlight**

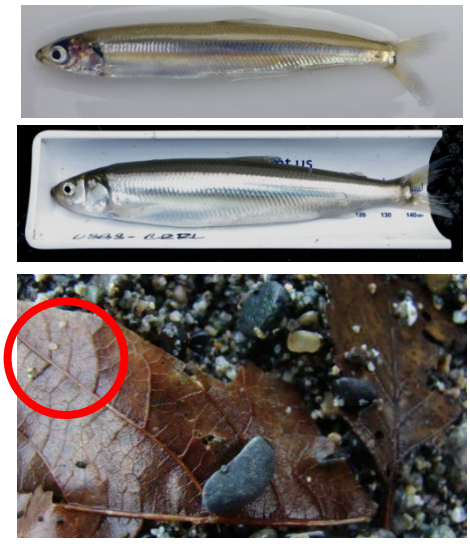
Surf Smelt – *Hypomesus pretiosus*

Protection status: *State priority species in Washington State*

Surf smelt range from Long Beach, California, to Chignik Lagoon, Alaska. In Washington state, surf smelt occur are present throughout the nearshore marine waters of Washington, from the mouth of the Columbia River to the Canadian border and into southernmost Puget Sound and Hood Canal.

Life history

Surf smelt can live to a maximum age of about 5 years, although very few survive to 3 or 4 years old. They have a silver or yellow band on their sides, with an olive green coloring on their backs.



Surf smelt (*Hypomesus pretiosus*) juvenile (top) and adult (middle). Photo: David Ayers, U.S. Geological Survey. Smelt eggs (lower). Photo: Friends of Forage Fish.

Many surf smelt spawn at age 1, the majority by age 2. Adults do not die after spawning. Throughout their lives, surf smelt generally stay near their natal spawning grounds and don't form large open-water schools.

Surf smelt spawn year round on beaches along Whidbey Island, Camano Island, Semiahmoo Bay, Cherry Point, Fidalgo Bay, Sinclair Inlet, the San Juan Islands, and the outer coast of the Olympic Peninsula. Fall and winter spawning occurs along Liberty Bay, Port Orchard, Quartermaster Harbor, southern Hood Canal, and southern Puget Sound. Summer spawning occurs along the Strait of Juan de Fuca.

Spawn adheres to particles of beach material and incubates in two to five weeks, depending upon seasonal temperature. Juvenile smelt rear in nearshore areas.

Surf smelt are secondary consumers. Larvae emerge as plankton (free floating). Juveniles feed on plankton, and adults feed on small crustaceans, worms, jellyfish, and larval fishes.

Habitat use

Approximately 10 percent of the shoreline of the Puget Sound Basin provides habitat for surf smelt spawning. The upper one-third of the intertidal zone often has overhanging vegetation that provides some protection from temperature fluctuations. The vegetation also prevents incubating embryos from drying out in in the mixed sand and pea-gravel spawning grounds along the beach. Both larvae and juveniles use the adjacent nearshore habitat as nursery grounds. However, we know very little about habitat use away from spawning grounds. Surf smelt do not appear to form large schools in open water in Puget Sound.

In general, surf smelt show great annual predictability in spawning sites and seasons. Spawn occurs throughout the intertidal zone but mostly on mixed sand-gravel beaches from +7 feet (+2m) to extreme high water.

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Importance in the Ecosystem Food Web

Ecologically, surf smelt are a key component of the Puget Sound food web, as are herring and other forage fishes in marine ecosystems. Surf smelt are secondary consumers (feeding on smaller plant-eating animals) and forage in schools on a variety of plankton and zooplankton, including amphipods, copepods, crab larvae, shrimp, aquatic insects, worms, fish eggs and larvae and jellyfish. Primary predators include seabirds, such as cormorants, mallards, blue herons, and bald eagles; marine mammals, such as harbor seals; and a variety of larger predatory fishes, including Pacific salmonids.

Cultural and Socio-Economic Significance

Native Americans have long used surf smelt for food and social and ceremonial purposes throughout the Pacific Northwest. Today, surf smelt support significant human-consumption fisheries in many areas of Washington state. Surf smelt are fished commercially with beach seines, and most are harvested in central Puget Sound. A recreational fishery uses long-handled dip nets and hook-and-line jig gear. Fisheries are presently limited by saturation and competition within the commercial markets and/or lack of suitable access to public beaches for recreational fishermen.

Why are surf smelt included in the Aquatic Lands HCP?

The Aquatic Lands Habitat Conservation Plan (HCP) addresses 29 species of animals that depend on submerged or intertidal lands for either all or a significant portion of their life history. Specific threats that warrant protection of surf smelt include:

- Loss and modification of habitat.
- Poor water quality.
- Nearshore chemical treatments.
- Toxins in marine waters and plankton.
- Impacts on spawning beaches.

The Aquatic Lands Habitat Conservation Plan

The Washington State Department of Natural Resources (DNR) is steward of more than 2.6 million acres of state-owned aquatic lands beneath Washington's navigable lakes, rivers, marine waters, and estuaries. DNR sustainably manages these aquatic lands on behalf of the people of the state—to protect fish and wildlife and to provide opportunities for commerce, navigation, and public access.

The increased demand for the use of aquatic lands can be harmful to aquatic habitats and species. To encourage a balanced approach to managing and protecting these lands, DNR is developing an Aquatic Lands **Habitat Conservation Plan** (HCP). The HCP will provide a framework for managing the aquatic lands under DNR's stewardship to ensure the continued health of our state's marine and fresh waters and the species that inhabit them.

Learn more

For more information about DNR's Aquatic Lands HCP and the other species that are covered in the plan, visit: www.dnr.wa.gov/aquaticHCP.

More information about surf smelt conservation and monitoring:

- Marine Beach Spawning Fish Ecology (Species & Ecosystem Science — WDFW): wdfw.wa.gov/conservation/research/projects/marine_beach_spawning/
- Surf smelt — Puget Sound Shorelines website (Washington State Department of Ecology) http://www.ecy.wa.gov/programs/sea/pugetsound/species/smelt.html
- Protecting Nearshore Habitat and Functions in Puget Sound (WDFW publication) wdfw.wa.gov/publications/00047/

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