

Forage Fish

SNOHOMISH COUNTY MARINE FACT SHEET

Forage fish are small, schooling fish common in the Puget Sound. Forage fish are not a phylogenetic group, but rather an ecological group. They are considered forage fish because they feed, or forage, on marine plankton. Forage fish are extremely important links in the marine ecological food web.

Did you know?

Juvenile Chinook salmon depend on sand lance for 60% of their diet!

Ecological significance

Forage fish are best described as the middle link in the marine food web. These small fish feed on microscopic, primary-producers like phytoplankton. In turn, forage fish and their eggs are key menu items for birds, seals, fish (including salmon), and other animals. In fact, forage fish are considered to be indicators of health and productivity of marine ecosystems.

The nearshore

Forage fish are obligate spawners in the nearshore. They deposit their eggs in vast quantities on nearshore vegetation and beaches. The nearshore also acts as a nursery for juvenile forage fish, which take refuge and feed in the shallow, vegetated waters.

Common species

Three forage fish species of concern in Snohomish County are:

Pacific herring (*Clupea harengus pallasii*)

— Grows up to 9 inches long. Bluish green to olive dorsal with silvery sides. No adipose fin. Large scales on body; none on the head and tail. The largest stock is in the Cherry Point area (northern Puget Sound).



Surf smelt (*Hypomesus pretiosus*) —

Grows up to 9 inches long. Olive green dorsal, silver or yellow band on sides. Adipose fin. Small scales.



Pacific sand lance (*Ammodytes hexapterus*) —

Grows up to 8 inches long. Gray to green dorsal, silver sides. Large dorsal fin. Elongated pointed body. No adipose fin. Scales almost invisible.

Forage Fish

Threats

While forage fish are generally considered to be abundant in Puget Sound, their populations are declining. A number of threats impact forage fish populations, many of which affect spawning grounds in the nearshore including:

- **Bulkheads** and other shoreline armoring can bury the upper intertidal zone, increase erosion along the base of the structures and prevent renewal of fine beach sediments needed for surf smelt and sand lance.
- **Tree removal** along the shoreline can increase erosion and decrease shading.
- **Dredging, pollution and shading** can remove eelgrass beds or prevent them from thriving.
- **Commercial and recreational harvest**, especially of herring stocks, has put pressure on forage fish populations.

Local protection efforts

Snohomish County Marine Resources Committee (MRC) participates in annual forage fish spawning surveys along shoreline between Everett and Mukilteo. The MRC is also leading a nearshore habitat restoration project in this area. The MRC is surveying the nearshore for forage fish eggs before, and after this restoration. Forage fish depend on nearshore for spawning and rearing.



Forage fish eggs in sediment

Resources

- Snohomish MRC: www.snocomrc.org/
- Puget Sound Nearshore Partnership Technical Report 2007-03, Marine Forage Fishes in Puget Sound, Dan Penttila

How you can get involved

The MRC is a citizen-based volunteer committee appointed by the Snohomish County Council. It is one of seven county-based MRC's, which conduct restoration, conservation, and education projects with diverse partners and community members to meet performance benchmarks.