



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

Pacific sand lance — *Ammodytes hexapterus*

Protection status: *State priority species in Washington State*

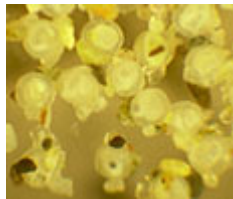
Pacific sand lance range from southern California around the north Pacific Ocean to the Sea of Japan and across Arctic Canada. Pacific sand lance are commonly found in nearshore marine waters throughout Washington state.

Life history

The lifespan of sand lances is about 7 years. Adults grow to about 8 inches (20 cm) in length. Sand lance have a slender sword-shaped body, with a needle-like nose, a thin dorsal fin along the length of the back, and silvery sides with gray-green coloring on their backs.



Pacific sand lance spawn from November through February on sandy intertidal beaches with freshwater seeps between mean higher-high water (MHHW) and +7 feet (2 meters).



Adults are repeat spawners, with spawning occurring early in November and December. Wave action disperses eggs across the intertidal zone, and incubation lasts about 4 weeks.

Tides and currents disperse the larvae, which form schools when they grow to about 1 inch. During late winter and spring, larvae enter the water column as plankton (free-floating), living in bays and inlets in Puget Sound and coastal estuaries.

Pacific sand lance (*Ammodytes hexapterus*). WA State University Extension & WA Department of Ecology photos (top & bottom).

Habitat use

Research has documented 140 miles of spawning beach that sand lance use in Puget Sound. Other spawning areas may exist; more surveying is needed to identify these beaches.

Sand lances are generally pelagic (using open water) from March through August. Both adults and juveniles use sandy, nearshore substrates for burrowing at night as a protection from predators. They forage during the daylight hours. Sand lance larvae feed on phytoplankton and zooplankton. Juveniles feed on numerous varieties of small crustaceans and their larvae, marine worms, and fish larvae. Adults feed on zooplankton, plankton, and other species living in deep water.

Burrowing habitat is typically well-washed fine sand and fine gravel, free of mud, usually with a strong bottom current keeping oxygen levels high. Sand lance can survive burrowing at low tide with short exposure times, up to 5 hours. Large groups of sand lance may also burrow beyond the nearshore in fields of deep-water sand. During the non-spawning season, sand lance become inactive and lower their metabolic rate by burrowing in suitable substrate.

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FS-13-021 | 2/25/14

Importance in the ecosystem food web

Sand lances are a major prey for more than 100 species. Along with other forage fishes, sand lance constitute an ecological cornerstone of a broad food web that includes the pelagic zone, the nearshore, the intertidal zone and terrestrial areas. Sand lance are the main food source for juvenile salmon, making up 35 to 60 percent of their diet. Schools of sand lance swimming near the water surface attract sea birds. Crows and eagles carry sand lance and other forage fish to their young, and crows sometime store prey in trees or in meadow grasses.

Such behavior brings marine-derived nutrients to terrestrial systems. Deposits of unused prey and digested fish material around the nests of seabirds can alter soils and plant communities and contribute nutrients to the sea near bird colonies, as well as enrich the adjoining terrestrial food web. Variation in the availability of sand lance (and other forage fishes) can substantially affect the breeding success and survival of their predators. And, unfortunately, sand lances are subject to paralytic shellfish poisoning (PSP or red tide) and other toxins, often transmitting these to some predator species.

Cultural and Socio-economic significance

For centuries, Pacific Northwest coastal tribes have eaten forage fish, including sand lance. Today, forage fish are harvested by recreational and commercial fisheries and continue to be used for tribal subsistence. There is no commercial sand lance fishery in Washington. During the summer and fall, recreational salmon anglers catch sand lance in dip nets to use for bait fish.

Why are sand lance 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 the Pacific sand lance 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 the 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 covered in the plan, visit: www.dnr.wa.gov/aquaticHCP. More information about conservation and monitoring Pacific sand lance:

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

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