

# Species Fact Sheet

## Pacific lamprey

### *Lampetra tridentate*



Photo Credit: Roger Tabor



#### **STATUS: SPECIES OF CONCERN**

Pacific lamprey potentially occur in these Washington counties: Douglas, Okanogan, Chelan, Grant, Kittitas, Yakima, Benton, Franklin, Walla Walla, Columbia, Garfield, Asotin, Klickitat, Skamania, Cowlitz, Wahkiakum, Pacific

(Map may reflect historical as well as recent sightings)

On January 27, 2003, USFWS received a petition to federally list the Pacific lamprey, *Lampetra tridentate*, in Oregon, Washington, Idaho, and California as threatened or endangered under the Endangered Species Act. In 2004, the USFWS found that the petition did not provide the required information to indicate that listing the species may be warranted and, therefore, a status review was not initiated.

### ***Current and Historical Status***

Pacific lamprey have been found in streams from Hokkaido Island, Japan, and along the Pacific Rim, including Alaska, Canada, Washington, Oregon, Idaho, and California to Punta Canoas, Baja California, Mexico. Pacific lamprey is the most widely distributed lamprey species on the west coast of the United States. Historically, Pacific lampreys are thought to be distributed wherever salmon and steelhead have occurred.

The current distribution of the Pacific lamprey in western Washington includes most large rivers and streams along the coast and the Strait of

Juan de Fuca, throughout Puget Sound, including the Nisqually Reach, and Hood Canal streams. Available information on the abundance of Pacific lamprey in western Washington is limited and largely anecdotal. Much of the data references only “lamprey.” Collection records show Pacific lampreys are widely distributed on the Olympic Peninsula and streams flowing into the Strait of Juan de Fuca. However, no population status and trend data are available. The species’ range extends long distances inland in the Columbia, Snake, and Yakima River systems. Recent data indicate that distribution of the Pacific lamprey has been reduced in many river drainages. They are extirpated above dams and other impassable barriers in larger rivers throughout coastal Washington and above dams in the upper Columbia and Snake Rivers.

## ***Description and Life History***

Lampreys are a primitive group of fishes that are eel-like in form but lack jaws and paired fins. These species have a round sucker-like mouth (oral disc), no scales, and breathing holes instead of gills. Adult Pacific lampreys are characterized by the presence of 3 large teeth and posterior teeth on the oral disc. As larvae (ammocoetes), they are nearly indistinguishable from other lampreys.

Adult Pacific lampreys are parasitic and feed on a variety of fish including Pacific salmon, flatfish, rockfish, and pollock, and are preyed upon by sharks, sea lions, and other marine animals. They have been caught in depths ranging from 300 to 2,600 feet, and as far off the west coast as 62 miles in the ocean. After spending 1 to 3 years in the marine environment, Pacific lampreys cease feeding and migrate to freshwater between February and June. They are thought to overwinter and remain in freshwater habitat for approximately one year before spawning, during which time they may shrink up to 20 percent in size. Most upstream migration takes place at night. Pacific lampreys spawn in similar habitats to salmon; in gravel bottomed streams, at the upstream end of riffle habitat, typically above suitable young larvae (ammocoete) habitat. Spawning occurs between March and July depending upon location within their range. The degree of homing is unknown, but adult lampreys cue in on pheromones released by ammocoete which are thought to aid adult migration and location of suitable spawning habitat. Both sexes construct the nests, often moving stones with their mouth. After depositing and fertilizing the eggs, the adults typically die within 3 to 36 days.

Embryos hatch in approximately 20 days. Ammocoetes drift downstream to areas of low velocity and fine substrates where they burrow, grow, and live as filter feeders for 2 to 7 years and feed primarily on algae. Several generations and age classes of ammocoetes congregate in high densities that form colonies. Ammocoetes are relatively immobile, though will move

during high flow events. Larger ammocoetes drift downstream primarily during higher flows in spring and smaller ammocoetes drift downstream during the summer. Anecdotal information suggests that ammocoetes may reside within the hyporheic zone and may move laterally through stream substrates. Metamorphosis to macrophthalmia (juvenile phase) occurs gradually over several months as they develop eyes, teeth, and become free swimming. Transformation from ammocoetes to macrophthalmia typically begins in July to October. Between late fall and spring, juveniles emigrate to the ocean where they mature into adults.

## ***Habitat***

Riffle and side channel habitats are important for spawning and for ammocoete rearing. Because lamprey ammocoetes colonize areas and are relatively immobile in the stream substrates, good water quality is essential for rearing.

## ***Reasons for Decline***

There are many reasons for the observed reductions in range and abundance of Pacific lampreys, and no single threat is the primary reason for their apparent decline. Artificial barriers to migration, poor water quality, harvest, predation by nonnative species, stream and floodplain degradation, loss of estuarine habitat, decline in prey, ocean conditions, dredging, and dewatering have all contributed to the decline of this species.

## ***Conservation Efforts***

Many Tribes, local, State, and Federal agencies are beginning to incorporate the needs of lampreys into management and monitoring plans. For example, the Army Corps of Engineers has funded many studies to improve lamprey passage at dams. However, there is little systematic monitoring of abundance and distribution of this species.

It is the USFWS's strategy to improve the status of lampreys by proactively engaging in a concerted conservation effort. In 2007, the USFWS initiated a Pacific Lamprey Conservation Initiative to facilitate communication and coordination and develop a Conservation Plan that will lead to restored Pacific lamprey populations and improvement of their habitat throughout their range.

The USFWS encourages interested parties to continue to gather additional information gathering and research to increase our understanding of the status of this species on such topics as:

- Pacific lamprey biology and ecology, their current and historical distribution and abundance, and habitat needs during all life stages;
- The range, status, and trends of this species;
- Specific threats to this species or its habitats;
- Techniques for improving identification of lamprey ammocoetes to species;
- Any other information that would aid in determining population status, trends, and structure;
- The adequacy of existing regulatory mechanisms to protect or conserve lampreys and their habitat.

## ***References and Links***

[90 Day Notice of Petition Finding 2004](#)

[Pacific Lamprey Conservation Initiative and Related Information](#)

[Best Management Practices 2010](#)