

WESTERN RIVER LAMPREY

LAMPETRA AYRESII (GÜNTHER, 1870)

NATURAL HISTORY SUMMARY BY TORY RIVERA

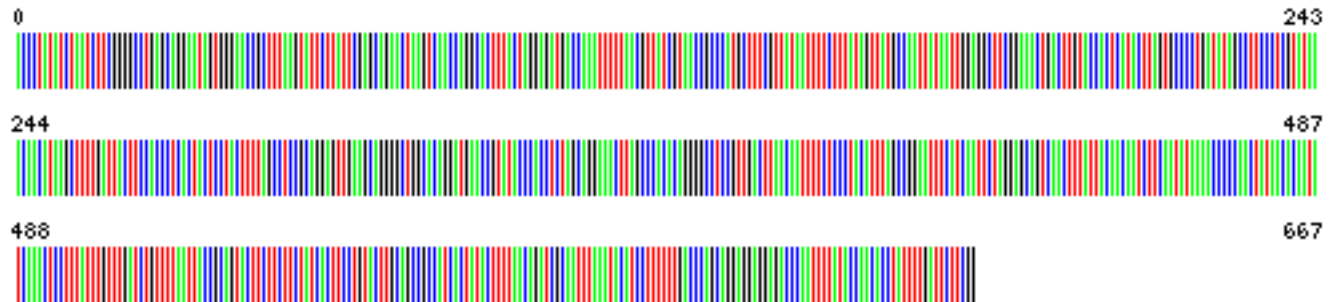


Figure 1. *Lampetra ayresii* DNA Barcode - Barcode of Life Database - BOLD Systems (Ratnasingham and Hebert 2007)

Classification

Kingdom: Animalia

Phylum: Craniata

Class: Petromyzontida

Order: Petromyzontiformes

Family: Petromyzontidae

Genus: *Lampetra*

Species: *L. ayresii*

Description

The Western River Lamprey (*Lampetra ayresii*) is an eel shaped organism with anterior, posterior dorsal and caudal fins, which might join the anal fin (the latter rarely present in males) (Morrow 1980). The adult Western River Lamprey can range in size from 11.5 to 31.1 cm in length (Renaud 2011). The pharyngeal gill pouches (as opposed to gill slits) are for breathing. It has one nostril and well developed eyes. The body is about 4-5 cm in diameter and tapers at the tail. It can be distinguished by its circular, disk-like mouth, used for sucking and attaching to hosts, as it lacks jaws for biting. The mouth is lined with two main, keratinous, unicuspid teeth on the anterior side of the mouth, and other small teeth circling the perimeter. They normally have dark brown or brown-gray coloration on the sides, back, and tail. Its belly is yellowish in color while its head and external gill openings are a silvery blue.

Distribution

The Western River Lamprey is found all along the Pacific Coast of the United States, and the other bodies of water that lead into it. The species range extends as far south as the lower Sacramento and San Joaquin rivers and their tributaries, to the San Francisco Bay and the Russian River (NatureServe 2013). While they have been found in Oregon's Columbia and Yaquina rivers, their presence has not been recorded over the last 30 years. They have been documented as far north as British Columbia and Tee Harbour near Juneau, in southeastern Alaska (NatureServe 2013). *Lampreta ayresii's* [range map](#) is available at NatureServe, 2013.

Diet

Larval Western River Lampreys (ammocoetes) feed mostly on aquatic microbes and algae, while adults are parasites that feed on the dorsal and anterior muscle tissue of a variety of fishes, including Pacific Herring (*Clupea pallasii*), Pacific Salmon (*Oncorhynchus*), and smaller salmonids (Salmonidae). Adults will suck and latch onto the fish hosts using their circular mouth disk, and consume pieces of flesh and internal organs (Beamish 1980). In order to prevent the host's blood from clotting and allow for continuous feeding, an oral gland secretes an anticoagulant substance. Oftentimes, their feeding process results in the host's death (Beamish 1980).

Habitat and ecology

In general, Western River Lampreys reside along the water edges. In marine water, Western River Lampreys most commonly reside in the shore and surface waters. In estuaries, they stay in the bay or sound area, and the mouth of the river. In the rivers, they stay in pools or riffle areas (NatureServe, 2013). From freshwater areas, they metamorphose and migrate out to the sea in order to further mature before returning to freshwater to spawn.

Reproduction and life cycle

The Western River Lamprey is anadromous, meaning that it feeds in estuaries and at sea and spawns over gravel riffles in freshwater streams (Lee et al. 1980). Western River Lampreys live for about two years, spending most of their lives growing as

ammocoetes, burrowing in muddy and sandy streams (Beamish 1980). Once they reach 12 cm in length, they become sexually mature (Beamish 1980), metamorphose, and travel upriver before migrating downstream into marine waters in the late spring and early summer (NatureServe 2013). Once at sea, they feed on Herring (Clupeidae) and Salmon (Salmonidae), and grow significantly, increasing by 11-14 cm in length and 12-18 g in weight. In the fall and winter, the Western River Lamprey return to the freshwater to spawn (Beamish 1980). Between April and June, the adults spawn and die soon thereafter.

Conservation status

In 2013, the Western River Lamprey, *Lampetra ayresii*, was assigned a conservation status of “Least Concern” by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species because the extent of occurrence, number of subpopulations, and population size are relatively large, and because the species probably is not declining fast enough to qualify for any of the threatened categories. (NatureServe 2013). The species’ main potential threats include habitat degradation by pollution and stream regulation through dam construction (Renaud 1997). The dams act as a barrier to spawning migration, since they are sometimes unable to travel through salmon ladders, preventing any continuation of the Western River Lampreys’ life cycle. Water quality in estuaries and oceans has diminished, prey population has declined due to fishing, and dredging and dewatering of other freshwater habitats, where ammocoetes reside, has occurred.

Cultural significance

For many centuries, Native American tribes in the Pacific Northwest, specifically in Oregon, have used Western River Lampreys or asúm (Yakama word to describe the Western River Lamprey) as a food source and in fishing-centered and blessing ceremonies (Washines 2014). Since lamprey harvesting is illegal in some places, there has been ongoing discussion between the Northwestern tribes and the Oregon Department of Fish and Wildlife to sort out the policies (Banse 2014).

Specimen Specific Detail

The Western River Lamprey (*Lampetra ayresii*) specimen from the [Burton Ostenson Museum of Natural History](#) at Pacific Lutheran University (PLU) was collected on June 20, 2011 by PLU professor Jacob Egge and students Evan Shields and Brianna Ankenman. It was collected in Snohomish County, at Jim Creek at Jordan Road, about two miles east of Arlington, Washington. The environmental conditions are very similar to those seen today. Interestingly, this same day, the U.S. Supreme Court granted the Environmental Protection Agency the authority to regulate greenhouse gas emissions (Koch 2011).

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