

A Word From the Watershed: The Weird and Wonderful Pacific Lamprey

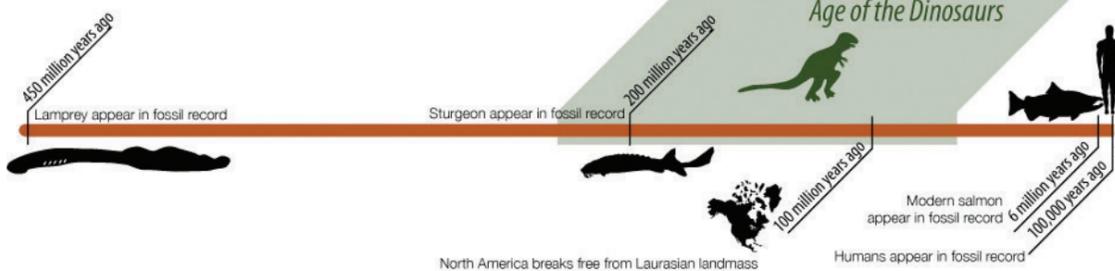
By Corrie Aiuto

Pacific Lamprey are amazing animals. An eel-like, boneless, parasitic fish, they are resilient, older than the dinosaurs, and have a fascinating life cycle. They also live in our watershed. In January the Upper Nehalem Watershed Council (UNWC) was happy to host Christina Wang of the U.S. Fish and Wildlife Service at the Vernonia Public Library to speak about Pacific Lamprey. We at the UNWC can't stop talking about her presentation or these crazy fish.

There are approximately 40 species of lamprey around the world. Four species are native to our watershed: Pacific Lamprey, Western River Lamprey, Western Brook Lamprey, and Pacific Brook Lamprey. Some species are anadromous, meaning they return to fresh water to spawn like salmon, and some spend their whole lives in fresh water. The Western Brook and Pacific Brook are an example of resident fresh water lamprey. The infamously invasive sea lamprey, which decimated

trout populations in the Great Lakes, is thankfully not found in our rivers.

Lamprey, though they look like eels, are actually fish. They have no scales, and are boneless, having cartilage instead. They have no paired fins on their sides (as goldfish do), only dorsal fins and a caudal fin. They have holes for gills, blue eyes, and depending on species they can be 4-33 inches in length.



They are also jawless, having a powerful suction cup mouth with teeth used for feeding, anchoring, and climbing. Lamprey cannot jump and have no swim bladder, so they must constantly swim or use their mouths to anchor themselves. They also use their mouths to climb over waterfalls, attaching to a rock, and then propelling forward with a quick stroke

of their tail.

Lamprey biology is ancient. Fossils dating 360 million years old show a recognizable lamprey, its body and form essentially unchanged, and they are estimated to have emerged 450 million years ago. That makes lamprey hundreds of millions of years older than the dinosaurs, sturgeon, salmon, and humans. Their survival strategies are so

successful that they lived through at least four mass extinction events on Earth.

The life cycle of Pacific Lamprey is one of many transformations and long journeys. Their range spans the upper Pacific Rim from Mexico to Japan.

When it is time to spawn, adult lamprey migrate upstream to build nests, or redds, in habitat similar to what salmon prefer, with gravel bottoms and slower currents. However, rather than returning to native streams to spawn as salmon do, lamprey follow the pheromone signals of live baby lamprey in the larva stage, called ammocoetes. Because of this, an Oregon lamprey can eventually spawn in Russian freshwater, following the

scent signals of existing larva. Spawning usually occurs between March and July, depending on how far they must travel. Both males and females build the nests, using their powerful sucking mouths to move rocks into a circular shape for the eggs. Spawning males also use their mouths to hold the female while mating and can mate with multiple females in a single spawning event. Female Pacific Lamprey are especially productive and can lay up to 250,000 eggs. After spawning, the adults die within 3-36 days.

The eggs hatch in about three weeks. The tiny ammocoetes drift downstream until they find a low flow area with loose silt and gravel where they burrow down beneath the surface. They look and behave

much like earthworms; sightless, toothless, they grow to be 8 inches long. They filter feed, pushing their mouths up above the silt to catch passing particles and help mix oxygen and nutrients into the silt. There they stay, hiding in the streambed, for anywhere from 2-10 years.

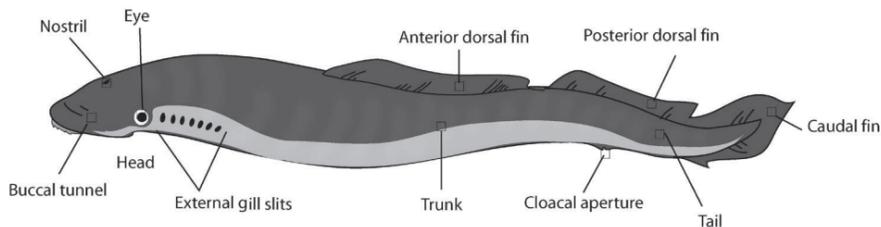
Juvenile lamprey, also called macrophthalmia, stop feeding, grow eyes and teeth, develop their suction mouths, and the ability to swim freely. They turn silver and, between July and November, begin their outward migration to the ocean. During this journey they can feed parasitically, preying on larger fish.

When they reach the sea, lamprey quickly swim away from shore, and have been found at depths over 4,800 feet where they feed and survive as parasites. They prey on pollock, hake, salmon, flatfish, rockfish, and many others. Much of their life and behavior during this time is unknown. Some adults return to fresh water to spawn as quickly as 6 months, while others stay at sea for over 10 years.

Adult lamprey are preyed upon by sharks, sea lions, birds, and many other marine mammals. They are calorie dense, which means they are an important food source for many predators and their presence brings some relief to salmon and other fish listed under the Endangered Species Act.

When lamprey at sea begin their migration to freshwater, they undergo one final transformation. Returning to fresh water streams in the spring

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