

## Pacific Lamprey (Eel) / Akraah / *Lampetra tridentata*



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### Cultural Importance

Akraah is an important food source for Karuk people, harvested during the upstream migration. The start of river fishing for eels is traditionally considered after the dogwoods bloom and extends through the end of the migration. (Karuk DNR 2010)

### Life Cycle & Habitat

As an adult, akraah is a parasitic species that feeds on various marine and anadromous fish. Adults live in the ocean for a few years before returning to freshwater, where they spend a year before spawning in gravel nests. After spawning, adults die, and their eggs hatch into larvae that reside and filter feed in silty or sandy substrates in freshwater for up to 7 years. Eventually, they transform into juveniles that migrate to the ocean, where they develop teeth on their sucking disks and take their adult form. One generation of lamprey occurs over the course of 2-3 generations of salmon. Their life cycle is long and they require fine sediment for their longest life stage—the larval stage. (Streif 2008)

### Akraah and Fire

Fire leads to increased sediment in streams, which can greatly benefit akraah in the larval phase. However, certain fire management strategies associated with high severity fire, such as the use of fire retardant, can have detrimental effects on these very larvae (CBB 2015, Soto 2016)

### Effects of High Severity Fire Across Time

Immediate	2-Year	Long-Term
<ul style="list-style-type: none"> <li>Smoke shading of river and potential inversion cooling benefits lamprey</li> </ul>	<ul style="list-style-type: none"> <li>High severity burned watershed with erosion impact downslope/stream habitat quality and suitability</li> </ul>	<ul style="list-style-type: none"> <li>After initial post-erosion sediment geomorphic stabilization, potential fine sand substrates increase ammoncoete habitat.</li> </ul>
Sources:	Sources: Peterson 2006	Sources: Peterson 2006

### Effects of Karuk Cultural Burning Across Time

Immediate	2-Year	Long-Term
<ul style="list-style-type: none"> <li>Patch, stand, and landscape mixed-severity fire regimes buffer extreme climate or fire disturbance events on hydrology and habitat for lamprey</li> </ul>	<ul style="list-style-type: none"> <li>Mixed severity burned landscapes release moderated amounts of sediment and water exfiltration (springs/seeps) into rivers and streams, improving larval habitat</li> </ul>	<ul style="list-style-type: none"> <li>Cultural burning across the landscape as mixed-severity fire buffer extreme climate or fire disturbance events on hydrology and habitat</li> </ul>
Sources: Peterson 2006	Sources: Soto 2016, Peterson 2006	Sources: Peterson 2006

### Effects of Federal Fire Management Strategies on Species' Climate Change and Fire Resilience

Prior to Fire	During Fire	After Fire
<ul style="list-style-type: none"> <li>Fire suppression prevents fire from contributing vital sediments and flows to aquatic systems</li> </ul>	<ul style="list-style-type: none"> <li>Fire retardants, suppression fuel-petrol (vehicle, equipment, drip torch) enter aquatic systems affect survival of lamprey, particularly in larval stage</li> </ul>	<ul style="list-style-type: none"> <li>Salvage logging may increase erosion and detrimental sediment pulses to aquatic habitat (lower gradient creeks near confluence with rivers)</li> </ul>
Sources: Peterson 2006, p. 70, 74	Sources: CBB 2015	Sources: Peterson 2006