

Pacific Giant Salamander / Púfpuuf / *Dicamptodon tenebrosus*



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Cultural Importance

In Karuk beliefs, púfpuuf is a spiritual being who transform into a salamander who monitors spring and creek water quality and quantity. As an indicator species, Karuk people consider púfpuuf the keeper of pure cleaner water. The healthy presence of púfpuuf is indicative of a healthy riparian freshwater ecosystem.

Life Cycle & Habitat

Púfpuuf occurs in moist and riparian forests in or near clear, cold streams and rivers, springs, creeks, lakes, and ponds. Population densities are highest in creeks with many large rock/stones and woody material in or under which púfpuuf can take shelter. Larvae

are born in water where they swim using an enlarged tail fin and breathe with filamentous external gills. They eventually transform into four-legged salamanders that live on the ground and breathe air with lungs. Some adults retain their gills and continue to live in water. (Californiaherps.com 2016).

Púfpuuf and Fire

High severity fire has the potential to burn terrestrial adults, their prey and shelter (woody material), as well as have mid-term effects on forest moisture levels that are vital for salamander habitat. Cultural burning provides benefits to aquatic salamander habitats by increasing stream productivity. In addition, mixed severity cultural burning serves as an intermediate renewal process that reduces high severity detrimental fire effects.

Effects of High Severity Fire Across Time

Immediate	2-Year	Long-Term
<ul style="list-style-type: none"> • Death by fire for terrestrial adults inhabiting upland spaces • Reduction in prey and shelter in upland settings • Alterations to microclimate that could affect survivability 	<ul style="list-style-type: none"> • Drier forests as a result of a more open canopy can compromise the habitat of terrestrial adults • Debris flows with excessive sediment can reduce instream and riparian suitable habitat 	<ul style="list-style-type: none"> • Removal of forest density and cover can increase water yield and instream habitat. • Legacy of debris flows contribute to pulses of structural habitat
Sources: GTR-NE-288, Bury et al. 2002 in GTR-NE-288,	Sources: Bury et al. 2002 in GTR-NE-288, Pettit and Naiman 2007	Bury et al. 2002 in GTR-NE-288, Pettit and Naiman 2007

Effects of Karuk Cultural Burning Across Time

Immediate	2-Year	Long-Term
<ul style="list-style-type: none"> • Takes into account salamander life cycle and avoids burning while salamanders are most vulnerable to death by fire 	<ul style="list-style-type: none"> • Potential benefits from increased stream productivity resulting from fire. • Recruitment of wood material from dead trees to aquatic and riparian systems 	<ul style="list-style-type: none"> • Diversified fire effects from mixed fire severity regime provide temporal and spatial complexity of habitat. • Reduction of high severity fires.
Sources: Karuk ECRMP 2010 , Pilliod et al. 2003	Sources: Bury et al. 2002 in GTR-NE-288, Dwire and Kauffman 2003	Sources: Perry et al. 2011

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"> • Fire excluded riparian habitats increases fuel loading/fire risk 	<ul style="list-style-type: none"> • Certain fire retardant chemicals can be highly toxic to amphibians 	Higher severity burned riparian area reduce suitable habitat
Sources: Dwire and Kauffman 2003	Sources: Pilliod et al. 2003	Sources: Pilliod 2003, Bury 2004,