

Patterns of Stream Amphibian Occurrence across the River Continuum in Northern California Redwoods

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Redwoods parks and other protected areas are not only reserves for impressive trees but also intact, unique, environments that serve as refugia for several species, including endemic species of stream amphibians. These amphibians have many vital roles in aquatic ecosystems and, because of their sensitivity to environmental change, are used as indicators of forest health. Three families of stream amphibians represent ancient lineages that now only occur in the Pacific Northwest: Pacific Giant Salamanders, Torrent Salamanders, and Coastal Tailed Frogs. We analyzed landscape patterns for these species, and additionally, Yellow Legged Frogs, a species recently proposed for federal listing.

Our study goal, outside of a general survey, was to define landscape variables determining the distribution and abundance of amphibians in redwood parks of northern California. Our specific objective was to determine the role of stream size/order (amphibian stream continuum associations) within the function of many variables influencing amphibians. Our sites were clustered into three general areas, one northern group close to the Oregon border (Jedediah Smith State Park), one warm inland group (Humboldt Redwoods), and one coastal southern group (Mendocino parks).

We conducted field survey in 2015 at a total of 54 waters: 14 seeps/headwaters, 14 creeks (approx. 1-m wide), 15 streams (2-3 m wide), and 11 large streams/rivers (≥ 4 -m wide). Pacific Giant salamanders were in all waters except the largest streams and rivers. We found many tadpoles of Yellow-legged frogs in larger waters where they breed, and we found a few adults in small waters. Both of these species were common throughout our study area. In contrast, we found Torrent Salamanders and Tailed Frogs only in headwaters and creeks with a few Tailed Frog exceptions in large creeks. Both of these species were scarcer at the southern end of our study area. Considering that we were primarily surveying intact Redwood State Parks, the low numbers of Torrent Salamanders and Tailed frogs found is a concerning trend.

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