

Amphibian Response to Management

Headwater stream buffer effects on animals after two thinnings: The plot thickens!

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The Density Management and Riparian Buffer Study of western Oregon examines upland thinning treatments to accelerate development of late-successional forest conditions, while retaining headwater stream habitats and biota. Eight, 40-60-year-old Douglas-fir stands on Bureau of Land Management lands were thinned twice, and we examined 52 stream reaches for the effects of four different riparian buffer treatments on instream and bank vertebrates. The four buffer treatments included one site-potential 200 to 240 foot tree height riparian buffer, 50-foot minimum width variable-width buffer, approximately 20 foot streamside-retention buffer, and a no-entry zone 2-tree thin-through riparian buffer. Analyses showed significant effects of buffer treatments on abundance of all fish species and amphibian species, including stream-breeding amphibians, sculpins, coastal giant salamanders, and both southern and Columbia torrent salamander species. Animal counts were higher in the one site-potential 200 to 240 foot tree height riparian buffer treatment than in the three other buffers. Analyses of indicator species showed species associations with buffers: torrent salamanders with streams in unthinned uplands; northern red-legged frogs with streamside-retention buffers; and Oregon slender salamanders with thin-through buffers. Possible lag effects on relatively long-lived animals with sensitive status remain key concerns.



Torrent salamanders (*Rhyachotriton species*) are sensitive species found in headwater streams in western Oregon. They have associations with streams in one site-potential tree height (200 to 220 ft) buffers after two upland thinnings, and control streams in unthinned second-forest stands. Photo by W.P. Leonard.