

Log and Soil Temperature Profiles in Managed Headwater Sub-basins in the Oregon Coast Range: Implications for Wildlife Habitat

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Poster Abstract

Down wood provides important faunal microhabitat in forests for many invertebrate taxa, small mammals, and amphibians. Habitat suitability of down wood as refugia is an increasing concern in managed forests of the US Pacific Northwest, where overstory reduction may result in both reduced down wood recruitment and increased temperatures within logs, which may make them unsuitable habitat refugia. We examined temperature regimes inside logs and soils to assess buffering capabilities against summer temperature extremes and potential habitat suitability for plethodontid salamanders. Temperature profiles of small- (0.3–0.45 m) and large- (0.7–1.0 m) diameter logs, as well as ambient soil and air temperatures, were measured in a 60-year-old forest stand under different slope positions (0–5 m and 35–40 m from stream edge) in three case studies: 1) along a headwater stream with a narrow riparian buffer (~6 m) and moderate upland thinning; 2) along a headwater stream with a wider riparian buffer (~15 m) and moderate upland thinning; and 3) along a headwater stream with an unthinned upland. Streamside and upslope maximum air temperatures experienced on all three streams during our study were near to or exceeded critical temperatures for western plethodontid salamanders (i.e., ~30°C). Streamside and upslope temperatures inside small logs, large logs, and soils stayed below critical temperatures. Our results suggest that logs of a wide size range as well as soils may provide sufficient protection against thermal extremes in uncut forests and thinned stands with limited overstory.

Keywords: Down wood, riparian, thinning, microclimate, salamander habitat.

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Photos, facing page—Top: How do we keep understory regeneration standing through the 2nd thinning entry? Yachats STUDS site, Siuslaw National Forest, July 2009. **Center left:** Blowdown along a ridge, North Soup Creek DMS site March 2009. **Bottom left:** Ferns, understory, and underplanting, STUDS site, June 2007. **Lower right:** Future yarding corridors may need to be planned at the time of the first thinning to retain anchor trees. North Soup Creek, March 2009. All photos by Paul Anderson.