



US Forest Service R&D PNW Research Station

Project Title: Climate Change and Lentic Habitats in Montane Forests of the Cascade Range in Oregon and Washington

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Project Description: We are examining snowpack levels in the Oregon and Washington Cascade Range, and the potential effects of low or variable snowmelt water availability for lentic habitats. In particular, our models determine locations across this montane landscape where low and unstable snowpack levels may adversely affect ecological and biological processes of lentic habitats, such as habitat suitability of ephemeral ponds for amphibian breeding and larval survival. We show that water retention in lentic habitats in the Oregon Cascade Range may be more vulnerable to climate change than those in the Washington Cascade Range because of lower snowpack levels, higher annual fluctuations in snowpack levels, and higher summer temperatures. Identification of geographic locations vulnerable to scenarios of climate change may be used to focus conservation efforts, such as to manage habitats for connectivity and to minimize additional human-induced threats. We develop conservation considerations for the endemic Cascade Frog, *Rana cascadae*, a species of concern that is reliant on ephemeral ponds in the high elevation Cascades.

Project Deliverables:

Suzuki, N. 2009. Climate change in the Pacific Northwest. Spotlight 2. In: Olson, D. coord. ed. Herpetological conservation in northwestern North America. Northwestern Naturalist.

Suzuki, N. and D.H. Olson. Climate change and lentic habitats in montane forests of the Cascade Range in Oregon and Washington, USA. Forest Ecology and Management (submission in January 2009).

Project Outcomes: Our project will provide maps to allow managers to make more informed decisions regarding locations to more effectively focus species and habitat conservation measures. For example, we show that under the climate change scenarios that we have examined, lentic habitats are less vulnerable to change in the Washington Cascade Range than in the Oregon Cascade Range. Consequently, maintenance of species reliant on those habitats, such as the Cascade Frog, will likely be more successful in Washington. However, in Oregon, our maps can guide conservation efforts to areas that are less likely to change, and can aid species conservation by reducing habitat disturbances from other potential anthropogenic stressors. Similarly, reducing disturbances to dispersal corridors among these less vulnerable locations could benefit those species.