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The Cascade Frog, *Rana cascadae*, in the North Coast Range of California

Dumas (1966) noted that one of the most puzzling distributional problems in the Pacific Northwest related to the frog genus *Rana*. Until recent years, the variation and distribution of the red-legged frog, *R. aurora*, and the Cascade frog, *R. cascadae*, were obscure. These frogs closely resemble each other in external morphology, and Stebbins (1951) considered the latter a race of *R. aurora*. However, Dunlap (1955) demonstrated that *R. cascadae* was a distinct species. It inhabits areas above about 1000 m in the Olympic Mountains of Washington and in the Cascade Mountains of Washington, Oregon, and north-central California (Altig and Dumas, 1971). *Rana aurora* ranges from southwestern British Columbia to northwestern Baja California, usually at low elevations, but there are records up to 2700 m elevation. In northern California, *R. cascadae* occurs in mountainous regions in the vicinity of Mt. Shasta and Mt. Lassen, both in the southern extension of the Cascade Mountains. In the Coast Range of California, *R. boylei* may occasionally be found at high elevations, but it is more often encountered below 1500 m.

Several major mountain uplifts form the northern part of the Coast Range (see Bury, 1970). In June, 1972, no frogs were found in a search of one montane lake in the Yolla Bolly Mountains located in southern Trinity County and northern Lake County. But this region merits further field work because it contains a number of montane ponds and lakes which have not been searched for amphibians.

The Trinity Alps in northern Trinity County were explored during 1970. On August 19-20, I observed several hundred ranid frogs in "L" Lake and a small creek that forms the upper reaches of Canyon Creek. These frogs were sluggish in their movements. Two individuals were taken for close examination. Those animals examined in the field and in the laboratory lacked red color and had distinct, inky spots on their backs (Fig. 1). I identify them as *R. cascadae*. Comparison of this new material with preserved specimens at the California Academy of Sciences (CAS) and the Museum of Vertebrate Zoology (MVZ) revealed that a number of *R. cascadae* have previously been taken in the Trinity Alps of northern Trinity County and southern Siskiyou County, California. Further, I reexamined four frogs from this region previously identified as *R. aurora* (Bury, 1970); these appear to be *R. cascadae*. There are now six localities known for *R. cascadae* in the Trinity Alps, as follows:

Locality Records.—TRINITY COUNTY: $\frac{1}{8}$ mi. NW Upper Canyon Creek Lake, 1770 m elev. (MVZ 94817-818); Black Basin, Deer Creek drainage, 2015 m elev. (MVZ 97944-946); Ward Lake, Swift Creek drainage, 2165 m elev. (MVZ 97948-951); Upper Nasb [=Nash] Mine (CAS 91517); SISKIYOU COUNTY: Gumboot Lake (CAS 13303-305); Dale Creek Meadows, N.E. side of Mt. Eddy, 2105 m elev. (MVZ 71063-070).



Figure 1. Adult *Rana cascadae* from "L" Lake, $\frac{1}{8}$ mi. NW Upper Canyon Creek Lake, Trinity County, California. Photograph by Dr. Nathan W. Cohen.

These sites are all at high elevations (1770-2165 m) where other ranid frogs are rare or absent. Occurrence of *R. cascadae* in the North Coast Range of California follows the distribution pattern of other montane amphibians (Bury, 1970). In the past the Coast Range apparently has served as a route for the southward dispersal for a number of amphibians associated with the Arcto-Tertiary Geoflora; and now several species, such as *Rana cascadae* and the long-toed salamander, *Ambystoma macrodactylum*, apparently are isolated in montane refugia during these essentially interglacial times.

The Trinity Alps populations of *Rana cascadae* extend the known range of the species 50-60 airline miles west of localities near Mt. Shasta and represent the first report of the species outside of the Cascade Mountains in California. The areas of sympatry and ecological separation of ranid frogs in northern California is complex and further study on these species is needed.

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