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DESCRIPTION AND LIFE-HISTORY OF A NEW RANA FROM WASHINGTON

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In the preparation of a comprehensive account of the Amphibians of Washington, I find it advisable to establish a new species and to record its life-history.

Rana cascadae sp. nov.

Description of Type.—Form moderately slender; head broad; external nares halfway between tip of muzzle and orbit; canthus rostralis prominent; orbit moderate; interorbital space about two-thirds length of orbit; moderate ridge on upper jaw, beginning anterior to the orbit and extending posteriorly to foreleg; tympanum inconspicuous, round, diameter about one-half length of orbit, separated from orbit by about two-thirds of its diameter; foreleg stout; palm with three elongated tubercles; sesamoid tubercles very prominent; digits stout, in order of decreasing length, 3, 4, 1, 2; dorso-lateral folds broad and prominent; hind leg slim; tibia nearly the same length as femur; tarsus greater than one-third length of foot; two metatarsal tubercles; toes stout, in order of decreasing length, 4, 3, 5, 2, 1; web moderate.

Tongue narrow oval, posterior end with well developed lobes attached by anterior one-half to floor of mouth; internal nares slightly overlapped by upper jaw; vomerine teeth mostly posterior to line joining centers of internal nares, two areas of which converge posteriorly and nearly join; maxillary and vomerine teeth small.

Surfaces generally smooth with slight roughening on dorsal surface of body, posterior femur, and dorsal tibia.

General coloration dorsal surface slight greenish-brown with many black spots about three millimeters in diameter; dorso-lateral folds light brown; sides, green-brown mottled with black and fading to light yellow toward ventral surface; space behind eye including ear, and line under canthus rostralis, dark brown; ridge along upper jaw, yellowish; lips, mottled; throat and under-surfaces of body and limbs, very light yellow; upper surface fore limb, mottled and slight bar; hind limb with broken dark bands.

Type.—C. P. S. No. 2383, an adult female from Elysian Fields, Rainier National Park, Washington. Elevation 5700 feet. Collected by the author, June 19, 1938.

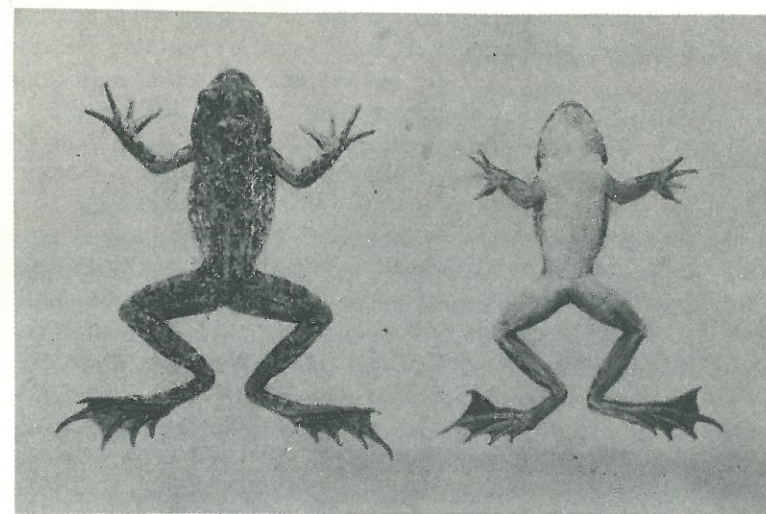
Paratypes.—Sixteen paratypes (C.P.S. 2384-2399) collected in the same place and on the same day by John W. Slipp and the author show variations in color and shape. The number of black spots on dorsal surfaces range from very few to about fifty. Individuals can change their ground color between the spots from gray-brown to nearly black. The tip of the muzzle in some is oval in outline from above while others have it nearly pointed. The type as pictured appears stouter than most of the paratypes because she was carrying mature eggs when captured.

MEASUREMENTS OF TYPE AND FIVE PARATYPES

C. P. S. No.	2383	2388	2387	2384	2386	2385
Sex	♀	♂	♀	♂	young	young
Head and Body Length.....	63.5	53.3	56.5	52.0	37.5	23.7
Length of Head.....	19.9	17.8	18.6	17.0	12.5	8.5
Width of Head.....	22.5	18.7	19.3	18.9	13.2	8.2
Orbit.....	7.0	5.6	5.1	5.4	3.5	2.7
Interorbital Space.....	4.1	3.4	4.1	2.9	2.8	2.5
Forearm.....	15.8	14.1	14.4	14.2	8.8	5.5
Hand.....	15.7	13.7	14.1	14.4	9.6	5.5
Femur.....	31.0	25.5	26.6	26.3	18.4	11.9
Tibia.....	35.0	27.3	30.6	28.0	19.7	11.6
Tarsus.....	18.4	15.3	15.3	14.9	10.5	6.0
Whole Foot.....	48.7	42.6	44.0	39.9	28.0	16.0

Range.—On life zones *Rana cascadae* is typically a Hudsonian frog. I already have specimens in my collection from the higher parts of the following counties of the State of Washington: Chelan, Clallam, Kittitas, Lewis, Mason, Pierce, Skagit, Skamania, Snohomish, and Yakima; and one specimen from Pottsville, Idaho. It will likely be found in Oregon, British Columbia, and possibly Alaska.

PLATE XIV

*RANA CASCADAE* sp. nov.

This is the only *Rana* which I find in the Hudsonian Zone of this state. *Rana aurora aurora* and *Rana cascadae* overlap a little in distribution in the Canadian Zone.

Eggs.—The different jelly envelopes average as follows: outer 11.3, middle 5.8, inner 4.9, while the egg proper is 2.25. Color of egg is very dark on upper three-fourths and light cream below.

Tadpoles.—The teeth are in two upper rows with a small gap in center of second row and four lower, three of which are nearly full length while the fourth is about one-fourth the length of the others. Tadpoles at hindlimb bud stage are 34 millimeters and when the toe buds show on hind limb they are about 40 millimeters.

Life-history.—Spawning period is from May 20 to July 10 depending on how much snow there is to melt before the ponds appear; eggs deposited in small ponds in numbers up to 425 by single female, hatch in 8 to 20 days; larval period 80 to 95 days, with very few tadpoles living over to following summer; transformation size for most of them 14 mm. or less; size at one year after transforming about 30 mm.; sexual maturity reached at end of three full years or possibly four.

Remarks.—Some previous collectors have placed specimens of this species with *Rana aurora aurora* while others have called them *Rana pretiosa* but it appears to me that *Rana cascadae* may be more primitive than these other two species. This species is named from the region in which I first found it which is the Cascade Range.



NOTES ON THE NEWT *TRITURUS VIRIDESCENS*

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Accounts of the life history of *Triturus viridescens viridescens* (Rafinesque) indicate that the duration of the terrestrial red eft stage may vary in different localities. Pope (1924) estimates that it lasts three and a half or four years, while Noble (1926 and 1929) reports a complete absence of this stage in newts on Long Island and in the Woods Hole region. Hausman (1936) reports keeping a red eft in a glass-covered terrarium for seven years without any indication of its changing to the aquatic form.