Cascade Torrent Salamander

(formerly Olympic Salamander)

Taxon, Status, and Rank

Species	*Rhyacotriton cascadae* Good and Wake formerly *Rhyacotriton olympicus*
Family	Rhyacotritonidae (Torrent Salamanders)
Status	State Candidate Species
State Rank	S3
Global Rank	G3

General Description

This is a small salamander that rarely exceeds 56 mm snout-vent length. The head is small with a short rounded snout and large prominent eyes. The body is relatively long with short limbs and a short tail. Coloration is brown above and yellow to orange-yellow below. White speckling is scattered on the body, but tends to be most concentrated on the sides. Varying amounts of dark dorsal spotting or mottling are a prominent feature of the color pattern, and a few black spots are often present on the belly. Males have prominent squared vent lobes, a trait unique to the family and the genus. The larvae have greatly reduced gills and tail fins, well-developed functional limbs, prominent dorsally positioned eyes that do not greatly protrude, and a white (young larvae) to yellow-orange belly. Eggs have not been found in the wild, suggesting females hide them well, perhaps in fractured rock or deep in springs. As in other members of the genus, eggs are thought to be unpigmented, laid singly and not attached to the substate. See Photos Page.

Identification Tips

The large size of the eyes (eye diameter approximately equal to snout length), relatively short rounded snout and generally prominent yellow component to the belly color are features that help distinguish torrent salamanders from other Washington salamanders. Adult male torrent salamanders can be distinguished from all other salamanders by the presence of prominent squared vent lobes. Superficially, metamorphosed torrent salamanders resemble Woodland Salamanders (*Plethodon* species) and Ensatina, but torrent salamanders lack nasolabial grooves and a constriction at the base of the tail (unique to Ensatina). Torrent salamanders and Rough-skinned Newts have a similar color patter, but differ in overall appearance with newts being stockier, having a thicker skin that is often rough (in the terrestrial phase) and lacking costal grooves. Torrent salamander larvae are the only stream-adapted (i.e., small gills and reduced tail fin) larval salamanders in Washington with a yellow to orange belly. The color pattern and morphology of torrent salamander species are similar and variable; therefore, torrent salamander species are best identified by collection locality and how that relates to the documented ranges of each species. Leonard et al. (1993) provide more details on color pattern differences between torrent salamander species. See Key Features Page.

Phenology

Cascade torrent salamanders may be active year-round at lower elevations. Breeding phenology is unknown, but may occur during most of the warmer months of the year. Based on the size distribution of larvae, eggs are most likely laid in the spring. Females produce relatively few eggs (usually less than 15). Based on laboratory observations, torrent salamander species may have the longest incubation period of any North American salamander, lasting 210-290 days at 8° C. The larval period is also though to be long, as a Columbia Gorge population was estimated to require 4.5 years before metamorphosis.

Range

Distribution in Washington is restricted to the western slopes of the Cascade Mountains south of the Nisqually River to the Columbia River in the Western Cascades Ecoregion. Distribution within the range is patchy. See Distribution Map.

For information on the complete range of this species, see NatureServe Explorer.

Habitat and Habits

Cascades Torrent Salamanders inhabit cold, permanent streams, seepages and waterfall splash zones, typically in areas with a thick canopy cover. They usually occur in stream segments or off-channel habitats that are shallow, slow flowing and that have gravel or rock rubble that is silt-free. Association with rock is also typical in seepages and waterfall splash zones. Larvae are fully aquatic. Adults are strongly associated with water and individuals are almost always found in contact with either free water or saturated substratum. During rainy wet periods individuals may be found in wet terrestrial forest settings away from streams or seepages. Cascades Torrent Salamanders can be locally common to abundant where they occur.

MacCraken (2004) recently described the first Cascade Torrent Salamander nest. The nest was found on 14 August 2003 in a 2nd-order headwater stream on the west slope of the Cascade Mountains in Skamania County. The nest, containing 5 eggs, was found under a cobble-sized (14 x 15 x 5 cm) rock in the middle of a calm stretch of the stream channel 10 cm deep x 60 cm wide x 72 cm long. The eggs were not attached to the substrate or each other. This differs from other Rhyacotriton that are described as laying eggs in deep cracks and crevices of springs and seeps.

State Status Comments

The relatively small range and narrow habitat requirements contribute to the species' current status. Mature forests, the optimal habitat for this species, have been greatly reduced by frequent harvest intervals over much of the species' range.

Inventory and Research Needs

Distribution and natural history should continue to be investigated. Habitat affinities for larval and adult salamanders, especially egg-laying habitat need to be better understood. Research is needed on the effects of roads and logging population persistence. Research addressing the seasonal movement patterns, especially the recolonization abilities of this species, is also needed.

Threats and Management Concerns

Management activities that alter the hydrology, water temperature or integrity of small streams, headwaters and seeps are reported to cause density declines in other torrent salamander species. Increases in sedimentation may be particularly problematic for this group.

References

Leonard et al. (1993), MacCracken (2004), Nijhuis and Kaplan (1998), Nussbaum et al. (1983), Nussbaum and Tait (1977), Petranka (1998), Stebbins and Lowe (1951), Welsh and Lind 1996.

Hallock, L.A. and McAllister, K.R. 2005. Cascade Torrent Salamander. Washington Herp Atlas. http://www.dnr.wa.gov/nhp/refdesk/herp/

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