

Columbia Torrent Salamander

(*Rhyacotriton kezeri*)



Species Description

Columbia torrent salamanders are long-lived, highly aquatic amphibians that are closely associated with cool, clear headwater streams. They are slim, mid-sized salamanders with a short tail, a small head, rounded snout, and protruding eyes. They are dark brown with no dark spots on their back, and bright yellow or orange underneath. Adult males are slightly smaller than adult females, and have squared off lobes at the base of the tail. Adults may grow to be three to four inches in total length, snout to tail.

Columbia torrent salamanders are one of four species of torrent salamanders that were treated as one species (the Olympic torrent salamander, *Rhyacotriton olympicus*) until 1992 when genetic analysis showed these species were distinct. These species are very difficult to distinguish based on morphological characteristics, though there are subtle differences to look for in identifying them. Geographic location is important to note when identifying specimens in this genus. Columbia torrent salamanders can be distinguished from the other three species by the absence of spots or blotches on their backs. They have a straight, relatively indistinct line of demarcation where the ground color changes between the color on their back. Location is important to note in identifying these species.

Range and Distribution

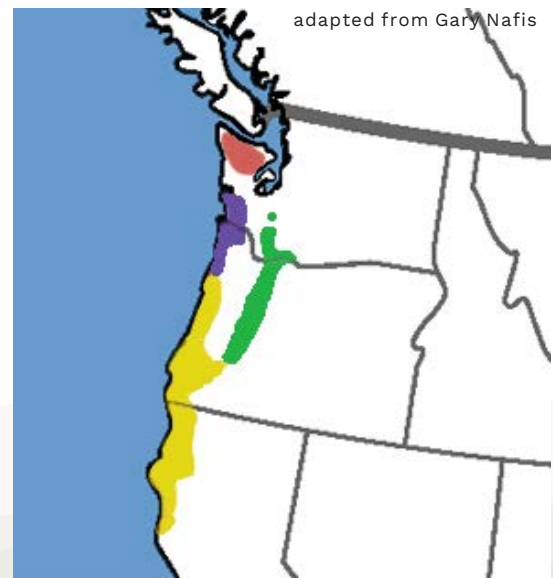
Columbia torrent salamanders are found in headwater streams of the Coast Range in southwest Washington and northwest Oregon. They patchily distributed throughout coastal and near-coastal regions from Tillamook County northward to southwestern Washington.

Habitat Characteristics

Columbia torrent salamanders are obligates of cool, clear streams including headwaters, springs, and seeps with a substrate of gravel and cobble. They are typically found in riparian areas within mature, late-successional forests which provide microclimatic stability, high humidity, low sedimentation rates into streams, and a canopy that helps to maintain cool water temperatures. Streams used tend to have leaf and moss cover, and typically have bottoms made up of basaltic rock. Adults can be found in upland areas near these headwater streams in moist conditions.

Diet and Foraging

Columbia torrent salamanders are invertivores. Their diet is composed of aquatic and semi-aquatic invertebrates. Larvae, or immature salamanders, primarily prey on copepods (small crustaceans) and true flies. Adults have a more varied diet, including arachnids, springtails, beetles, and true flies.



Approximate range of the genus *Rhyacotriton*

- *R. cascadae*, Cascade torrent salamander
- *R. olympicus*, Olympic torrent salamander
- *R. kezeri*, Columbia torrent salamander
- *R. variegatus*, southern torrent salamander

Life History and Ecology

Columbia torrent salamanders are relatively long lived and mature slowly. They undergo complete metamorphosis, or transformation, with distinct immature and mature body forms. Eggs develop for over 200 days before larvae, the immature form, emerge. Larvae are entirely aquatic. They have external gills, and a wide tail fin to help navigate the aquatic environment. After hatching, larvae likely take two or more years to reach metamorphosis when they transform into their mature form. Their lungs develop, their external gills shrink, and their tail fin shrinks. After metamorphosis, it likely takes an additional four years to reach sexual maturity. Adults are semi-aquatic, and may be found on land close to streams in moist, cool areas.

Columbia torrent salamanders are thought to have limited dispersal abilities, especially overland, and have very small home ranges. Studies of torrent salamanders have shown that individuals are largely sedentary, with short average daily movements recorded of less than eight feet. They may be capable of longer distance overland dispersal in optimal conditions when it is cool and moist. They are vulnerable to desiccation, or drying out. They have reduced lungs, and obtain oxygen, or breathe, through their moist skin.

They are *ectothermic*, or “cold-blooded,” which means they rely on the environment to maintain their body at the optimal temperature for metabolism. Torrent salamanders are adapted to the cool temperatures of the streams they live in, and are vulnerable to increases in stream temperature. They are active year-round, remaining in the same small home range.

Limited information on the life history of Columbia torrent salamanders is available, and much of the understanding of their life history and reproductive biology is derived from closely related species that were previously identified within the same species complex. Only a handful of their nests have been documented, suggesting nests are located in hidden or well-camouflaged, inaccessible locations. Documented nest locations were underwater in low-flow headwater sites in protected locations in crevices below rocks, under moss, or under logs. Individual clutches likely consist of 2 to 16 eggs.

Predators of Columbia torrent salamanders are not well documented.

Fun Facts

- When attacked, Columbia torrent salamanders raise their tail to expose the bright yellow underside. The skin on the tail secretes a toxic substance to deter predation and the bright yellow color serves as a warning.
- There are four closely related torrent salamander species, all endemic to the Pacific Northwest, which were considered one species until 1992 when they were split into four species following genetic analysis.
- As members of the lungless Plethodontidae family of salamanders, torrent salamanders have extremely small lungs and get almost all of their oxygen through their moist skin, so they can never be more than a few feet away from water.

Conservation

Adequate long-term population data does not exist, but it is thought that the species' population is decreasing due to human-caused effects, in particular certain forest management practices. Management activities that reduce canopy may lead to increased temperature and drying out of upland habitats that may further limit dispersal capabilities for this species due to their vulnerability to desiccation, or drying out.

The species is vulnerable to habitat changes that may change stream temperature or cause sedimentation in their streams, including forest management practices. Sedimentation, when fine particles settle out the water into the stream bed, can fill crevices between large gravel and cobbles that are important habitat components for this species. They have limited dispersal capabilities, as they are highly sedentary and require moist conditions to move overland.

You can help contribute to the conservation of Columbia torrent salamanders and other aquatic salamanders when hiking in their habitat. Be careful not to damage delicate riparian habitats by going off trail, pack out all trash, and dispose of waste responsibly. Walking in waterways or flipping over rocks can increase turbidity and cause unnecessary stress to salamanders. Avoid handling salamanders when you find them, as they have very absorbent skin. Oils, salts, and products on your hands may damage the skin of salamanders.

They are an Oregon Conservation Strategy Species, and a Sensitive Species in Oregon. For more information about the conservation status of Columbia torrent salamanders including special needs, limiting factors, data gaps, and conservation actions, refer to the Oregon Conservation Strategy.