

# Columbia Spotted Frog (*Rana luteiventris*)



Photo credit: William Flaxington

## Species Description

Columbia spotted frogs are one of the most highly aquatic frog species native to the Pacific Northwest, and are rarely found out of the water. They are adapted for this aquatic lifestyle, with upward oriented eyes that allow them to see out of the water while mostly submerged, fully webbed feet, and relatively short hind legs. These medium sized frogs grow up to two to four inches in length, snout to vent, with adult females growing significantly larger than males. Adults are variable in color, ranging from tan to dark brown, olive green, or gray on their backs to match their environment. They have moist bumpy skin covered in dark, leopard-like spots that darken with age. Their underparts are an opaque cream-color with a bright yellow or pink wash on their lower abdomen and legs. They have inconspicuous dorsolateral folds, or ridges of skin that run the length of their body on the sides of their back.

Oregon spotted frogs and Columbia spotted frogs were classified as one species until genetic analysis showed that they were distinct species. The two spotted frog species are nearly identical morphologically, so habitat and range are important in determining which species you may be looking at. Northern red-legged frogs and Cascades frogs are two species native to Oregon that may be mistaken for spotted frogs. Spotted frogs can be distinguished from these other similar species by their upward oriented eyes, and large black spots with ragged edges.

## Range and Distribution

Columbia spotted frogs occur in scattered locations throughout the western United States, most of British Columbia, and southeastern Alaska at elevations typically ranging from about 1,700 to 6,400 feet.

In Oregon, Columbia spotted frogs can be found in the far eastern part of the state. They have been found living as high as 7,370 feet on Steens Mountain in Harney County.

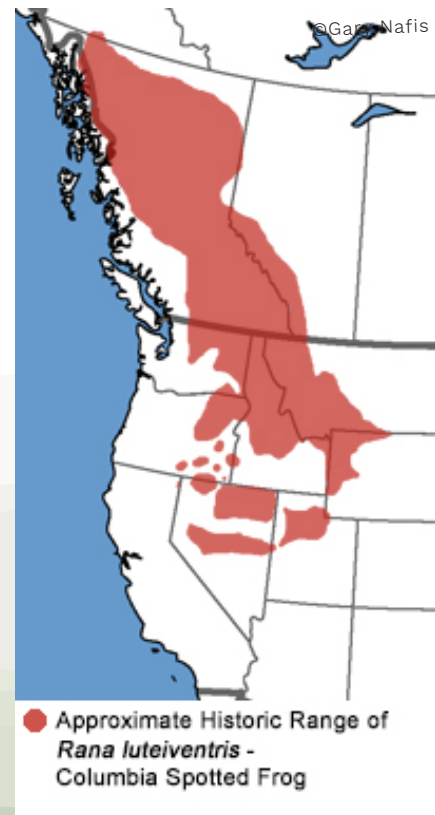
## Habitat Characteristics

They are highly aquatic frogs associated with clear, slow moving water within sage-juniper shrublands including lakes, slow-moving streams, ponds, and marshes. They require emergent vegetation and standing water for breeding habitat. During the non-breeding season, they make their homes among willows and other emergent vegetation.

Little is known about Columbia spotted frogs' overwintering habitat, though it is understood that they require permanent water that does not freeze through. The most commonly documented overwintering locations have been spring-fed ponds containing willows.

## Diet and Foraging

Adults hunt using their long sticky tongue that they shoot out of their mouths to catch prey. Adult diet varies, but they typically forage in flooded meadows for insects, spiders, snails, and other invertebrates. Tadpoles feed on algae, detritus (dead organic matter), and bacteria.



## Life History and Ecology

Columbia spotted frogs are always found near water. They do not migrate long distances, as their movement is limited to wet riparian areas. Individuals may migrate short distances between summer and winter habitat if one site does not provide all necessary life history attributes. They are not territorial. Like other amphibian species, they are *ectothermic*, which means they rely on the environment to maintain their body at the optimal temperature for metabolism.

In the spring, adult Columbia spotted frogs emerge from their overwintering habitats to congregate at breeding sites. Males arrive to the breeding grounds first to advertise for potential mates with a series of calls. Breeding takes place between late March and April in the lower elevations of southeastern Oregon, and between late May or early June at higher elevations, with activity beginning after the winter thaw. Eggs are laid on the surface of the water in large masses of 200 to 500 eggs. Females have a strong tendency to lay their eggs communally, and as many as 25 or more egg masses, each with hundreds of eggs, may be found in one spot. The length of time eggs take to develop is dependent on ambient temperature.

Columbia spotted frogs undergo complete metamorphosis, and have distinct immature and mature forms. Tadpoles, the immature form that emerge from eggs, are entirely aquatic, have gills, do not have legs, and have a tail. Metamorphosis, when individuals metamorphose, or transform, from their tadpole form to their mature adult form, occurs in the first year from late July at lower elevations through October in higher elevations. During metamorphosis, tadpoles grow legs, reabsorb their tail, and develop lungs.

The oldest Columbia spotted frogs documented lived to 12 to 13 years, though three to four years for males and a five to eight year lifespan for females is more common. Frogs that live in colder areas have shorter expected lifespans. Columbia spotted frogs have high mortality during embryonic development and as tadpoles. Eggs are vulnerable to desiccation and freezing, as they are laid in areas that are prone to drying out or freezing as environmental conditions change. Tadpoles face steep predation pressure from a variety of predators, even including adult Columbia spotted frogs.

Predators of Columbia spotted frogs include American bullfrogs, herons, river otters, raccoons, and garter snakes. Larvae may be consumed by fish, diving beetles, or dragon fly larvae. They defend themselves with camouflage and by diving underwater and into debris.

## Fun Facts

- Columbia spotted frogs lay massive clutches of a few hundred to as many as 2,000 eggs depending on the size of the female. They have a strong tendency to lay their eggs communally, sometimes resulting in thousands of eggs in a single mass.
- Some Columbia spotted frogs have been documented to live as long as 12 or 13 years, although three to eight years is more typical.
- When attacked, they emit an alarm call best described as a long, startling shriek.

## Conservation

There are four currently recognized populations of Columbia spotted frogs: the Great Basin, Wasatch, West Desert, and Northern. Of the four populations of Columbia spotted frogs, only the Northern population are considered abundant and secure. The other three populations, including those that live in Oregon, are in decline.

Threats to Columbia spotted frogs that have contributed to population decline include habitat destruction and modification, predation and competition by nonnative fish and amphibians, hydrological changes such as down-cutting of stream channels, and siltation.

Many frog species and their habitat are vulnerable to disturbance. To help in the conservation of Columbia spotted frogs and other amphibians in aquatic habitats, make sure that when you're out in nature you pack out all of your trash, avoid damaging or disturbing sensitive wetland habitats by staying on established trails, and keep your pets on leash. Many frogs are sensitive to chemicals that may be on your skin such as sunscreen and insect repellent, so it is important to avoid handling amphibians whenever possible.

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