

# Western Toad (*Anaxyrus boreas*)



Photo courtesy of Chris Brown, USGS

## Species Description

Western toads are relatively large, stout-bodied amphibians that are well camouflaged. The color of adult western toads is highly variable: individuals can be anywhere from olive green to reddish brown or even black in color overall. On their underside, their skin is a mottled cream to tan with dark blotches. Regardless of body color, western toads have a distinct white stripe that runs down the middle of their back. This stripe is more prominent on females than on males. They have roundish bumps covering their dorsal surface, which are often reddish brown in juveniles, though this color is often lacking in adult toads. They have prominent kidney shaped bumps (*parotid glands*) behind their eyes, and horizontal pupils. Adult female western toads are larger than males, and can grow up to 5 inches snout to vent, though 4.3 inches is more typical. Adult males typically only grow up to 3.7 inches in length snout to vent. They can be found in a wide variety of habitats, even in riparian areas of the dry desert!

Distinct features that help to distinguish western toads from other toad species in Oregon are their horizontal pupils, distinct light stripe running down their back, and the shape of their parotid glands. Other similar species in Oregon include Woodhouse's toads and Great Basin spadefoots. Adult Woodhouse's toads have parotid glands that are longer and more oval shaped than western toads. Great Basin spadefoots have smoother skin overall than western toads, and have a characteristic black spade on the hind legs.

## Range and Distribution

Western toads are widely distributed in North America: their range extends from southeastern coastal Alaska and British Columbia to northern Baja California. They are found state-wide in Oregon, with the exception of the Willamette Valley and parts of the coast range, from near sea level up to 7,370 feet in the Steens Mountains in Harney county.

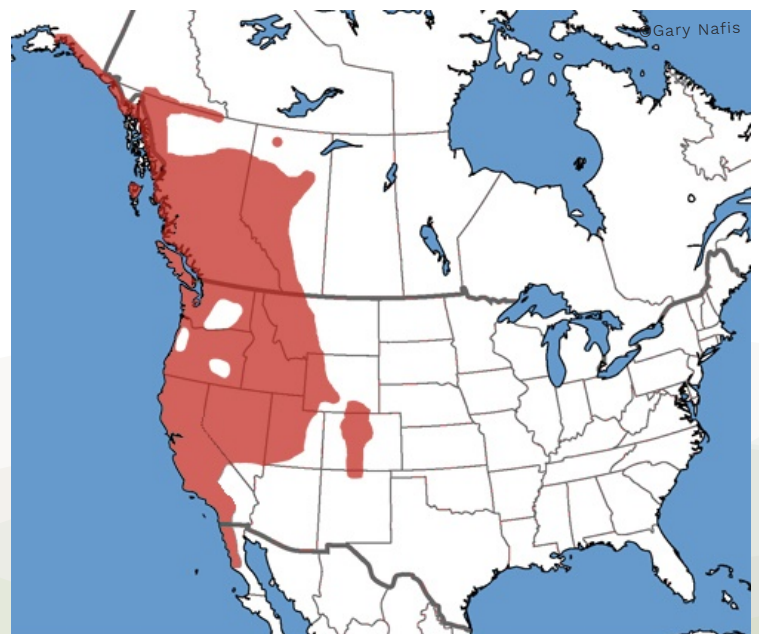
## Habitat Characteristics

Western toads can be found in a variety of aquatic and upland habitats near waterbodies, including mountain meadows, desert flats, and forested areas.

They typically breed in shallow, sandy margins of small waterbodies including lakes, streams, estuaries, beaver ponds, or even road ruts! Tadpole growth may be accelerated in areas with warm, shallow water and higher daytime temperatures.

Following the breeding period, adults remain in nearby marshes or riparian edges of breeding sites, or may travel several kilometers to other suitable habitat. They seek cover under shrubs, woody debris, rocks, and vegetation, and may dig shallow depressions in the ground, or use burrows of other animals. When juveniles leave breeding ponds, they use similar terrestrial habitat to adults.

Western toads overwinter underground in damp habitats including burrows, middens, abandoned beaver lodges, or in cavities below trees and decayed root tunnels.



● Approximate range of western toad, *Anaxyrus boreas*

## Life History and Ecology

In Oregon, western toads are typically active between February and late October. During the cold season they overwinter by burrowing into the ground in crevices and burrows deep enough to keep them protected from freezing conditions. They emerge from hibernation when the weather conditions are right in spring. Their activity depends on temperature and is influenced by weather conditions, latitude, and elevation. Like other amphibians, western toads are *ectothermic*, or “cold-blooded”, meaning they maintain their body temperature behaviorally. They bask to warm up, and may retreat to burrows or under rocks, logs, or other cover to stay cool.

Western toads are highly mobile. Though they are relatively slow-moving animals, they are capable of long-distance dispersal over land: they can travel over a mile from overwintering sites to their breeding grounds! After the breeding season ends, they may travel another mile or more to terrestrial sites for the summer, and then back to overwintering sites (or *hibernacula*) from late August to early September.

They return to the same breeding sites every year, gathering in large numbers to breed communally for a one to two-week period in the spring. The breeding period coincides with warming weather and snowpack melt, and timing varies year to year and by elevation. Males space themselves in suitable breeding habitat, and may compete for mating opportunities. Eggs are laid in long, intertwined strings at the bottom of shallow margins of lakes or ponds, or on vegetation or submerged branches. Tadpoles hatch from the eggs after only three to twelve days depending on water temperature. They *metamorphose* (transform) from tadpoles into their adult form after one to three months in late July or early August. During metamorphosis, they grow legs, reabsorb their tail, and develop lungs. Shortly after metamorphosis, juveniles depart the breeding pond in groups to terrestrial habitat. Males are sexually mature at three to four years old, and females at four to six years old. They can live over nine years.

Western toads, like most other amphibians, can obtain oxygen, or 'breathe,' through their skin in a process called *cutaneous respiration*. While underground, underwater, or inactive, they absorb oxygen through their skin to meet their needs. They also breathe through their lungs when active to supplement oxygen uptake.

Western toads move slowly by walking or hopping through their terrestrial habitat. This slow movement makes them vulnerable to predation. Common ravens, especially, have been noted to take many adult toads. Western toads produce skin toxins that cause many potential predators to avoid them. This toxin can be harmful to humans or pets if ingested.

## Fun Facts

- Their thick, bumpy skin helps them keep from drying out, allowing them to travel far from water.
- They lay their eggs in two long, intertwined strings containing up to 12,000 eggs each!
- Western toads are slow movers. Like many species of toads, they will usually walk or hop rather than leap like a frog.
- Male western toads do not have a specific vocalization they use to advertise during the breeding season. They do make an encounter or release call that is a faint series of chirps similar to the peeping of small chicks. This call helps to communicate with other toads during the breeding season to maintain territory and spacing. They also make this call when grasped by predators or other toads as a warning to let them go.

## Diet and Foraging

Western toads are ambush predators, waiting for prey either from a hiding spot in a shallow burrow or on the ground surface. The adult diet consists of a wide variety of invertebrates, including worms, beetles, bees, grasshopper, spiders, ants, and butterflies. Tadpoles eat algae, detritus, and occasionally carrion.

## Conservation

The western toad is a species that is widespread throughout the western U.S and Canada and can be locally common in suitable habitat. Data describing population trends for western toads are not widely available throughout their range. Sharp declines in local populations have been recorded throughout their range, and the drivers of these declines are poorly understood. In parts of the southern Rocky Mountains, die-offs have been attributed to fungal infections.

Declines in western toad populations have also been linked to habitat loss and fragmentation, especially of breeding habitat due to changes in water-level management. Roads create a barrier to movement for western toads; possibly interfering with travel between breeding and hibernating sites, and causing mortality at crossings near major breeding sites.

Like many other amphibians, western toads are sensitive to chemicals that may be on your skin. Western toads also produce toxins on their skin that can be harmful to humans and pets if handled or ingested, so it is best to avoid touching them both for your safety and the toad's safety. You can help protect western toads by avoiding them when you see them on roadways, and slowing down when traveling at night in areas where toads are known to be on roads. Recreational activities such as off-road vehicle use can be detrimental to western toad habitat and can cause incidental mortality. Always be safe when recreating, stay in designated areas, and protect habitats by not driving through delicate wetland ecosystems.

For more information about the conservation status of western toads including special needs, limiting factors, data gaps, and conservation actions, refer to the Oregon Conservation Strategy.