



6.0 Profiles of Amphibians and Reptiles

Salamanders

Family Ambystomatidae

Within Los Alamos County there is one species of mole salamanders. These salamanders live their entire life underground, emerging only to reproduce. The eggs of the mole salamanders are laid in the water and hatch into free swimming larvae called waterdogs.

- Tiger salamander (*Ambystoma tigrinum*)

Family Plethodontidae

The Jemez Mountains is the location for the endemic Jemez Mountains salamander, the only species in this family found in the area. This family is a group of lungless salamanders that breath through mucous membranes of the mouth and throat and through the skin. They seek shelter in caves, crevices in rocks, spaces between roots and stones, or within or under logs. Eggs are laid in rotting logs and rock crevices, although eggs of the Jemez Mountains salamander have never been located in the wild. The Jemez Mountains salamander is considered a species of concern by the US Fish and Wildlife Service and as threatened by the New Mexico Department of Game and Fish (NMDGF 1994).

- Jemez Mountains salamander (*Plethodon neomexicanus*)



Tiger Salamander

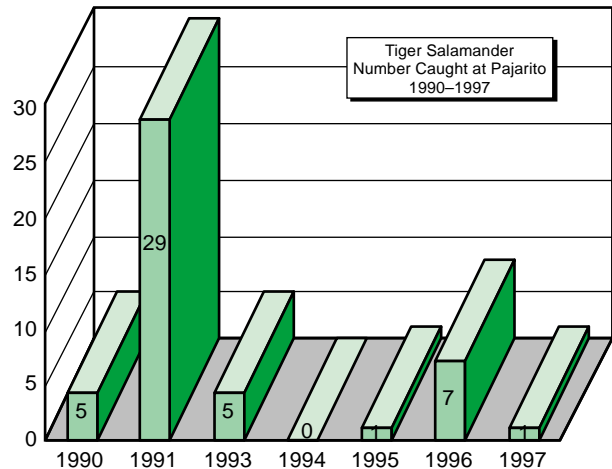
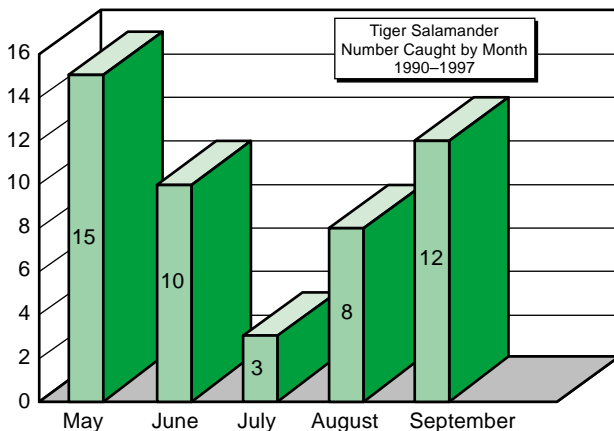
Family: Ambystomatidae
 Common Name: Mole Salamanders
 Scientific Name: *Ambystoma tigrinum*
 Common Name: Tiger Salamander



The range of this species stretches from the east coast to the west coast of North America, north to southern Canada, and south to Puebla, Mexico. In the spring after snow melt, these large, colorful salamanders can be found breeding in ponds, pools, and slow moving streams of Los Alamos County, including sewage lagoons. They are found at all elevations and have been noted in ponds at 2700 m (9000 ft) and sewage lagoons at 1950 m (6500 ft). Within the Pajarito wetlands, they are most commonly encountered in May and September. Generally, 2 to 5 captures were made each year, except for 1991, a very wet year. The numbers of captures were the least in 1994 and 1995, the driest years. Because of technical problems and hungry racoons, data for 1992 were unreliable and are not included.



Note the rounded snout and small eyes.



The mature adult has a large stocky body (15 to 40 cm [6 to 13 in.]), small eyes, and a rounded snout. Its color and skin pattern will vary according to where a population is located. Over much of its range, markings will consist of spots and bars of white, cream, or yellow on a black background.

During the breeding season, males arrive at slow moving streams first. The male produces a spermatophore then guides the female to it where she picks it up between the lips of her cloaca to fertilize her eggs. Eggs are laid from mid-March to mid-August, usually later in the season at higher elevations. The eggs hatch within 2 to 5 weeks. The immature emerge looking like tadpoles with distinct external gills. As they begin to metamorphose, the immature develop legs and are sometimes called “waterdogs.”

The adults are primarily burrowing animals and are active above ground only during wet periods. They can be found in animal burrows where the relative humidity is high. We have had them reported from under porches and in basements of buildings. The tiger salamander is a ravenous consumer of other amphibians, small mice, earthworms, and large insects.



(Clockwise from upper left): note the coloration and patterns; higher elevation individual without pattern; the external gills of this immature salamander.



Jemez Mountains Salamander

Family Name: Plethodontidae
Common Name: Lungless Salamanders
Scientific Name: *Plethodon neomexicanus*
Common Name: Jemez Mountains Salamander

This species is only found in the Jemez Mountains and is common only where specific microhabitat occurs. They are considered a species of concern by the US Fish and Wildlife Service and as threatened by the New Mexico Department of Game and Fish (NMDGF 1994).

These salamanders lack lungs and breathe through mucous membranes in the mouth and throat and through the skin. This dark brown salamander is slender and elongate—very much resembling a worm with legs and eyes—and the body length is about 82.3 mm (3.3 in.) long—about the distance across the palm of one’s hand. The tail may be as long as the body, which could make the total length of this salamander 135 mm (5.3 in.). The species is generally found in rocky soils at elevations between 2200 and 2900 m (7260 and 9570 ft). They are found in and under rotting coniferous logs or under rocks on both flat areas and steep slopes in a habitat that is dominated by mixed conifer. A study conducted by the NM Natural Heritage Program for Los Alamos National Laboratory has looked at the microhabitat to correlate the presence of salamanders with specific vegetation.

Studies indicate that the salamander eats ants, although flies, pseudoscorpions, beetles, flies, annelid worms, mites, and snails are also important in the diet.



This species spends most of its time underground and seldom leaves the shelter of rotting logs.





Frogs and Toads

Family Ranidae—True Frogs

Ranid frogs are the familiar frogs found along freshwater streams and lakes. In Los Alamos they are most likely associated with the Rio Grande. The hind legs are long and powerful, and the feet have webbed toes. In all species reproduction occurs in two stages—eggs that are laid in water and emergent tadpole—that may last from several weeks to two years. In New Mexico, the genus *Rana* is the only representative of this family.

- Bullfrog (*Rana catesbeiana*)

Family Pelobatidae—Spadefoots

In Los Alamos County two species of spadefoots have been reported. These are toad-like burrowing frogs that are adapted to arid conditions. They are distinguished from true toads by their cat-like eyes, the single black, sharp-edged “spade” on each hind foot, teeth in the upper jaw, and rather smooth skin; parotid glands are absent or indistinct. The pupils are vertical in bright light and round at night. This distinguishes them from true toads that have horizontal pupils, two rounded brown tubercles on each foot, no teeth, a warty skin, and large parotid glands.

Spadefoots are explosive breeders. During dry seasons they bury themselves in self-made burrows or those of gophers and squirrels. They are chiefly active at night. They burrow by backing into the ground and pushing the dirt with their spades.

- New Mexico spadefoot (*Spea multiplicata*)
- Plains spadefoot (*Spea bombifrons*)

Family Bufonidae—True Toads

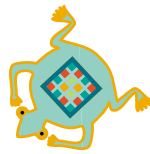
Members of this family are squat-bodied, heavy-set, short-legged toads with numerous wart-like glands on the body and legs.

- Red-spotted toad (*Bufo punctatus*)
- Woodhouse’s toad (*Bufo woodhousii*)

Family Hylidae—Treefrogs

Treefrogs are long-legged, slim-waisted frogs, mostly small in size. They can be arboreal, living in trees. These are long-legged frogs that are powerful jumpers. Some have toe tips expanded into small adhesive disks.

- Canyon treefrog (*Hyla arenicolor*)
- Western chorus frog (*Pseudacris triseriata*)



New Mexico Spadefoot

Family: Pelobatidae
Common Name: Spadefoots
Scientific Name: *Spea multiplicata*
Common Name: New Mexico Spadefoot

The distribution of the New Mexico spadefoot ranges from western Oklahoma and central Texas to Arizona and south into Mexico. Throughout New Mexico, this species is encountered in favorable habitat from elevations of 900 to 2600 m (2970 to 8580 ft).

All spadefoots have smooth skin and darkened horn spades on their hind feet. All members of the family have vertical pupils, and all have free-living aquatic tadpoles. This species is recognized by dark, irregular blotches on a yellowish or greenish back. There is no raised area between the eyes, and the eyelids are as wide as the space between them. The species is largely nocturnal and spends most of its life buried in the soil, emerging to breed only during summer rains.

Degenhardt et al. (1996) described the spadefoot as “adapted to arid conditions, explosive breeders with short-duration, high-density aggregations that form during periods of summer thundershowers.” That indeed seemed to be the case in our study area in 1991 when the spadefoots successfully bred in great numbers—the only year out of the past six. In 1991, ponds formed in Pajarito Canyon in areas that were generally dry. Within a short time the numerous tadpoles began to metamorphose. Everywhere we stepped, in both wet and dry locations, small emergent spadefoots were seen. The one-gallon pit-fall traps were filled nearly to the rim with the 2.5-cm (1-in.) toads. Only one adult spadefoot has been seen in other years.

What causes emergence? Dimmit and Ruibal (1980) found that low-frequency sound and/or vibration, such as caused by rainfall or thunder, are primary cues for emergence. Woodward (1982) reported that more than 90 percent of the breeding generally occurs on the first night following pond formation. The eggs hatch in only 15 hours at 30°C, but in 82 hours at 10°C. Tadpoles metamorphose at approximately 2 cm (0.8 in.). We have investigated the 1991 emergence based on



Note the vertical pupils.



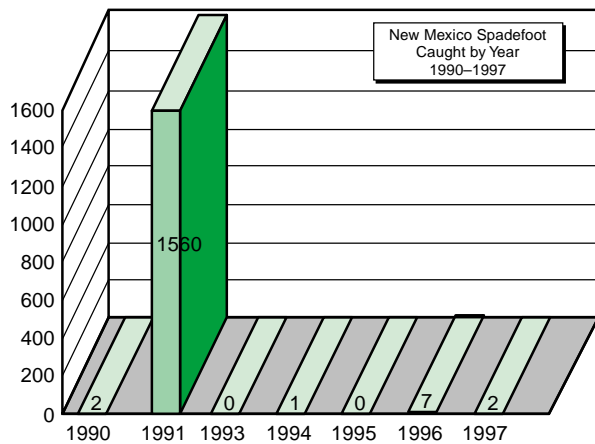
Emergent spadefoot



Note spade on foot.

thunder and hail records kept at LANL. There was a hailstorm two days before the emergence. Further investigation is being made.

Bogert (1979) collected a spadefoot near pools in Pajarito Canyon near the junction of Three-mile Canyon. The spadefoot was crossing a paved road after a relatively brief but heavy rain had fallen at dusk. The female had already ovulated, but the ponds near where it was collected did not have eggs. He examined the ponds at intervals until the end of September and did not find eggs or larvae.



Plains Spadefoot

Family: Pelobatidae
 Common Name: Spadefoots
 Scientific Name: *Spea bombifrons*
 Common Name: Plains Spadefoot

The plains spadefoot is easily confused with *S. multiplicata*, having basically the same coloration—a dorsal greenish-yellow coloration and dark mottling—and the same range in New Mexico—except only up to 2200 m (7260 ft) in elevation. However, the plains spadefoot has a frontal swelling between the eyes and a puglike profile that is not present on the New Mexico spadefoot. The call of the plains spadefoot is a short, distinct, ducklike note lasting 1/3 to 3/4 s, which is shorter and more rapidly trilled than the call of the New Mexico spadefoot.



Plains spadefoot



Red-spotted Toad

Family: Bufonidae
Common Name: Toads
Scientific Name: *Bufo punctatus*
Common Name: Red-Spotted Toad

This species can be found from southeastern California east to central Texas, encompassing the southern tip of Nevada, southern Utah and Colorado, all of Arizona and New Mexico, excluding the north-central highlands, and central Texas. Its range also extends south into Baja California and central Mexico. The red-spotted toad occurs throughout New Mexico from 900 to 2200 m (2970 to 7260 ft). Bogert (1979) in his survey of Pajarito Canyon indicated the presence of red-spotted toad. However, in the past six years we have not found any adults in the Pajarito wetlands. Juvenile Woodhouse's toads (*B. woodhousii*) have red spots and can be confused with the red-spotted toad.

The red-spotted toad is small with a flattened head and body and round parotids, about the same size as the eye. The snout is pointed. Body color is light gray, olive, or reddish brown and has reddish or orange warts. This species is found on floodplains of streams but most often in rocks where it shelters. Its call is a prolonged, clear musical trill, which will be performed by the male while sitting along the edge of the water. It breeds in May through September in temporary or permanent pools of intermittent streams.



Adult, note the circular parotid gland behind the eye.

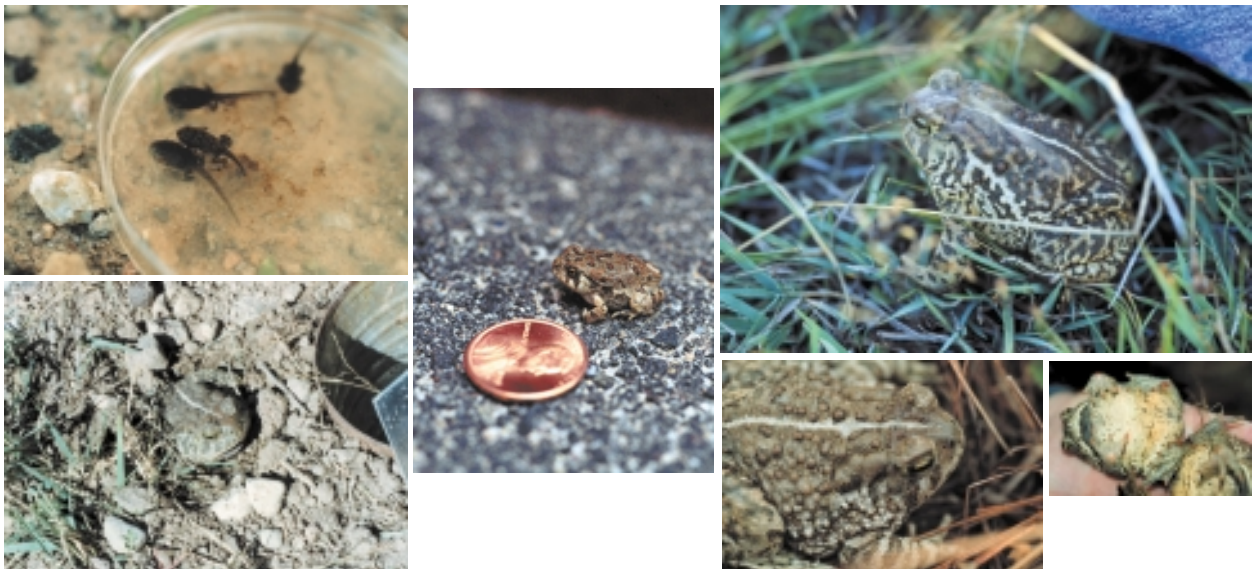


Woodhouse's Toad

Family: Bufonidae
Common Name: Toads
Scientific Name: *Bufo woodhousii*
Common Name: Woodhouse's Toad

The distribution of this toad ranges from northern Montana to Durango, Mexico, and from the Atlantic coast to southeastern Washington, western Utah, and southeastern California. In New Mexico, the range of elevation is from 900 to 2400 m (2970 to 7920 ft), and this toad is the most common toad caught in the Pajarito wetlands. This toad can be identified by its dry skin covered with many warts of different sizes. The overall body color is patterned olive or greenish over a darker color with a light stripe down the middle of the back. The belly is whitish, many times spotted dark on the chest between the forelegs. Each foot has rounded tubercles.

Woodhouse's toad generally lives near permanent water or floodplains, resting in shallow burrows during the day, feeding at dusk and after dark. We have seen the toad bury itself into the soil with just the head emerging. It has been suggested that populations in northwestern New Mexico breed twice each year, corresponding to spring and summer rainfall peaks. Males will spend two nights in a breeding pond, while the females will spend only one.



(Clockwise from upper left): tadpoles; a newly emerged juvenile; view of coloration and pattern; the underside showing spots on the chest and tubercles on the feet; the stripe on the backside; a "settled-in" adult.



Family: Ranidae
Common Name: True frogs
Species: *Rana catesbeiana*
Common Name: Bullfrog

Today, the bullfrog is one of the most widely distributed amphibians in North America, ranging north to south from Nova Scotia to central Florida and west to the Rocky Mountains with isolated populations as far west as California and British Columbia. The historic western extent of this range cannot be determined since this species was widely introduced by humans. In fact, there is some question whether the bullfrog is native to New Mexico or was introduced. In New Mexico, the bullfrog can be found statewide at elevations up to 2100 m (6930 ft) where freshwater is found.

The bullfrog is easily identified by long powerful legs and a short glandular fold that curves around the eardrum. On males, the eardrum is about twice the size of an eye; whereas, on females, the sizes are similar. Body color is green or brown above—usually with spotting—and cream or yellow underneath. Males have a vocal pouch, and the throat is yellow. Large adults may be as long as 20 cm (8 in.).

This frog can be found along the freshwater habitats of the Rio Grande and associated tributaries—usually in quiet water with thick aquatic vegetation. When disturbed, they will escape to deeper water by long, splashing leaps. Their appetite is voracious. They will sit and wait for salamanders, snakes, birds, bats, and small rodents.

In some areas this species is likely responsible for the decline of endemic populations of wetlands herpetofauna. Even so, this species is protected in New Mexico by a required fishing license and a limited hunting season.





Canyon Treefrog

Family:	Hylidae
Common Name:	Treefrogs
Scientific Name:	<i>Hyla arenicolor</i>
Common Name:	Canyon Treefrog

These long-legged frogs are powerful jumpers. In the Southwestern US, the canyon treefrog can be found at elevations from near sea level to around 2990 m (9800 ft) from southern Utah to central Colorado and south into Mexico.

The body of this treefrog is well camouflaged, depending on the natural surroundings. Against black basalt this frog is grayish in color. Against tuff, this animal will be brown to tan. The plump body is toadlike with warty skin. The toe tips have adhesive discs that allow the animal to climb on anything. They breed in streams, in potholes in solid rock, and in rain pools on rock cliffs.

In the spring of the year, White Rock Canyon echoes with the call of the canyon treefrog. Where Pajarito Canyon drops precipitously into White Rock Canyon, we collected the canyon treefrog in the rock base pool that is worn into the rock where water drops 100 m (330 ft) into White Rock Canyon. The treefrog's loud call—"ba-a-a"—bounces off the canyon walls. Looking closely into the cracks of the rocks, one may see a small frog staring out. We have also found treefrogs clinging to rocks in the burned area of the La Mesa fire where no ponds or water sources were close by.



(Clockwise from upper left): note the toepads; close-up of toepad; front face view; note the camouflage; adult canyon treefrog clinging to rock; adult.



Western Chorus Frog

Family: Hylidae
Common Name: Treefrogs
Scientific Name: *Pseudacris triseriata*
Common Name: Western Chorus Frog

This species maintains populations from as far east as the north Atlantic coast, west to Idaho and British Columbia, and south to isolated pockets in central Arizona and northern New Mexico. In New Mexico the distribution trends southward, following the Rio Grande drainage at elevations ranging from 1280 to 3050 m (4224 to 10,065 ft).

This small, brown, olive green, or grayish frog (19 to 39 mm [.75 to 1.6 in.]) has a very loud call. Early in the spring the ponds and slow-moving water will vibrate with the call of the western chorus frog. The regularly repeated “crrreeek” or “prrrreep” is often described as a sound made by running a fingernail over the small teeth of a pocket comb. The adults have a dark stripe that extends through the nostril, through the eye, and above the forelimb to the groin. There is usually a triangular spot on the forehead, and the hind foot has reduced webbing and no toe pads. The back is spotted, and the throat is heavily mottled. Males are slightly smaller than females.

This is one of the earliest breeding frogs in New Mexico. We have heard them calling as early as April, the males calling from atop floating vegetation night and day. In the higher elevations, calls can be heard even before all of the surface ice of the water has melted. They breed in shallow or temporary bodies of water, grassy meadows, and rock pools.



(Clockwise from left): Note the dark stripe from nostril to groin; tadpole; tadpole tail being absorbed; immature on fingertip; immature blended into rock.

