

Chapter III. Amphibians

Amphibians are intimately associated with water, most of them spending part of their life in water and part on land. These ectothermic (cold blooded) vertebrates are divided into 3 groups: newts and salamanders, frogs and toads, and the worm-like caecilians. The life cycle of most amphibians involves a transformation from aquatic larvae (which breathe using gills) to terrestrial adults (which take in oxygen through lungs). Most live close to water in tropical and temperate regions.

Frogs and Toads

Frogs and toads are amphibians that have very thin, permeable skin. This skin helps them regulate their body temperature, water balance, and to breathe. However this skin also makes them susceptible to accumulating pollution in their bodies from water sources. Their skin is also vulnerable to ultraviolet radiation due to loss of atmospheric ozone. Scientists think that this increased ultraviolet radiation could also damage their eggs. The eggs are gelatinous, translucent, lack the protection of a shell, and are often laid at the surface of the water.

Amphibians must rely on their environment and their movements to regulate their body temperature. Amphibians are most active at temperatures of 40-83 degrees Fahrenheit, which in summer is most commonly at night. When temperatures become too low, amphibians become inactive at the bottom of a body of water, or underground in wet areas. When the temperature becomes too warm, they become inactive and retreat to cooler damp places.

All frogs and toads are predators as adults. All frogs and toads have a large mouth and modified tongue, which is used in capturing prey. They take their prey whole and thus do not have much need for teeth. Movements of the prey trigger the feeding response of frogs and toads. Tadpoles, which are the larval frogs and toads, are mostly herbivores. Some have mouths that are adapted for scraping algae off surfaces, while others obtain most of their food by filtering the water.

Frogs and toads appear to have a distinct home range. Within this area they feed, have shelter, and interact with other species. The size of this range varies. Most toads and frogs move to ponds, lakes, streams, or ditches to breed, especially after rains. The eggs are released into the water and soon hatch as tadpoles.

Frogs and toads have a variety of defenses. Most have coloration schemes that help camouflage them. Some frogs can actually change colors to blend into different locations. If they are disturbed they can hop or jump quite well. However some frogs may squat and lie motionless when alarmed. Many frogs, and all toads, have special glands in their skin which produce toxins that, in some cases, are extremely toxic to animals that try to eat them. The introduced marine toad is extremely dangerous to dogs that bite them. Most people are not affected by these poisons unless they are rubbed into the eyes or get into the mouth.

Chiricahua Leopard Frog *rana chirichuensis*

The Chiricahua leopard frog is a medium-to-large sized frog from 2.5 to 4 inches in length. It is spotted and often greenish with a raised fold of skin running down each side of the back. The frog is found in ponds, streams, stock tanks, and other aquatic

sites in the mountains of central and east-central Arizona and west-central New Mexico, and in the mountains and valleys of southeastern Arizona and extreme southwestern New Mexico.



Habitat is a large variety of permanent aquatic habitats including springs, stream, man made and natural ponds, and lakes. Exists from 3300 to 8500 feet in elevation in habitats where adequate water depth provides escapes from predators. Habitat tends to contain abundant aquatic vegetation.

Nests in thickets of trees and shrubs approximately 13 – 23 feet tall with high percentage of canopy cover and dense foliage from 0 to 13 feet of the ground.

These frogs need permanent water for reproduction. Those found above 5,900 feet breed during June/ July/August; below 5,900 feet breed from spring to late summer, mostly prior to June. Egg masses are usually suspended within 2 inches of the surface on vegetation growing in water 6-14 inches deep near the shore of ponds and streams. Masses are clumped in spherical form. Metemorphosis occurs 2 to 9 months after hatching and time varies depending on temperature. Tadpoles are dark colored and reproductive maturity usually requires 2-3 years from metamorphosis. Life span is up to 14 years in the wild.

Forage is a wide range of invertebrates, caterpillars, beetles, etc.

American Bull Frog *Rana catesbeiana*

A large frog, light green to dark olive green above, with dark spots and blotches. Juveniles have many small dark spots. Sometimes light green only on the upper jaw. Cream to yellow below with grey marbling on larger individuals. No dorsolateral folds. A short fold extends from the eye over and past the eardrum to the forearm. Conspicuous tympanum. Males have tympanums larger than their eyes and a yellow throat. Tadpole is greenish yellow with small spots and grows up to 6 in.



Inhabits warm, sunny, permanent water - lakes, ponds, sloughs, reservoirs, marshes, slow river backwaters, slow creeks. Found in grassland, farmland, prairies, woodland, chaparral, forests, and desert oases. Highly aquatic. Rarely found far

from water. Active day and night. When startled, usually emits a chirp or squeak, then jumps into the water.

Eats anything its can swallow, including mammals, birds, amphibians, fish, and reptiles. Typical of most frogs, the prey is located by vision, then a large sticky tongue is used to catch the prey and bring it into the mouth to eat.

Mating and egg laying occurs in water from May to late August. Eggs are laid in a sheet of jelly about 2 feet in diameter. Fertilization is external. The egg mass floats at first, then sinks to underwater vegetation just before hatching. Tadpoles transform at the end of their 2nd or 3rd summer, living in warm shallows and dense aquatic vegetation. Transformed froglets are 2 in.

It occurs throughout most of California. Absent from dry deserts and high elevations in the Sierra Nevada Mountains. Occurs naturally throughout most of the eastern and southern United States, north barely into Canada, and south just below the Rio Grande in Texas, and west to New Mexico and Colorado.

Green Toad *Bufo debilis*

A small flat bright-green toad, 1 ¼ to 2 1/8 inches in length, with many small warts and black spots. Large parotoids extend onto sides; cranial crests absent. Male has dark throat.

They breed from March to September, but only when rains are adequate to fill pools. If conditions are not favorable, breeding season may be skipped. Egg strings are attached to vegetation.



The toad shelters in rocks in semiarid regions. Also found on prairies. Active at twilight, but frequently will forage during the day following heavy rains. When threatened, it frequently flattens itself against the ground.

Its range is from SW Kansas south through Texas to the Gulf Coast and into Mexico, north to SE areas of Arizona, New Mexico, and Colorado.

Warning Toads have enlarged glands (called the paratoid glands) on the side of the neck, one behind each eye. These glands secrete a viscous white poison that gets smeared in the mouth of any would-be predator, inflaming the mouth and throat and causing nausea, irregular heart beat, and, in extreme cases, death. Toads pose a danger to pets, which may pounce on and bite them. Humans should take care to wash their hands after handling a toad, and to avoid touching the mouth or eyes until having done so.