AMPHIBIANS

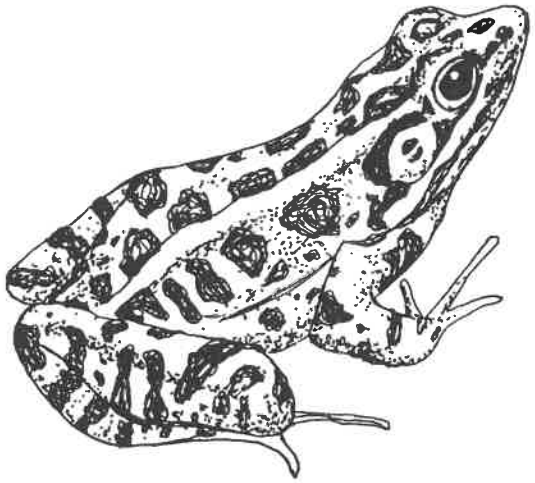
Status: Common Native

NORTHERN LEOPARD FROG

(Rana pipiens)

Description

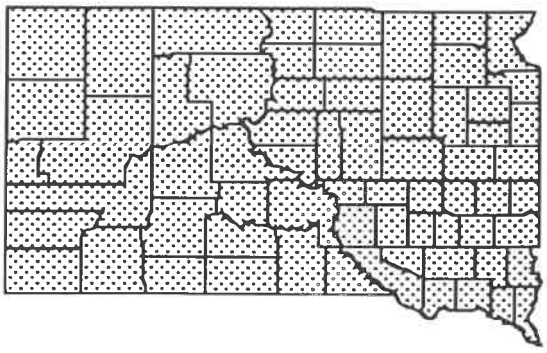
Northern leopard frogs are easily recognized by their slim bodies and leopard-like round, dark spots outlined with pale yellow and white. These leopard spots are located within two distinct yellow ridges extending along each side of the back. The background coloring can vary from shades of greens to grays to browns. Another identifying feature is that the inside concealed surface of the thigh is immaculate white, not yellow as in other species. Other common names for this frog are meadow frog and grass frog. The Lakota word for frog is "gnaska."



This medium-sized frog is 2 to 5 inches long (5-13 cm). The females are usually larger than the males. During the mid-March or early April breeding season, males have paired vocal sacs and stout forearms with swollen thumb bases with which they hang on to the female.

Because they are amphibians, frogs go through a *metamorphosis* during which they change from eggs to *tadpoles* and then adults. The *aquatic* tadpole can be described as a dark head quickly propelled through the water by a wiggly tail, all less than one inch (2.5 cm) long.

Distribution



Northern leopard frogs are abundant throughout South Dakota in almost any body of water.

Natural History

Northern leopard frog *tadpoles* and froglets are *herbivores*, feeding mostly on algae and other aquatic plants which they scrape off submerged rocks and twigs with a rasping mouth. They grow rapidly and by late spring are about 1 inch (2.5 cm) long and begin to develop legs. The *tadpoles* will die if their watery homes dry up before they have metamorphosed into frogs; therefore, they must grow quickly where the rains are seasonal. Small frogs leave the water in the early summer to begin their life on land, moving into the grass to feed and jumping into water to escape predators. A field near a permanent body of water will usually contain many young froglets in mid to late summer.

Adult frogs can live out of water and breathe through lungs (although they also obtain oxygen through their moist, thin skin). Sexual maturity is achieved 2 to 3 years from the egg stage, and the expected longevity is 6 to 9 years.

The habitat of the adult frog is the narrow zone between water and grassland. Here they forage for insects at night, living almost exclusively on non-aquatic insects, worms, and other frogs. Northern leopard frogs have innumerable predators. Fish, large salamanders, snakes, raccoons, mink, skunks, bullfrogs, herons, and hawks all prey upon frogs. One adaptation to this predation is that frogs are powerful swimmers and jumpers, leaping 5 to 6 feet in a zig-zag pattern to avoid capture. When fall comes, leopard frogs *hibernate* on the bottom of ponds through the winter.

Northern leopard frogs are one of the first *amphibians* to emerge from hibernation in the spring and they are the first prolonged breeder to start calling. The Northern leopard frog is often difficult to hear because it does not call in large groups as do other frog species. Individual leopard frogs call from the edge of the water. Each male maintains a large distance between himself and his neighbors. His song sounds like a long, guttural snore usually followed by a series of short grunts or clucks. Sometimes the call may sound like a hiccuping snore or like a person rubbing hands over a wet balloon. Mating occurs in water while the female swims with the male attached to her back. By releasing her eggs, the female stimulates *milt* release by the male, and the eggs are fertilized externally. The eggs are attached to twigs or plants below the surface of the water in large, flattened masses of 3000 to 6000 eggs. The eggs absorb water and measure about 1/2 cm. An indication of the level of predation of frogs is that each female must lay 3000 to 6000 eggs each year to maintain their population.

Conservation Measures

Frogs are important links in the food chain both as consumers of insects and as food for wildlife. Though still widespread, the leopard frog is experiencing a drop in numbers which is surprising since they are a fairly hardy, common, and widespread species. These declines are due to a variety of factors, including harvesting to be used as bait, increased use of pesticides (including lawn pesticides), and loss of habitat due to construction and agriculture (loss of both wetland and field habitat).

According to the Global Declining Amphibian Populations Task Force, over the last 50 years, populations of many species of *amphibians* throughout the world have declined markedly. Some species have become extinct. In many cases the declines are a direct response to the impact of human activities such as habitat destruction or pollution acting at a local level. However, towards the late 1980's, biologists from many parts of the world reported declines in *amphibian* populations in apparently pristine habitats, such as national parks and nature reserves, where local effects could not be implicated. This led to the suggestion that there may be one or more

global factors that are adversely affecting amphibians. Possible candidates for such influences are climatic and atmospheric changes, such as increased UV-B radiation, disease, and widespread pollution such as acid rain.

A loss of biodiversity anywhere should be a cause of concern to all of us, however, there are good reasons for thinking that disappearing *amphibians* are especially significant. As a measure of the health of the environment, *amphibians* may be showing us how our activities (i.e. depletion of the ozone, pollution of natural systems, possible global warming) are affecting our shared ecosystems. *Amphibians* are an important part of the ecological balance of many habitats. So if you see a leopard frog, don't think of it as just 'a common frog', think of it as the representative of the frog world.

Glossary

Amphibian - a cold-blooded, smooth-skinned vertebrate of the class Amphibia that characteristically hatches as an aquatic larva with gills.

Aquatic - referring to fresh water.

Herbivore - a plant eating animal.

Hibernate - to be in a state of dormancy during the winter in which metabolic activity and heart rate are reduced.

Metamorphosis - a series of distinct stages in the development from egg to adult. In amphibians the aquatic larva have gills and live in water. The larva then transforms into an adult having air-breathing lungs and living on land.

Milt - the liquid containing sperm that is released by a breeding male.

Tadpole - the immature aquatic stage of amphibians. Hatching from the egg, the tadpole is gill-breathing and legless and propels itself by means of a tail. During metamorphosis it develops lungs, legs, and other adult organs and, in the frog and toad, loses the tail. Tadpoles are sometimes called polliwogs.

References

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Conant, Roger, 1975. A Field Guide to reptiles and Amphibians of Eastern and Central North America. Boston: Houghton Mifflin. 2nd ed. Peterson Field Guide Series.

Gunzi, Christiane, 1995. Amphibians & Reptiles of North America. San Diego: Thunder Bay Press.

Kansas Amphibians and Reptiles. Vol. 8. No. 1 of On T.R.A.C.K.S. 1996. (Teaching Resource Activities and Conservation to Kansas Students), Kansas Wildlife and Parks.

Selected Resources for Teachers

Beaty, Seddon Kelly and Irene Fountas. Frogs and Toads. 1996. (grades K-4) Whole language resource guide.

Jaine Kopp. Frog Math. Lawrence Hall of Science. 1992. (grades K-3) Use frog games and stories to introduce math principles.

Parker, Nancy W. Frogs, Toads, Lizards and Salamanders. New York: Greenwillow Books. 1990. Reading Rainbow book.

There are several sites on the Internet on frogs, including amphibian monitoring activities by schools.

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