

FABULOUS FROGS

What lives in the mud, but is comfortable on land, water, or in the trees, can be a bit slimy, jumps out of trouble, and may or may not turn into a prince upon being kissed? No, it's not your second cousin Ed, it's the fabulous frog. We have lots of them in the Natural Area this season, with the long, wet spring. While the Western or Pacific tree frog is the most common species, one might run across the leopard or western spotted frog, or an occasional bullfrog.



Western tree frog

How do these amphibians survive and thrive in a climate that can drive Californians back to their home state. Bioengineering is the answer and their story is a very interesting one. Their first test is the long, harsh winters. They can survive as long as their blood does not freeze up. Their first defense against freezup is to burrow deep in the mud at the bottom of ponds. Frog livers then break down the glycogen stored there to flood glucose into the blood as antifreeze. Glucose can reach 60 times normal levels. Their metabolism shuts down and they hibernate for a long winter's nap.

Optimal temperatures for frogs is between 77 and 95 degrees F. Our local frogs have adapted to lower temperatures by dressing in darker colors to absorb sunlight. If too hot, they can use evaporation of pond water on the skin for amphibian air conditioning. Some frogs can actually lighten up skin colors to reflect more heat during hot summers, sort of reverse sun tanning. Generally, being cold blooded, they prefer being warm to increase metabolism to support those important frog activities.

Frogs communicate through sound, and do not feel obliged to ornament themselves with colors so they can pair up for mating. Instead they opt for camouflage, thus making the critters hard for us to spot; brown for ground dwellers, green for tree dwellers. Skin often has spots that mimic the holes in vegetation caused by insects. Frogs employ a "disruptive coloration" of blotches and stripes to confuse the predator's memory of suitable prey. They also have "flash markings" on the hidden parts of the body that are only exposed when fleeing to add to the predator's confusion. To make maximum use of the camouflage, the first line of defense is not to move, and some faint death or "thanatois" in hopes of being passed by.

The frog's main tool for escape are the powerful jumping legs. Our aquatic species like to stay one hop from the safety of the water where they can lie just below the surface and watch you with their frog eyes protruding the surface.

Maybe one of the most impressive parts of the frog's engineering is their skin. Glands produce a mucous that keeps the skin moist while inhibiting fungal and bacterial infection. This same slime makes them taste bad to those wishing to eat them. Some species (not here!) produce poisons on the skin that rate as the most potent toxins in the natural world. Scientist believes that frogs, generally, smell bad to their neighbors. Skin secretions also aid in their ability to breathe through their skin as well as with their lungs. Our tree frogs use a sticky version of this mucous on their foot pads to aid in climbing. Frogs do not drink (amphibian temperance?). They absorb liquid through their skins. During dry summers, they react by shifting activities to nighttime, and hiding in ground litter during the day. They also keep their more permeable underbellies down on the ground and can actually drink up on these moist spots through their skin.

Frogs are passive animals and are wonderful additions to any ecology. They are opportunist and will eat whatever they can catch and swallow, but this is mostly bugs. They do not attack but are defensive in lifestyle. Their strategy for reproduction is simply to lay lots of eggs, and they try to conceal them under leaves and branches. To catch a choir of frogs in the Natural Area's wetlands is truly a treat. In conclusion, frogs are a marvel of engineering that allows them to thrive in places that first glance are too hot, too cold or too dry.

ASSOCIATION NEWS

We are a non-profit 501(c)(3) organization dedicated to saving nature areas in the Spokane region for public enjoyment and education. Call Michael Hamilton, 747-8147, if you have questions. Our board meets every month on the third Tuesday. Our next meeting is July 19th, 7 pm. We meet at the Moran Prairie Spokane County Library, 6004 South Regal St. Visitors are always welcomed.

The following are our May donors that have consented to be listed: Nancy Cashon, Bruce Erickson, Walter Fernau, Julia Goltz, Judith Hudson, Chris Kopczyński, Cynthia Langlois, Marilyn Miller, Matthew Miller, Della Meyers, Mike Nelson, Richard Taylor, Florence Townsend, Jody Wende, and three anonymous donor. Thanks spring supporters.

Time's fun when you are having flies
Kermit the Frog

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