

National Fish + Wildlife Foundation Southwest Region

The Ramsey Canyon Leopard Frog | July 2001

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Ramsey Canyon, in Arizona's Huachuca Mountains. The Ramsey Canyon Leopard Frog lives in a lush enclave within the mountains.



Arizona's Huachuca Mountains are surrounded by subtropical desert and scrub. Within this complex topography, the Beatty family, along with a team spearheaded by the Arizona Fish and Game Department, helped increase numbers of the local Ramsey Canyon Leopard Frog sufficiently to avoid putting the frog on the endangered species list.

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The Ramsey Canyon Leopard Frog

Frogs were on the menu for a long time at the Beatty's Miller Canyon Guest Ranch & Orchard in Arizona's Huachuca Mountains. Bullfrogs, that is. "It took two years to get them all," says Tom Jr., who runs the guest ranch with his parents Tom Sr. and Edith. The Beattys had introduced bullfrogs into a large pond built for fishing and swimming. Then they realized the East coast bullfrogs were competing with the native Woodhouse toads on the property, and also with a native frog heading for the endangered species list — the Ramsey Canyon Leopard Frog. When they understood that this is one of the rarest frogs in the world, the Beattys joined up with a team spearheaded by the Arizona Fish and Game Department to release adult frogs into a renovated pond on their property to help them increase their numbers. Four years ago there were perhaps 10 of these frogs in the world. Now, thanks

to the Beattys and to crucial help from the National Fish and Wildlife Foundation (the Foundation), the frog population is much more secure.

The Beatty family is one example of private property owners who are working to make "endangered species" an opportunity rather than a liability. While we all understand and appreciate the necessity for the Endangered Species Act, from private property owners it can elicit a groan. The 28-year old Act enumerates a complex procedure to evaluate species for listing, including critical habitat designation, recovery plans and review of likely government actions. A potential endangered species on your property can mean years of government review — thus the "3S" strategy half-jokingly suggested throughout the West: "shoot, shovel, and shut-up."

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The Foundation is committed to protecting species on private property as well as on public land, conserving plants and wildlife. Many species close to being listed could avoid it altogether with some help in getting their populations up. The Foundation matches funds through partnerships on critical conservation projects, and is very enthusiastic about citizens such as the Beattys, who see an opportunity and take it into their own hands. Since over 80 percent of endangered species are on private property, joint ventures like this one are critical to our environmental health. Keeping species off the list serves everyone's best interests.

As one of the rarest frogs in the world, the Ramsey Canyon Leopard Frog is interesting in its own right. The male makes its call submerged under water up to three feet (the critter's Latin name describes this: *Rana*- frog; *subaquavocalis*- below water song). The "snore-like" mating call is difficult to hear in the air. U.S. Navy sound sensors have been used to get recordings. And the female lays her eggs while submerged. Part of the specialness of the Beatty's property is its location on the Huachuca Mountains, one of about two- dozen "sky islands" in Southeastern Arizona. Sky islands are "cradles of evolution." The mountains ascend to 9,000 feet, harboring vegetational changes similar to traveling from Mexico to Canada. More moisture allows an amazingly diverse population of plants and animals to thrive above where they would not survive below.

Mike Sredl, the Ranid Frogs Project Coordinator at the Arizona Fish & Game Department, had seen a Ramsey Canyon Leopard Frog in a local museum collection, and Tom Jr. remembers seeing them as a boy. In the late 70s, a fire in the area caused a flood that may have wiped out most if not all the RCLFs in Miller Canyon. Sredl spent some three years with the Ramsey Canyon Leopard Frog Conservation Team trying to revive them before the Beattys got into the picture. "They just boosted our efforts enormously," Sredl says. He helped the Beattys by recruiting volunteers to collect eggs for metamorphosis and then releasing the adult frogs into the Beatty's ponds.

As "bellwether" or "indicator" species, the general vitality of frogs tells us a lot about the state of our environment. These days, what they are telling us is not good. Frogs have been declining steadily across the globe since the 1970s. Stresses on frogs include direct habitat degradation from mining, logging, grazing and other activities.

There is now evidence that global warming trends are having a deleterious effect on amphibians. Recently Joseph M. Kiesecker of Penn State and Andrew R. Blaustein and Lisa K. Belden of Oregon State University published findings in *Nature* which show links between warmer weather patterns, depleted ozone and higher amphibian mortality rates. Warmer temperatures caused shallower water in remote alpine lakes and ponds in Oregon, exposing toad eggs to higher levels of UVB radiation.

Frogs occur in almost every habitat the globe has to offer, from deserts to rain forests, from alpine to subpolar tundra. Amphibians are an important piece in the energy and nutrient cycles of many ecosystems. Often there is more amphibian biomass than any other class of vertebrates. Losing frogs means losing a critical piece of the food chain, one that eats bugs and algae and is in turn eaten by a huge variety of species from garter snakes to black hawks.

Frogs have been dying in areas remote from human activity, offering clues to complex threats to our overall environment. Most frogs begin in the water as tadpoles where they are herbivores and end up on the land where they are carnivores, exposing them to toxins in both plant and animal food as well as both water and airborne pollutants. Additionally, the moist, permeable skin that makes a frog a frog creates a particular vulnerability to increased UVB radiation as well as other climate warming results. Mike Sredl has recently studied die-offs due to a chytrid fungus epidemic. The chytrid fungus is a water mold that breaks down keratin, infecting the skin and causing behavior changes including lethargy, balance problems, reluctance to flee and abnormal posture. Responsible for amphibian declines in Central America and Australia, the efficacy of the chytrid fungus could potentially be linked to climate changes as well — if a frog's skin is weakened through UVB exposure, it may provide a better host for the parasite.

All the more reason to welcome the Beatty's good news. Tom Jr. says: "I get enjoyment out of watching the frogs. The newest pond is just outside my window and has the strongest breeding population — 28 egg masses in the first year, starting last July, from frogs under a year old...this year should be even better."

The Beattys received a Director's Meritorious Citation from Arizona Fish & Game.

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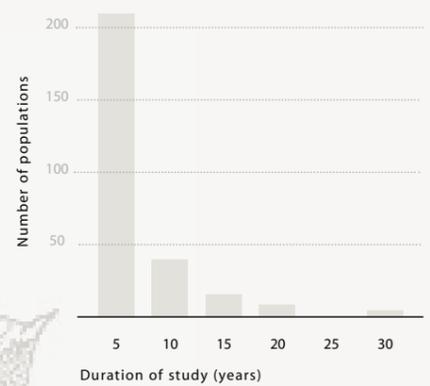


*The Ramsey Canyon
Leopard Frog*

FROG FACTS

Quantitative evidence for global amphibian population declines

Graph adapted from Houlihan, Findlay, Schmidt, Meyer & Kuzmin. *Nature* 404, 752-755 (2000). © MacMillan Publishers Ltd.



FROG FACTS

- Frogs are a link to the ancient world. They've inhabited the earth for over 350 million years.
- Literature has doted on frogs, from Aristophanes to the Koran to Shakespeare.
- Frogs live all over the world, from cave to mountaintop. Often amphibians can be the most abundant vertebrate in an ecosystem.
- Frogs are biotech labs. Chemicals in frog skin and glands have a wide range of medicinal values, like heart stimulation and pain killing.
- Frog populations are declining due to habitat loss; acid rain and soil; UVB radiation; diseases; nitrates; heavy metals; herbicides; pesticides and petroleum products.

BUILDING PUBLIC-PRIVATE PARTNERSHIPS

The NFWF matches funds to achieve strategic conservation projects.

For every federal dollar spent, more than two dollars are raised by our grantees.

Recent Southwest Region projects include:

Working with PG&E, we direct and manage the Nature Restoration Trust to empower communities in restoring native habitats.

We joined with Anheuser-Busch Corporation Foundation to protect the Hawaiian state bird, the Nene Goose. Reduced to just a few dozen birds a decade ago, the Nene is making a remarkable comeback with a population in the 100s.

With the David and Lucille Packard Foundation we established the Marine Conservation Trust for the Pacific to improve California's marine resource management.

In partnership with state and federal agencies, we work to assist recovery of wildlife and to repair natural resources.

In other joint efforts we are overseeing the administration of ecosystem restoration funds for the CALFED Bay-Delta Restoration Program.

In 2000, we worked with agencies investing over \$80 million in restoring the San Francisco Bay watershed.