Rare Frogs

Get a Helping Hand



The gopher frog, one of our state's most unusual and fascinating frog species, sadly, is also one of our rarest.

BY JEFF HOLMES

Gopher frogs (*Lithobates capito*) historically ranged from the coastal plain of North Carolina southward to Florida and westward to Alabama, but in many of these areas, including the Palmetto State, only a few dwindling populations remain. Sharp declines in the species earned the frogs a state endangered species listing in South Carolina. Further, the U.S. Fish and Wildlife Service (USFWS) is currently reviewing whether the frogs should be listed under the federal Endangered Species Act (ESA). Still, conservationists continue working diligently to reverse population declines before the frogs need ESA protections.

PHOTOS BY BEN MORRISON

GOPHER FROGS love this kind of temporary wetland habitat. (Inset) This one in particular appears to be right at home.

COMPLEX AND SPECIALIZED

"Gopher frogs are excellent indicators of ecological health in the longleaf pine ecosystem," said SCDNR wildlife biologist Andrew Grosse. "They have a very complex life history and highly specialized habitat requirements. All of the pieces must be in place and functioning at a high level to support these fragile populations."

Most of the year gopher frogs live in underground holes, often created by rotten or burned stumps, burrows of rodents and other creatures, or as their name implies, gopher tortoises, where their range overlaps. These holes must be in dry, sandy, upland habitats usually dominated by open longleaf pine savanna that is fire-maintained. Gopher frogs, primarily an upland species, use wetlands to breed, thus they need to have suitable wetlands nearby in order to reproduce successfully.

These wetlands must hold water for up to 120 days after heavy rain events, yet also dry completely periodically to minimize threats from aquatic predators. If predatory fish become established in these wetlands, gopher frog tadpoles have little chance of survival.

They breed in late winter or early spring during heavy rain events when the temperature is above fifty degrees. Males migrate to nearby wetlands and use their long, deep snoring call to attract females. When females decide the conditions are ideal, and the snoring is just right, they attach their egg masses to vertical stems of sturdy grasses and sedges in the wetland.

Fish are not the only worry for those new tadpoles. A ravenous arsenal of skilled predators, ranging from wading birds, to snakes, to bullfrogs and even larger tadpoles, are all determined to eat as many larvae as they can. Life is not easy for a young gopher frog, and it gets harder each passing day.

Only a small percentage of tadpoles make it through this highly vulnerable stage to metamorphose into froglets. By May or June, once froglets have emerged from the breeding wetland, they face a multitude of other challenges, such as finding proper refugia and threats from land-based predators.



LONGLEAF PINE SAVANNAS, like this one at the SCDNR' s Webb Wildlife Center, also can be attractive to gopher frogs.

JOEY FRAZIER



BEN MORRISON



PHOTO COURTESY FMNF

(TOP TO BOTTOM) Gopher frog egg mass is ready to go to the hatchery. This gopher frog seems to disappear while being very still in its natural habitat.

HABITAT MANAGEMENT

"Like many other upland species, gopher frogs have lost most of their habitat to development, agriculture, fire suppression and other incompatible land use regimes," said U.S. Fish and Wildlife Service wildlife biologist Jestin Clark. "During the past couple of decades, we have been aggressively restoring habitat and monitoring our populations. Unfortunately, declines have been steep since the mid-1950s and populations may have already reached a tipping point before our restoration work began."

With such stringent habitat requirements and a host of threats, it is not surprising that populations of these precious natural wonders continue to dwindle range-wide. It takes a lot of work to protect this incredible species. In fact, the Savannah River Site and Francis Marion National Forest (FMNF) are the last known gopher frog strongholds in South Carolina. And even at these locations, only a handful of successful breeding events have been documented in the last five years.

Ben Morrison and Sydney Sheedy of the Amphibian and Reptile Conservancy (ARC) provide a fulltime presence on the ground at FMNF, committed solely to the conservation of gopher frogs and other rare species.

"The habitat management is outstanding and getting better every year," Morrison said. "With more and more habitat restoration ongoing, I don't think that habitat within the FMNF is a problem going forward. We just need more frogs."

"We are in close contact with ARC ,and they are consulted on management decisions that may impact rare species, including gopher frogs," said Clark. "ARC is out there literally every day, and they have a rich understanding of what the species needs. We're providing the habitat, but I agree with Ben, we need more frogs to restore the populations to a sustainable level."

So, how do we get more frogs out there?

HEAD-STARTING AS A TOOL

"The habitat within the Francis Marion National Forest is looking great," said Melanie Olds, a wildlife biologist with the U.S. Fish and Wildlife Service. "It's continuing to get better, but this is simply not a case where we can build it and they will come. Populations on the Francis Marion Forest have declined to a point



PHOTOS COURTESY FMNF





(ABOVE) These gopher frogs, placed in clear transport containers, are ready to be released into their home (top).

that just doing habitat restoration is not enough. We needed to take future action to give this population a better chance at survival."

Getting more frogs out on the landscape requires more tadpoles surviving to metamorphosis. Then, those froglets need to survive to adulthood and return to the wetlands to reproduce. How did this ever happen without us? Well, there was a time when a lot more gopher frogs were on the landscape. With healthy populations, they can withstand the heavy losses that naturally occur. We need to get them back to those numbers. This is where head-starting helps by allowing more of the tadpoles to survive to metamorphose in an environment free from predators.

To begin a head-starting program here in South Carolina, a partnership between the U.S. Fish and Wildlife Services Ecological Services Field Office, Bears Bluff National Fish Hatchery, SCDNR and the U.S. Forest Service was formed in cooperation with the Amphibian and Reptile Conservancy. In late 2018, a plan for head-starting was written, equipment was in place and all the partners were eagerly awaiting breeding season.

In February 2019, it all came together, and we had our first breeding event occur. The egg masses were discovered by Ben Morrison (ARC) before they hatched and within twenty-four hours, small subsets of egg mass had been collected and transferred to Bears Bluff National Fish Hatchery a few miles away.

At the hatchery, James Henne, Bears Bluff manager, and his team made sure the larvae were well-fed, comfortable and safe from predators and drought.

"Survival rates were outstanding and greatly exceeded even the best rates in the wild," Henne said.

By Memorial Day weekend, the first few froglets were ready to go home to their natal pond. Everyone on the team worked evenings and weekends as needed over the next several weeks to release subsequent waves of froglets. Some froglets were released into clumps of lush vegetation around the wetland. Others were released directly into holes in rotten stumps, which they will call home until they are mature enough to hop down to the pond and breed. In all, 243 froglets were released.

At this same time in May, a drought left the ponds totally dry and all the remaining tadpoles would have likely died. Instead, thanks to head-starting, a few hundred survived and left the ponds as fully morphed froglets.

Just five egg masses and some hard work from a dedicated team may have started the change in the trajectory of this fragile population in a very positive way. It will take several years before the froglets released in 2019 are mature enough to return to the wetlands for breeding and for us to measure success, but our efforts will continue in subsequent years until we see growth in the population at the FMNF.



GOPHER TORTOISES, equipped with tracking devices, make their way back into their burrow that could one day become a shelter for a gopher frog. JOEY FRAZIER

According to Melanie Olds, there are further efforts for gopher frog recovery in the state.

"Gopher frogs have fallen to near or below undetectable levels in other parts of South Carolina," Olds said. "There are several other ongoing projects to detect gopher frog populations on private lands, as well as working with private landowners to restore occupied and unoccupied habitat for the gopher frog in other known populations within the state."

"It feels good to be a part of such an outstanding team," Morrison said. "I hope future generations of nature enthusiasts will once again be able to enjoy the primitive and hauntingly beautiful call of gopher frogs as much as I do."

Jeff Holmes is a South Carolina native and the Executive Director of The Amphibian and Reptile Conservancy. You can support ARC's conservation efforts by donating at *amphibianandreptileconservancy.org.*