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Hope for hoppers: Endangered frog on path to recovery in Yosemite

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The Sierra Nevada yellow-legged frog was once one of the most abundant amphibians in that western mountain range. But the animal has disappeared from 93 percent of its historical range, leading it to be added to the endangered species list in 2014 by the US Fish and Wildlife Service.

But there might be hope for the hoppers yet.

Just two years have passed since the frog has been under federal protection but, in some parts, the Sierra Nevada yellow-legged frog (Rana sierrae) is already coming back. With efforts to improve conditions for the frogs already in place before the US Fish and Wildlife Service protections kicked in, the frog population has increased sevenfold in Yosemite National Park over the past two decades, according to a study published Monday in the journal Proceedings of the National Academy of Sciences.

Courtesy of Roland Knapp

"This was not a rare species that became rarer. This was a really abundant species that became really rare," study lead author Roland Knapp, a biologist at the University of California, Santa Barbara, tells The Christian Science Monitor. So to see the frogs start to return, he says, is cause for some celebration. "It's a dramatic turnaround."

Around the turn of the 20th century, the frogs were delivered the first blow, as mountain lakes began to be stocked with non-native fish, particularly predatory trout that like to snack on the same things as the frogs do, as well as the frogs and tadpoles themselves.

But around the 1970s, the amphibians were hit with a second devastating blow when a new fungus appeared in

their habitat, Dr. Knapp says. And this wasn't just in the deeper bodies of water where the trout were, but in all of the wet areas the frogs called home.

So what changed in Yosemite to help bring the frogs back?

About 25 years ago, the park halted all non-native fish stocking, and lakes began to revert back to their natural, fish-less conditions. And when Knapp and his colleagues surveyed the Sierra Nevada yellow-legged frog populations across Yosemite over a 20 year period, they found that as the trout disappeared, the frogs reappeared in their absence.

As for the fungus, the team found that where the frogs had been exposed to it for decades, they had adapted to resist its devastating effects. Although the team isn't exactly sure how that happened yet, Knapp says, "We think that's giving them an extra boost that has been a significant player in this most recent discovery."

Simply stopping non-native trout stocking and giving the frogs time to adapt isn't the whole story, says Noah Greenwald, the endangered species director at the Center for Biological Diversity, who was not part of the study but has been involved in petitioning for protections for the frogs.

"Roland Knapp has also done a bunch of work to remove non-native trout from lakes where they didn't just disappear on their own," he adds in an interview with the Monitor. "That's a pretty huge effort to combat that threat."

And this could provide a path forward to help save the species, Mr. Greenwald says. This recovery shows "that if we do care, and we do provide protection to the species, and we do stop doing activities like stocking non-native trout on top of [the frogs], then it does matter," he says. "We can recover species."

The success in Yosemite is no small victory – the park makes up about 13 percent of the Sierra Nevada yellow-legged frog's range, according to Knapp. But it isn't necessarily representative of what's happening elsewhere.

Because Yosemite is a national park, protections for the frog's habitat are more well-established than in other parts of the animal's range.

But the rest of the frog's range will likely see improvements soon, thanks to the recently implemented protections under the Endangered Species Act. Because the frog is now listed as endangered, state and federal agencies are coming together with conservationists to support efforts like the removal of non-native fish species from the lakes.

"Obviously when you have a species that has been declining for a century all of a sudden showing signs of recovery, that's a great thing," Knapp says. "But we certainly have a long way to so still to recover this frog, not just in Yosemite but across its entire Sierra Nevada range."

Saving the frog from extinction could save the whole ecosystem, Knapp adds. “If you take a species that was once so abundant out of a food web, you’re going to have a whole series of unintended consequences,” he says. “For example, we know that when the frogs disappear from one of these sites, the garter snakes, which are one of their major predators, also disappear.”

“By restoring frogs to these habitats and to these food webs, we restore the entire food web.”