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Can the "Amphibian Ark" Save Frogs from Pollution/Extinction? A repopulation plan for endangered amphibians

By Charles Q. Choi

Amphibians are going extinct faster than any other group of organisms. Since 1980, 122 species may have disappeared. Of the roughly 6,000 remaining, up to half are threatened; some 500 could go extinct in the next 50 years if not taken into captivity. Now zoos and other institutions worldwide are working together on an "Amphibian Ark" to help save all these species as they vanish in the wild, in the hope of one day returning them home.

Amphibians may be especially vulnerable to extinction because they depend on both land and water—if either habitat suffers, they do as well. In addition, although their thin skins let them easily take in air and water, that thin-ness unfortunately allows pollutants through, too.

The most immediate threat to amphibians is a parasitic fungus called amphibian chytrid, which was likely accidentally spread by African clawed frogs shipped worldwide for lab studies and pregnancy tests before the 1950s. (Injecting a pregnant woman's urine into a female frog makes it lay eggs.) Once chytrid finds a suitable area, it can kill half the amphibian species there within three months, and currently scientists have no way to stop or eradicate the fungus in the wild.

Still, the greatest threat to amphibians overall is damage to or loss of habitat. For instance, one critical breeding pond of the Puerto Rican crested toad "is now a parking lot by the beach," says Jennifer B. Pramuk, curator of herpetology (amphibians and reptiles) at New York City's Bronx Zoo. Although cases of species raised in captivity and reintroduced into the wild have been documented, the sheer scope of an endeavor targeting an entire group of animals "is unprecedented," Pramuk says.

Right now zoos around the world are at best equipped to support only about 50 species long-term. The Amphibian Ark hopes to recruit 500 zoos, aquariums, botanical gardens, universities and other institutions to each support a species. For example, the Bronx Zoo and Ohio's Toledo Zoo are now helping save the penny-size, bright yellow Kihansi spray toad, which usually depends on the fine mist from the cascading waters of Kihansi Gorge in Tanzania. Its habitat withered after the Kihansi River was dammed in 2000, and then chytrid arrived; the toad has not been seen in the wild since 2003.

To keep an amphibian species breeding in captivity, about 50 wild specimens are needed for genetic diversity, estimates Kevin Zippel, the Ark's program director. "You could do it in a small room," he adds. "For the price to keep a single elephant in captivity for a year, about \$100,000, you could pay for the expertise and facilities to save an entire amphibian species." Zoos and conservationists worldwide marked 2008 as the "Year of the Frog" in hopes of raising both awareness and funding, which has proved difficult to come by since the project was first proposed in 2006.

Even if saved by the project, a species might not be able to return home. The original habitat may be lost or contaminated with chytrid, which lasts for an unknown time even after the amphibians it parasitizes disappear. Safe reintroduction of a species back to the wild will likely rely on small, cautious releases onto protected land and long-term monitoring. Protecting amphibians against chytrid may be tricky, if not impossible—attempts to immunize the animals would last only a single generation, and fungicides could kill beneficial types and have other unintended consequences. "There will have to be a lot of R&D before reintroduction takes place," Pramuk says.

Before declaring the Ark fully launched, scientists must still clear many hurdles, not the least of which is funding. "Amphibians may not be as charismatic to most people as mammals," Zippel says. "But they are absolutely vital to

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their ecosystems." Moreover, he adds, because amphibians are sensitive to their environments, "by seeing what happens to them, we might see what's in store for us."

Note: This story was originally published with the title, "Saving Kermit".

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