Responding to Amphibian Declines

Frogs and toads are disappearing, along with salamanders, newts, and the unusual caecilians. With almost a third of all amphibians threatened with extinction, the combined effects of habitat destruction, climate change, pollution, invasive species, and emerging diseases such as the fungus *Batrachochytrium dendrobatidis* ("*Bd*"), cannot be addressed solely in the wild. Zoo and aquarium habitats and breeding programs have become the only hope for many species faced with imminent extinction. With their demonstrated expertise in endangered species breeding programs, accredited zoos and aquariums have been called upon by the World Conservation Union (IUCN) to meet this conservation challenge.

AZA-accredited zoos and aquariums are an active force in amphibian conservation. Two amphibian species are part of AZA's Species Survival Plan program: the Puerto Rican crested toad SSP was approved in 1984 and the Wyoming toad SSP in 1996. Since 2000, AZA members have spent more than $1.1 million on amphibian conservation and research projects in more than 20 countries around the world. Millions of dollars in funds are also being committed to expanding and improving amphibian facilities and exhibits on zoo and aquarium grounds, many of which will include conservation areas dedicated to housing and caring for critically endangered species.

Zoos and Aquariums Take Action

Conservation extends far beyond the amphibian exhibits seen at zoos and aquariums. Amphibian conservation includes partnering with local, federal, and international governments. It requires travel to local wetlands and distant river gorges. It includes field research, population surveying, and invasive species control. It calls for supplementing and transplanting wild populations and providing individuals for reintroductions. Sometimes it requires zoos and aquariums to take the lead, while at other times their most important role is to support others. Below are just a few examples of what AZA zoos and aquariums are doing behind-the-scenes:

- Recognizing that the devastating *Bd* fungus was approaching El Valle, Panama, biologists from Zoo Atlanta and the Atlanta Botanical Garden spearheaded an effort in 2005 to evacuate hundreds of frogs representing 35 species from central Panama. The Houston Zoo and El Nispero Zoo (Panama) began constructing the first in-country facility for maintaining critically threatened amphibians locally. Dozens of AZA facilities have supported the construction, training, and continuing operations of this facility; the *Bd* fungus reached El Valle in early 2006 and wild amphibian populations began to plummet. Thankfully, many of these species can still be found in assurance populations in the US and at the newly operational El Valle Amphibian Conservation Center.

- In 2000, the Bronx Zoo brought 500 Kihansi spray toads from Tanzania to US zoos when their habitat came under threat from the development of a dam. This transfer turned out to be extremely fortunate; the entire population collapsed in 2003 once dam construction was completed, and now the sole surviving Kihansi spray toads live at the Toledo and Bronx Zoos. These zoos are working closely with the Tanzanian government and local partners to establish rearing facilities in-country and assess habitats so that these toads can eventually be sent home.

- Anecdotal evidence suggested that hellbender salamander populations were declining throughout its range. This large (sometime longer than two feet!) salamander is found in the US's Southeast/ Appalachia regions. Zoos and aquariums throughout the salamander's range have stepped up to survey

and monitor local populations in the wild. The North Carolina Zoo is working with the state's Wildlife Resource Commission to monitor populations and collect water quality and population data. The species is a priority under North Carolina's State Wildlife Action Plan. The Pittsburgh Zoo and PPG Aquarium, Smithsonian National Zoological Park, St. Louis Zoo, Lincoln Park Zoo, Louisville Zoo, National Aquarium in Baltimore, Oglebay's Good Zoo, Wonders of Wildlife, Nashville Zoo, and *the Wilds* are also all involved in hellbender conservation.

- The critically endangered mountain yellow-legged frog has a limited and disjointed range in the mountains of California. Introduced trout have long been a threat to the eggs and tadpoles of this species, so a plan was developed by the U.S. Geological Survey (USGS) and the U.S. Fish and Wildlife Service (USFWS) to remove these predators from the Angeles National Forest north of Los Angeles. Zookeepers from the Los Angeles Zoo and Fresno Chaffee Zoo assisted in this endeavor. The San Diego Zoo's Conservation and Research for Endangered Species (CRES) center is currently safeguarding frogs rescued by government agencies from drying streambed pools in the San Jacinto Mountains. Once drought conditions have passed, zoo staff will work with state and federal agencies to return these individuals to their natural habitat.

- Adopt-A-Pond started in 1991 as a partnership between the Toronto Zoo and Environment Canada to address declining amphibian populations by providing teachers, students, and community groups with information resources and educational opportunities to conserve, restore, and create wetland habitats. People of all ages are taught to monitor local frog populations by listening for their calls and reporting their data to a central database. Turtles are also counted and full curricula have been developed around these programs. The Toronto Zoo excels at promoting backyard conservation and putting international conservation issues into a familiar and local context.

Tackling Conservation Strategically

Globally, over 400 species of amphibians are Critically Endangered, while over 700 species are Endangered. Some of these, plus a handful of others, have also been listed under the US Endangered Species Act. However, only a few of the species are currently under the care of AZA-accredited zoos and aquariums. To address this conservation crisis most effectively, AZA-accredited zoos and aquariums are working strategically and collaboratively. Both local and international amphibian experts from within and outside the zoo and aquarium community have developed recommendations for which species would most benefit from programs at AZA-accredited zoos and aquariums. These recommendations are based on the threats facing each species, whether the threat can be mitigated in the wild rather than requiring transfer from natural habitats into zoo or aquarium facilities, and the unique characteristics of each species. These recommendations are not set in stone; it is assumed that as new conservation measures are implemented, new diseases emerge or are controlled, and new field and lab research is conducted that recommendations and priorities will shift.

Meet the Amphibian Experts

The Amphibian Taxon Advisory Group (TAG) is a network of zoo and aquarium amphibian practitioners that share their successes, challenges, and suggestions. Their steering committee is an elected body of people recognized for their expertise and willingness to help others. In 2007, the Amphibian TAG published a Conservation Resource Manual to help novice amphibian conservationists develop successful programs. The Amphibian TAG will publish a Husbandry Resource Guide in 2008.

The AZA community is constantly challenging itself to improve its practices and the skills of its amphibian caretakers. Since 2004, the AZA Board of Regents has offered an *Amphibian Biology and Management* professional training course. This course, developed with oversight from the TAG and evaluated and updated annually, draws participants from throughout the AZA community and around the globe.

To learn more and to pledge to be a *Friend to Frogs,* visit www.aza.org/yearofthefrog.