Giving Leopard Frogs a Head Start

by Tara Sprankle

Despite being one of the most arid states, Arizona is home to a wide variety of amphibians. There are 25 native species as well as a few introduced species. Unfortunately, populations of many of our native amphibians have declined dramatically. The primary threats include disease (chytridiomycosis, a fungal infection attacking amphibians around the world), habitat loss and fragmentation, and introduced predators such as bullfrogs, several crayfish species, and non-native sport fish. Because of these threats, all six species of Arizona's native leopard frogs are protected by the state and one, the Chiricahua leopard frog (*Lithobates chiricahuensis*), is also listed at the federal level as threatened.

The Phoenix Zoo has been working with state and federal agencies and private groups for over 10 years to recover several species of native leopard frogs. These partnerships began in the late 1990s when native leopard frogs were experiencing dramatic declines. Some populations had dwindled to fewer than 100 animals.

Because of high mortality rates in the wild for eggs and small tadpoles, we decided to collect egg masses from the

Chiricahua leopard frog

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wild and rear them to large tadpoles or small frogs, life stages that provide a greater chance of survival when reintroduced. In the wild, only about five percent or fewer of the eggs in a mass survive to metamorphosis. In captivity, we have gone well beyond that and have had over 90 percent of an egg mass survive to be released as froglets or late-stage tadpoles. Releasing a large number of animals back into a site greatly increases the chance that more will survive to adulthood and reproduce. In the small, isolated populations in Arizona, releasing a large number of individuals at one time also helps ensure that the "founding population" contains as much genetic diversity as possible.

To that end, the zoo constructed the Montane Anuran Conservation Center as a temporary rearing facility for native amphibians. It was built from two insulated cargo carriers that were outfitted with air conditioning units, full spectrum lighting, and aquaculture tubs for rearing large numbers of tadpoles. The facility worked well for many years despite its limited amount of space. Recently, we have begun using a new system that uses smaller polycarbonate boxes stacked on shelves. These lower density containers allow us to more closely monitor the health of individual animals and make minor adjustments to captive conditions.

Our head-start planning cycle begins prior to the start of the field season. At that time, the recovery teams identify donor and recipient sites for release of head-started individuals. Once the breeding season begins, volunteers and state and federal biologists monitor donor sites for breeding and spawning activity. Once they find an egg mass, they notify the zoo. Whole or partial egg masses are transported to the zoo and set up in a tank to hatch. Zoo staff then raise the tadpoles until they become large tadpoles or small metamorphs, at which time they are released back into the wild. Between 1995 and 2007, the zoo head-started over 7,000 tadpoles and frogs! This year, we will move into a new facility built on the zoo grounds called the Native Species Conservation Center (NSCC). The pur-

Staff from the Phoenix Zoo and the Forest Service release captive-produced frogs into the wild.

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pose of the NSCC is to head-start native Arizona species for release as well as to provide short-term housing for populations or individuals in jeopardy. The facility will also educate the public about local and global conservation issues. Moving into the NSCC will give us more space and flexibility as well as allow us to work with multiple populations of frogs at the same time.

Since 2001, some populations of the Chiricahua leopard frog have recovered enough that hundreds of egg masses have been laid in the wild. This increase allows us to shift towards the more natural approach of supplementing current populations by translocating wild egg masses or tadpoles rather than only releasing head-started captive stock. The number of ponds where Chiricahua leopard frogs have become or are becoming established has increased four-fold. This project is a great example of how various government agencies and private groups can work together to help stabilize a declining population.

Although the Phoenix Zoo's primary contributions to southwestern frog conservation have been head-starting of egg masses, developing and improving captive husbandry techniques, and captively rearing frogs, members of the zoo staff have also participated in population surveys, habitat restoration, and presentations to educate the public about the plight of amphibians. In 2008, we plan to bring back the Tadpole Taskforce, a group of volunteers used in the early 1990s to help with the daily care of the tadpoles. Their help was invaluable, and it gave interested people a way to become directly involved with conservation. We hope that the zoo's continued efforts will make a difference in the survival of the Chiricahua leopard frog as well as Arizona's other native amphibians.

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Chiricahua leopard frogs hatching at the Phoenix Zoo

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