A crisis of epic proportions is ravaging the amphibian world. It’s all in the numbers: roughly 30% (1,895) of the 6,285 amphibian species assessed by the International Union for Conservation of Nature (IUCN) are listed as Threatened with extinction; 6% (382) are known to be Near Threatened and 25% (1,597) are Data Deficient – nearly 3,900 species are in trouble. Worse, 165 amphibian species are believed to have recently gone extinct, including 39 known to be extinct or extinct in the wild but still surviving in captivity. The amphibian crisis has been called the biggest mass extinction in the environment since the dinosaurs’ demise.

While habitat loss is the greatest contributor to the extinction of amphibians, the deadly fungus Batrachochytrium dendrobatidis (Bd), discovered just 15 years ago, is decimating populations with devastating speed—sometimes wiping out an entire species in just a few weeks. Bd is currently unstoppable and untreatable in the wild. Preserving species ex situ is sometimes the only hope of staving off complete extinction.

Why do we care? Amphibians have been compared to canaries in a coal mine: just as miners used sensitive canaries to warn them of toxic gases in the mines, amphibians might be warning us of unsafe environmental conditions. In areas of the world where amphibians have declined, there has been an increase in invertebrate pests that damage crops and carry human diseases. Species extinction also means the loss of a pharmacopoeia of possible medical applications that we’re only now beginning to learn about. (A species of frog contains in its skin a chemical that is a painkiller 200 times more powerful than morphine without being addictive; another blocks transmission of the HIV virus.)

Two amphibian conservation organizations, Panama Amphibian Rescue and Conservation (PARC) Project and Amphibian Ark (AArk) are both on the front lines in the race to stem the loss of amphibians. Both are members of the 40-year-old International Species Information System (ISIS), taking advantage of the Zoological Information Management System (ZIMS), cloud-based software housing a worldwide database that provides access to historical and current data to determine population trends. Nearly 80,000 animals belonging to 688 species of amphibians are currently represented in ISIS’ ZIMS.

Started in 2009, the PARC Project was launched with the goal of building additional capacity to secure amphibians at risk from Bd and other disease-related declines. Panama is a biodiversity hotspot for amphibians with more than 200 species of frogs, salamanders and caecilians. For the past 20 years, however, many of Panama’s unique and endemic amphibian species have declined or disappeared as a result of the deadly Bd that has spread throughout Latin America and the Caribbean. In fact, a third of amphibian species in Panama are considered threatened or endangered. Worldwide, according to Dr. Brian Gratwicke, Amphibian Conservation Biologist with the Smithsonian Institution, “We are losing 40% of the amphibian species we know of. Particularly hard-hit are amphibians in the mountainous near-tropics, where declines have been catastrophic.”

In fact, PARC has just opened a new rescue and research center at the Smithsonian Tropical Research Institute in Gamboa, Panama. Eastern Panama is at the front of the Bd fungal wave as it spreads across Latin America. PARC partners are racing to stay ahead in order to save those species that are in most critical danger as the disease advances. One important—though not glamorous—component to any successful conservation program is careful recordkeeping.

“An animal that has been separated from its provenance in information loses much of its value from a conservation perspective,” says Gratwicke, “So our move over to a systematic records management solution has really helped us to get our house in order at that level. In this collaborative partnership-based project, our vets work in Colorado, Massachusetts, and Georgia, and our pathologist is in California. This move to an online solution has already helped improve communications over great distances and helped us share records. We are especially excited to use the medical records function.”

AArk was created in 2007 to carry out the ex situ components of the IUCN, Species Survival Commission’s Amphibian Specialist Group’s Amphibian Conservation Action Plan (ACAP). Its principal partners are the Conservation Breeding Specialist Group (CBSG), World Association of Zoos and Aquariums (WAZA), and the Amphibian Specialist Group (ASG). AArk selects species most in danger of extinction and maintains them in captivity until they can be secure in the wild. Its programs guide those involved in managing amphibian populations in zoos and aquariums so that they will have healthy, sustainable populations to reintroduce back into the wild in the future.

AArk is working especially closely with biologists studying Madagascar amphibians, in hopes of developing probiotic treatments for Bd. Two phases of their work involve probiotic colonization and persistence trials, and clinical trials with captive amphibians. This has meant teaming up with zoos and aquariums, especially those with Malagasy frogs. The knowledge gained will hopefully lead to the development of probiotic treatments that will help save some of the planet’s most threatened amphibian species.

Kevin Johnson, AArk’s Taxon, Communications and Development Officer, says, “It’s critical that we have access to the largest animal records database and specifically, to the largest source of information about captive amphibians as a key resource for conservation efforts around the world. The global database allows us to see which of the target species are being held in captivity, and which institutions have had success and expertise in breeding them.”

PARC’s and AArk’s important work tracking in situ and ex situ amphibian conservation projects is truly a race against time.

J. Peter Donlon is Director of Global Member Development at ISIS. He works closely with the 923 ISIS members in 87 different countries, and manages partnerships with a further 29 global zoological associations. ZIMS contains the largest and most valuable knowledge base of detailed husbandry and medical information on more than 3,100,000 animals and 16,000 species. Peter can be reached at pdonlon@isis.org or by phone at 651.447.5573.