

# panama amphibian crisis

## Panama Amphibian Crisis

As the amphibian chytrid fungus has been acknowledged as a major cause of global amphibian extinctions, researchers and conservationists continue to document its devastating effects on species in the wild. A long-term data set published in early 2006 (K.R. Lips et al., 2006, Proceedings National Academy Sciences) formulated dire predictions about the geographic spread of the pathogen across central Panama—and inevitable disappearance of many populations of endemic amphibians. This scientific prediction was the primary motivator and justification for an unprecedented rescue effort mounted by Zoo Atlanta and the Atlanta Botanical Garden in 2005. Forming captive assurance colonies of these rare species is key to their immediate survival, in order that the species may survive while crucial research is conducted to better understand the fungal disease, possible controls, and abilities of amphibians to resist its effects. The Panama Rescue Project focused on the rich amphibian fauna in around El Copé and El Valle de Anton in central Panama. The project was a direct rescue of infected frogs treated in a triage setting at the infected site (El Copé) and a pre-emptive collection at the next major region of intact amphibian biodiversity in the path of the chytrid fungus (El Valle). These animals simply had no place to go in Panama, as there was at that time no zoo or other institution to care for them. Thus, after consultation with the Panamanian government, the decision was made to export animals and establish survival-assurance colonies at the Atlanta Botanical Garden and Zoo Atlanta. As a result, there currently are founder individuals of 35 species from this region safely secured in survival-assurance colonies.

Inevitably, continued monitoring at El Valle has documented the arrival of the chytrid fungus into the region and the inevitable deaths of amphibians. All available scientific data indicate that the amphibian fauna of El Valle has begun its terminal decline that will result in permanent loss of many regional populations and, quite likely, extinction of multiple species. Building on the efforts by Zoo Atlanta and Atlanta Botanical Garden, the Houston Zoo has arrived on the scene to spearhead the completion of the El Valle Amphibian Conservation Center (EVACC), as state-of-the-art facility being constructed on the grounds of the El Nispero Zoo in El Valle. This will allow rescue efforts in Panama to begin immediately and continue indefinitely, thus enabling Panamanians to work in country to safeguard their own natural heritage. At Houston Zoo, Dr. Alberto Mendoza, Paul Crump and colleagues deserve great credit for establishing the first national amphibian facility in Panama. As the fungal crisis is currently underway at El Valle, staff from Atlanta Botanical Garden and Zoo Atlanta began offering key assistance in logistics, staffing, and training in early June, 2006.

## Timeline

### November 2004

Dr. Karen Lips (Southern Illinois University) and colleagues document the catastrophic decline of amphibians at El Copé, Panama. This effectively verifies the predictive power of their spatiotemporal model of the spread of the chytrid fungus, and allows for subsequent predictions to be made in the region (published: Lips, K.R., F. Brem, R. Brenes, J.D.



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Reeve, R.A. Alford, J.Voyles, C. Carey, A. Pessier, L. Livo, and J.P. Collins. 2006. Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. *Proceedings of the National Academy of Sciences USA* 103:3165–3170).

#### **December 2004**

Key stakeholders in amphibian research and conservation meet in Atlanta to outline general scope and scale of necessary conservation action to preserve amphibians in the face of emerging infectious diseases and other global threats.

#### **March–August 2005**

Biologists from Zoo Atlanta and Atlanta Botanical Garden conceive and implement pilot project to determine feasibility of unprecedented ecosystem-level pre-emptive extractions of amphibians from areas predicted to be affected by imminent threats such as spreading diseases.

Atlanta group devises protocol for field-treatment of chytrid fungal infection, and sets up rural triage facilities in El Copé and El Valle; hundreds of frogs are maintained temporarily until they are transported to quarantine facilities in Atlanta. This 4-month effort established founder colonies of 35 amphibian species from central Panama; all currently are safe in facilities where they are being maintained and many are reproducing.

As the logical next step, to establish capacity in Panama, a conservation partnership between Houston Zoo and El Nispero Zoo (El Valle, Panama) initiates construction of the first in-country facility for maintaining critically threatened endemic amphibians; facility anticipated to be fully operational by July 2006. Staff from the Atlanta Botanical Garden and Zoo Atlanta are closely involved in training local biologists in Panama to maintain these in-country survival-assurance colonies.

#### **August–December 2005**

The World Conservation Union (IUCN) and Conservation International (CI) host series of strategy meetings, culminating in The Amphibian Conservation Summit. The resulting Amphibian Conservation Action Plan (ACAP) announced in form of a formal Declaration ([www.globalamphibians.org/acap\\_5fsummit\\_5fdeclaration.pdf](http://www.globalamphibians.org/acap_5fsummit_5fdeclaration.pdf)). The ACAP lays out the basic infrastructure to support a global conservation response to global amphibian extinctions. The Atlanta group were delegates and primary contributors to the Summit, and to ACAP. The ACAP has been broadly endorsed by conservation stakeholders, including IUCN-Conservation Breeding Specialist Group (CBSG), The American Zoo and Aquarium Association (AZA), and The World Association of Zoos and Aquariums (WAZA).

#### **January–February 2006**

Dead frogs found at several sites in the El Valle region; subsequent testing confirms presence of chytrid fungus at all sites. The inevitable catastrophic crash has begun.....



## April 2006

Staff from Atlanta group and IUCN-CBSG team up to help Houston Zoo/El Nispero Zoo expedite funding and construction on the amphibian facility in El Valle. Plans also launched to convene a volunteer staff, and funding base, from various institutions to implement a rapid-response rescue operation—literally, to get amphibians out of the wild, treat them, and hold them in temporary facilities until the permanent facility is complete, staffed, and deemed biosecure. This rescue operation will take place during June–July 2006.

## Learn more about amphibian declines and actions being taken to address the problem

Global Amphibian Assessment  
<http://www.globalamphibians.org/>

Declining Amphibian Population Task Force  
<http://www.open.ac.uk/daptf/index.htm>

IUCN-CI Amphibian Conservation Summit:  
<http://www.iucn.org/en/news/archive/2005/09/amphibians.pdf>

IUCN-Conservation Breeding Specialist Group  
<http://www.cbsg.org/amphibian.scd>

Houston Zoo/El Nispero Zoo El Valle Amphibian Conservation Center  
<http://www.waza.org/conservation/projects/projects.php?id=93#<strong>The%20El%20Valle%20Amphibian%20Conservation%20Center%20at%20El%20Valle%20de%20Anton>

Wildlife Trust: Consortium for Conservation Medicine  
Amphibian Feature:  
[http://www.wildlifetrust.org/enter.cgi?p=news/2006/0201\\_slide\\_frog\\_a.htm](http://www.wildlifetrust.org/enter.cgi?p=news/2006/0201_slide_frog_a.htm)

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