



# ***THE ROLE OF TRADE IN THE AMPHIBIAN CRISIS***

**November 19, 2009**



## **SUMMARY OF SYMPOSIUM PROCEEDINGS**

Peter Jenkins, Director of International Conservation, and Jamie Rappaport Clark, Executive Vice President, welcomed everyone to the symposium on behalf of Defenders of Wildlife. With representatives from agencies, NGO's, and the scientific community, this unique gathering aimed to facilitate sharing of ideas and knowledge to enable the symposium participants to move forward on this vital issue.

### **Key Terms**

- *Bd*, *Bactrachochytrium dendrobatidis*, is a fungus which infects amphibians and persists in the environment and is often referred to as the amphibian chytrid fungus.
- Chytridiomycosis is the disease caused by infection with *Bd*.
- OIE is the World Organization for Animal Health which has developed standards for regulating the trade of amphibians for *Bd*.

### **SPEAKER PRESENTATIONS**

#### ***What is the Global Amphibian Crisis, and Why Should We Care?***

Presented by Dr. Robin Moore, Conservation International

Amphibian population declines have been noted since the 1970's, but not until 1989 were they recognized as a global phenomenon. In 2004, the first comprehensive assessment discovered that one-third of amphibians were threatened, and the newest assessment reveals the scientific evidence of the mass extinction crisis is mounting. Amphibians are disappearing from protected areas where they should be persisting, revealing that the conventional approaches to conservation are inadequate.

Why should we care? Amphibians eat insects, and effects on amphibians can have cascading effects on food webs. Larval and aquatic amphibians play a significant role in the aquatic ecosystem, while adults feature prominently in the terrestrial ecosystem: therefore, losing one species is often akin to losing two species. Amphibians also have medicinal properties which hold the potential for scientific breakthroughs. Amphibians are simply a part of healthy ecosystems from which we can benefit.

#### ***What is Chytrid, and How is it Affecting Amphibian Populations?***

Presented by Dr. Karen Lips, University of Maryland

Amphibians are presenting a new paradigm in the loss of biodiversity. Given the global scope and broad taxonomic scale of effects, conservation business as usual cannot save the amphibians. As *Bd* sweeps through an area, few species remain and few individuals survive from those populations that do persist. *Bd* infects many species of frogs and any frog can transmit the fungus. The zoospores of the fungus may infect other frogs, re-infect the recovering frog, or persist in the environment. The impact on frogs varies, but the invasive species *Bd* is rapidly spreading. Genetic analysis has shown that species are being lost more quickly than they can be discovered.

Endemic species are the ones most decimated, and the biodiversity of an ecological community decreases as *Bd* spreads. Nutrient cycling is affected and the ecology of waterways changes with possible cascading effects downstream. Unfortunately, the temperatures and moisture levels that are best for the fungus are also the best for the frogs, and as the climate changes, new areas will become susceptible to the fungus.

## *How Does the International Amphibian Trade Exacerbate the Amphibian Crisis?*

Presented by Dr. Brian Gratwicke, Smithsonian National Zoological Park

The amphibian trade is ubiquitous, with less developed and highly developed countries importing and exporting on all the continents. In the southwestern United States salamanders are used as bait and released if the fishermen are unsuccessful while nationally, secondary schools order leopard frogs from biological supply companies; around the world, ten thousand tons of frog legs at a value of \$500 million are traded every year. Overharvesting has impacted many species worldwide.

Furthermore, amphibian pathogens are also spread through trade. Indonesia, a chytrid-positive country, is responsible for 40% of the world's frog legs supply. Five million amphibians are imported into the U.S. annually. Schloegel and Daszak have shown that as high as 62% of live bullfrogs sold in oriental markets in San Francisco, Los Angeles and New York are infected with chytrid. Trading and market conditions often promote contact among amphibians, and though chytrid is present in the U.S., new strains could be entering. The importers of these animals need to price their products to reflect the risks of trade.

## *What are the Consequences of America's Unregulated Amphibian Trade?*

Presented by Dr. Peter Daszak, Wildlife Trust

Dr. Daszak opened with the relevant question, "Is the evidence good enough to move on [the amphibian chytrid fungus and trade] in a policy way?" The answer is yes. Chytrid is a disease and spreads like a disease, with economic and cultural costs and losses. Studies of disease ecology have shown that we can predict the spread of disease, often based on travel and trade routes, and the amphibian trade is unregulated. The spread of *Bd* can be predicted—ignorance is not an acceptable claim. The scientific community is increasingly endorsing use of disease spread models. People who question why we should attempt to protect against *Bd* when it is already present in the U.S. do not question getting a seasonal flu vaccine because new flu strains pose new dangers.

Progress has been made with the OIE listing of chytrid as a notifiable disease. Each OIE party must declare the presence or absence of *Bd*. Defenders of Wildlife has submitted petitions to regulate *Bd* in the U.S. amphibian trade. The scientific and regulatory communities should act to mitigate the trade impacts on the spread of wildlife and zoonotic diseases. The knowledge base regarding disease spread is incontrovertible; now we must act.

## *What are the Challenges of Regulating Interstate Commerce?*

Presented by Priya Nanjappa, Association of Fish and Wildlife Agencies

The Association of Fish and Wildlife Agencies has been spearheading an effort to compile laws and regulations regarding the use of amphibians and reptiles across the United States. An amphibian and reptile regulatory summit in early November examined the broad variability of regulations among states and identified recommendations for moving forward.

Generally, existing statutes and regulations regarding scientific, personal, and commercial use vary greatly across the states; scientific collection is the only type of use that is consistently regulated. Many states have few restrictions on personal or commercial takes. Opportunities exist, however, in re-examining existing frameworks designed for game species and applying them to non-game species; this is particularly applicable to herpetofauna given the large user community. Although only one-third of the states have full-time herpetologists on staff, and the capacity of law enforcement to identify and prosecute violations is limited, interest among state fish and wildlife agencies in collaborating with partners on this issue is great. Outreach to user groups and specifically addressing disease transmission and testing are future topics in this endeavor as part of coordinating state efforts related to threats to amphibians.

## *What Policy Actions Can Address the Threat of Trade?*

Presented by Peter Jenkins and Alejandra Goyenechea, Defenders of Wildlife

Defenders produced a report on the wildlife trade, *Broken Screens*, which documented at least 172 non-native amphibian species entering the country from 2000 to 2004 - with at least 13 of them known to be actual or potential invaders or disease risks. There are no Federal regulations covering the risks of the amphibian trade. The legal framework provided by the Lacey Act is outdated. Defenders of Wildlife has submitted petitions to the Departments of Interior and Agriculture to regulate the import, export, and interstate commerce of amphibians according to the OIE standards, but has had no response to date.

Further, enacting a new bill in Congress which revises the Lacey Act is necessary and being pursued by several actors. Beyond the disease risks, the entry and subsequent invasion by harmful non-native amphibian species is an important aspect of the trade discussion and should be addressed. Hundreds of “successful” introductions have already been documented for amphibians worldwide.

Internationally, the OIE standards should be promoted broadly along with the drafting of national “amphibian action plans” by amphibian-rich countries. CITES is another tool that is being pursued by Defenders with the recognition that over-harvested amphibians also may be affected by *Bd* and doubly in need of protection. A total of 17 new species listings were originally proposed for CITES by Defenders; six of those species will be voted on at the Conference of the Parties in March, 2010. CITES’ limitations should be acknowledged; it is not a suitable forum to comprehensively address disease risks. Enforcement and education—the latter in the pet, food, and medicinal trades—will be two critical needs for conservation.

### QUESTION AND ANSWER SESSION: THEMES OF DISCUSSION

**Examining *Bd*:** Can we trace how *Bd* is spreading to clearly associate it with anthropogenic rather than natural drivers? What do we know about the history of *Bd* in the U.S., and what has genetic analyses revealed about the strains in the U.S. from several decades ago? Genetic analyses is being performed across the world to build a better picture of *Bd* distribution and impact, but for now we know it was not present 100 years ago and that this disease is extirpating entire species.

**Implementing the OIE Standards:** Can water be tested for *Bd*? What happens at the borders if the standards are adopted? How affordable would OIE-based regulations be? USGS is working toward testing water accurately. Ultimately, the U.S. effectively regulates a variety of comparable imports. Experience shows trade can be regulated and still industries can continue to trade in a profitable way.

**Transforming Industry:** Embracing a regulated system of captive breeding as the paradigm for traded amphibians has promise, given the precedent of the alligator and crocodile products industries. Industry, scientists, and others can come together as stakeholders in transforming the system. Some amphibian traders would prefer captive breeding if it were comparatively cheaper. Appropriate pressure on the pet industry might lead to a greater domestic captive-bred industry. However, a new paradigm must also evaluate and mitigate the risks of invasive species of amphibians. Expanding captive breeding as opposed to importing wild-caught amphibians does not necessarily reduce the likelihood of invasions by nonnative species.

**Using Appendix III of CITES:** Can Appendix III be effectively used to block species known to harbor *Bd* from entering the U.S.? Opinions differed as to whether this would be an appropriate use of Appendix III.

**Promoting Education:** Regulation alone is not sufficient. As a beginning, the public must be informed about the pet trade and instructed not to release animals into the wild.

**Finding Funding:** Private conservation dollars, not taxpayers or those who benefit from the amphibian trade, are currently funding the vast majority of amphibian conservation initiatives worldwide, providing a perverse environmental subsidy for the people and businesses spreading *Bd*. Fortunately, new language in the appropriations bill for the Fish and Wildlife Service Wildlife Without Borders program has earmarked about \$200,000 for amphibian conservation. This funding is a start but is not sufficient, given the vast challenges.