

SAVE THE FROGS! -- Translating Science Into Action

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Amphibian populations have been rapidly disappearing worldwide in recent decades. One-third of the world's species of frogs, toads, newts, salamanders and caecilians are on the verge of extinction, and up to 200 species have already gone completely extinct. In America, there are 296 amphibian species, of which 36 (12.2%) are listed by the IUCN (International Union for the Conservation of Nature) as threatened. This number underestimates the true number of threatened species, as there are certain species that simply have yet to receive legal protections.

Currently only a small proportion of our society knows that amphibians are disappearing. This lack of awareness in the general public is one of the greatest impediments to successful amphibian conservation efforts, as most of the threats to amphibians could be ameliorated if people were aware of the effects of their actions. Prior to 2008, most amphibian conservation efforts in the United States focused on scientific research. However, scientific research in and of itself is not sufficient to save amphibians, because it does not address the root cause of amphibian extinctions: the actions of humans.

Founded in May 2008, SAVE THE FROGS! is America's first and only public charity dedicated to amphibian conservation. Our mission is to protect amphibian populations and to promote a society that respects and appreciates nature and wildlife. SAVE THE FROGS! is preventing further extinctions through a combination of environmental education and advocacy: (1) educate and involve the public; (2) work with politicians to improve legal protections for amphibians; and (3) work with corporations to reduce the impact of their trade practices on amphibian populations.

SAVE THE FROGS! has several active educational programs, including:

Save The Frogs Day

Save The Frogs Day is an annual event we conceived and coordinate. On this day we encourage the appreciation and celebration of amphibians by people from all walks of life. The 2nd Annual Save The Frogs Day (April 30th, 2010) was the largest day of amphibian education and conservation action in the planet's history, with 104 known events in 21 countries. Save The Frogs Day has been legally recognized by various politicians in both Canada and the United States. We are working hard to ensure that Save The Frogs Day 2011 events take place at thousands of schools, zoos, museums, and community groups worldwide, and that the day receives widespread political recognition and is covered by major news outlets around the world. The success of the event lies in providing people with the educational materials, ideas, inspiration and motivation to take action on behalf of amphibians in their own communities.

Free Course at the Smithsonian Institute

While the infectious disease chytridiomycosis has become a major focus of amphibian research worldwide, few amphibian biologists have any background in the laboratory techniques

necessary to detect the disease, and training classes are both rare and expensive. To remedy this problem, SAVE THE FROGS! Founder Dr. Kerry Kriger taught a free amphibian disease detection course at the Smithsonian Tropical Research Institute in Panama City in October 2009. The course was taught in Spanish and was attended by 25 scientists from Panama, Colombia, and Costa Rica, three countries whose amphibian populations have been decimated by disease. SAVE THE FROGS! has made this course's slideshow presentations and detailed laboratory protocols freely available at savethefrogs.com/qpcr, where they have been downloaded by scientists from more than 30 countries.

Public Service Announcements

With the assistance of ClearChannel and other major advertising companies, SAVE THE FROGS! has been able to post large Public Service Announcements in the streets of Washington, D.C., on San Francisco public buses, and in eight major U.S. airports, including Chicago O'Hare, Denver and Miami International. These announcements highlight the effect of climate change on frog populations.

Free Public Presentations on Amphibian Conservation

To raise awareness of the plight of amphibians and to motivate people to take action, SAVE THE FROGS! Executive Director Dr. Kerry Kriger has given over 80 free presentations on the amphibian extinction crisis to schools, universities, zoos, museums, businesses, and community groups. Audio and video recordings of many of these presentations are archived and freely downloadable from savethefrogs.com. SAVE THE FROGS! also offers a free Webinar Series featuring guest scientists from around the world.

Worldwide Media Coverage

The mass media provides an excellent venue for disseminating information on amphibian extinctions and spreading word of the threats amphibians face. SAVE THE FROGS! regularly gives interviews to journalists, and our work has been featured on the front page of *Le Monde*, in *Vanity Fair*, the *Washington Post*, *Chicago Tribune*, *Scientific American*, on ABC News, and in an array of other media outlets worldwide.

Frog Art and Poetry Contests

Many teachers have no background in biology and thus require innovative teaching methods to get their students educated and excited about amphibians. The SAVE THE FROGS! Art and Poetry Contests allow them to do just that. The 1st Annual Frog Art Contest received 394 entries from 10 countries, and the most recent Frog Poetry Contest received 774 entries from 26 countries. We are currently preparing a book of the best frog art and poetry; the book will be published and distributed nationwide, raising awareness of amphibian extinctions, and raising money to support our conservation efforts.

THE VICTORY SHEET

Saving Florida's Pig Frogs

At least 100 million frogs are taken out of the wild for use as food each year, crippling many amphibian populations. We informed San Francisco's Restaurant Gary Danko about the

amphibian crisis, and asked them to remove the wild-caught Florida Pig Frogs (*Rana grylio*) from their menus. The restaurant agreed to discontinue frog legs sales, making them the first restaurant in the world to remove frog legs from their menus for environmental reasons. Likewise, Wegmans supermarkets removed frog legs from the shelves of their 76 locations based on our request. As Restaurant Gary Danko and Wegmans are extremely well-known and well-respected in the culinary community, we expect many restaurants and supermarkets to follow in their footsteps. As such, these are major victories for worldwide amphibian conservation efforts. Our campaign to end the ecologically damaging frog legs trade, however, is far from over.

Keeping Non-Native Species Out Of California

In April 2010, the California Department of Fish & Game became the first state in the country to ban the importation of non-native frogs and turtles for use as food. Unfortunately, a vocal minority of restaurant and supermarket owners successfully lobbied the Fish & Game Commission to hold a "re-consideration" of that ruling. On May 19th, SAVE THE FROGS! Founder Dr. Kerry Kriger testified at the Commission's May 19th "reconsideration" hearing, highlighting the spread of infectious disease and invasive species that inevitably accompany the frog legs trade. Not only did the Commission vote 3-2 to maintain the ban, they also voted to research methods of enforcing the ban and ensuring invasive species do not slip into the state via potential loopholes. This victory would not have been possible without the 1,196 letters sent to the Department of Fish & Game by SAVE THE FROGS supporters – ours comprised over half of the 2,043 comments received by the Department!

Protecting The California Tiger Salamanders

The California Tiger Salamander (*Ambystoma californiense*) has been hard hit by habitat loss and road mortalities. Until recently however, the salamanders were afforded very few legal protections, due in large part to a strong lobby from agriculture groups and land developers. After 452 Save The Frogs Supporters sent letters to the California Fish & Game Commission urging their assistance, the Commission voted 3-2 on March 3rd, 2010 to protect the Tiger Salamanders under the state Endangered Species Act. This represents a major step forward in the conservation of the species.

Saving New Zealand's Endangered Frogs From Mining

Two of the world's most unique and endangered frog species were under imminent threat of extinction when the New Zealand government announced plans to remove legal protections from the strongholds of the frogs' last remaining populations. The government's plans to allow mining would have doomed the critically endangered Archey's Frog (*Leiopelma archeyi*) to almost certain extinction. SAVE THE FROGS! organized a campaign to save the threatened frogs, and 1,275 of our supporters sent letters to New Zealand's Minister of Economic Development urging him to protect New Zealand's endangered frogs...which he did! The Archey's Frog and Hochstetter's Frog are safe from mining - for now at least.

SAVING KOREA'S AMPHIBIANS

Based on the success of SAVE THE FROGS!, I would suggest that the Korean conservation community implement a similar initiative: a nonprofit, non-governmental organization with a sole goal of protecting amphibians. The organization would raise money via individual donors,

grants from foundations and government bodies, and through corporate sponsorships. The organization would focus on improving environmental education in Korean schools, enacting better legislation, purchasing critical amphibian habitat and other activities not traditionally covered in the day to day life of university academics. Ideally, the organization would have a minimum of US\$75,000 for the first year's funding, to cover the salary of a full-time Executive Director and other necessary expenses. The Executive Director would preferably have skills in nonprofit or business management, marketing, communications, fundraising, website development, teaching and amphibian conservation; in reality though, few people have all these skills to begin with. Fortunately, they can be learned.

Such an organization could potentially be organized as an independent, but associated branch of SAVE THE FROGS!, and operate under the name "SAVE THE FROGS! Korea". This would require a Korean language version of www.savethefrogs.com and would hasten the accomplishment of the Korean organizations' goals, as many of our successful, pre-existent programs could be enacted in Korea.

WHY ARE ALL THE FROGS DISAPPEARING?

Frogs populations are disappearing worldwide at unprecedented rates, even from supposedly pristine areas such as national parks and preserves. Here's why.

Global Warming & Climate Change. Frogs need moist conditions in order to survive. But rising temperatures mean rising cloud levels, and for frogs in tropical cloud forests, this means time is running out, as their habitats literally dry up. In Yellowstone National Park, persistent droughts in recent decades have affected the water table and caused 25% of the park's ponds to become permanently dry. The frogs that once inhabited these ponds are now gone.

Pesticides & Pollutants. Pesticides and pollutants can be carried by the wind to locations hundreds of miles from their origin, and are then brought by gravity to the waterways in which frogs live and breed. Frogs have permeable skin that absorbs these chemicals, which can cause limb deformities (missing or extra limbs), hermaphroditism, deformed mouthparts and delayed metamorphosis.

Habitat Destruction. Urban expansion is transforming once vibrant wetlands and forests into shopping malls and housing developments. New roads serve as death traps to slow-moving amphibians trying to move through an inhospitable landscape. In developing countries, species-rich rainforests are quickly being converted into oil palm plantations, sugarcane fields, and ranchland.

Infectious Diseases. Tens of millions of frogs are shipped around the world each year for use in the frog pet trade, food trade, bait trade, and laboratory trade. Very few of these frogs undergo disease testing, and sick frogs inevitably escape into their new environment, where native frogs have no evolved defenses against the new pathogens. One disease, chytridiomycosis, has driven up to 100 frog species to complete extinction. Human activity is facilitating the spread of chytridiomycosis and threatening frog species worldwide.

Over-Harvesting for the Pet and Food Trades. Tens of millions of frogs are removed from the wild each year, destined for dinner plates and for American, European and Japanese pet shops. This harvest is unsustainable, and threatens some of the world's most appreciated frogs: brightly colored species such as poison dart frogs and red-eyed treefrogs, and large frogs, such as the Goliath Frog, which could be hunted to extinction for the meat on its legs.

Invasive Species. Trout have been introduced to naturally fishless mountain lakes and streams worldwide, from the Sierra Nevadas to Patagonia and the Southern Alps. Trout are voracious predators of tadpoles, and have completely extirpated many montane frog populations, as is the case with the Sierra Nevada Yellow-Legged Frog, formerly one of the most abundant amphibians in California.

WHY WE MUST ACT QUICKLY TO SAVE THE FROGS

The rapid disappearance of frog populations worldwide in recent decades is undoubtedly one of the most significant environmental issues of the 21st century. Unless we act quickly, frog species will continue to disappear, resulting in irreversible consequences to Earth's ecosystems and to humans.

Frogs eat ticks, mosquitoes and other disease vectors. Adult frogs eat large quantities of insects and arachnids, including disease vectors such as mosquitoes and ticks that can transmit fatal illnesses to humans (i.e. Lyme disease, dengue fever and malaria). The continued disappearance of frog species will inevitably result in an increase in such diseases, and related fatalities.

Humans use frogs in medicinal research. Approximately 10% of the Nobel Prizes in Physiology and Medicine have resulted from investigations that used frogs. When a frog species disappears, so does any promise it holds for improving human health and well-being.

Frogs are bioindicators. Most frogs require suitable habitat in both the terrestrial and aquatic environments, and have permeable skin that can easily absorb toxic chemicals. These traits make frogs especially susceptible to environmental disturbances, and thus frogs are considered accurate indicators of environmental stress: the health of frogs is indicative of the health of the biosphere as a whole. Further, frogs have existed in more or less their current form for 250 million years, having survived countless ice ages, asteroid crashes, and other environmental disturbances, yet now one-third of amphibian species are on the verge of extinction. This should serve as an alarm call to humans that something is drastically wrong in the environment.

Frogs are an integral part of the food web. Frogs serve as an important food source to a diverse array of predators, including dragonflies, fish, snakes, birds and even monkeys. Adult frogs can eat hundreds of insects in a single night, and tadpoles keep waterways clean by feeding on algae. The disappearance of frog populations disturbs an intricate food web and results in negative impacts that cascade through the ecosystem, rendering other species vulnerable to extinction processes.

Frogs are cool! Frogs provide a source of enjoyment and cultural fascination, and it is our duty to safely deliver Earth's wonders to our grandchildren. Frogs are an integral part of our existence on this planet and they have every bit as much right to live here as do we...so let's SAVE THE FROGS!

