amphibian ark

In This Issue

AArk Newsletter No. 10, March 2010

The Amphibian Ark team is pleased to send you the latest edition of our e-newsletter. We hope you enjoy reading it.

The Amphibian Ark

Meet the Amphibian Ark's Steering Committee! (Part 3)

Kevin Zippel, Program Officer, Amphibian Ark

The Steering Committee is the AArk's primary conduit for sharing information quickly throughout our global network, and for seeking direction from our stakeholders on AArk's strategic directions, and in this newsletter, we meet six more members of the committee.

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Amphibian Ark launches FrogMatchMaker.com

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Amphibian Ark has five exciting new credit cards, featuring endangered frogs, and US residents can help support Amphibian Ark with every purchase.

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Amphibian Ark Seed Grant announcement

Kevin Zippel, Program Director, Amphibian Ark

Amphibian Ark is pleased to announce the second annual call for proposals for its Seed Grant program. This $5,000 competitive grant is designed to fund small start-up projects that are in need of seed money in order to build successful long-term programs that attract larger funding.

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AArk launches web page to inform partners about use of cargo containers as amphibian facilities

Kevin Zippel, Program Director, Amphibian Ark

Insulated shipping containers can make ideal rescue facilities for amphibians. The idea was pioneered by Gerry Marantelli at the Amphibian Research Centre in Australia, and the AArk has now developed a web page to show partner organizations how they can use containers for their amphibian programs.

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Guatemalan Amphibian Conservation Needs Assessment Workshop

Kevin Johnson, Taxon Officer, Amphibian Ark

The Amphibian Ark facilitated an amphibian Conservation Needs Assessment workshop for Guatemalan species, from 4th-6th February at the Museum of the University of San Carlos in Guatemala City. Participants at the workshop were Carlos Vasquez, Jonathan Campbell (Guatemalan Regional Chair of the IUCN/SSC Amphibian Specialist Group), Ted Papenfuss, Manuel Acevedo, Roderico Anzueto, Liza García, Jacobo Conde, Alejandra Zamora and Gustavo Ruano, and the workshop was facilitated by Kevin Johnson.

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Frog vets on the road

Ron Gagliardo, Training Officer, Amphibian Ark

The Balsa de los Sapos program in Ecuador is one of the leading amphibian conservation programs in Latin America. In late January, several vets visited the program to help with health and disease issues within their collection.

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News

New developments in our understanding of amphibian declines

Kevin Zippel, Program Director, Amphibian Ark

The origin of the deadly fungus that causes chytridiomycosis in amphibians (*Batrachochytrium dendrobatidis*, Bd) is still unknown. New research and studies question its origins.

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Regional updates on biobanking activities

Compiled by Rhiannon Lloyd, Chair, Amphibian Ark Biobanking Advisory Committee

Researchers from the Memphis Zoo, Mississippi State University, Fraunhofer Institute for Biomedical Engineering and Fraunhofer Research Institution for Marine Biotechnology report on their cryopreservation and biobanking work.

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News from Panama

Brian Gratwicke, Conservation Biologist, Smithsonian National Zoological Park

Brain Gratwicke from the Smithsonian National Zoological Park reports on some news from Panama.

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APOD II – the return of the big metal box

Richard Gibson, Curator Lower Vertebrates and Invertebrates, Chester Zoo

A new amphibian pod was designed and manufactured locally following the specification of the Chester Zoo herpetology team, and it now houses the Critically Endangered green-eyed frog (*Lithobates vibicaria*) from Costa Rica.

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Cooperative breeding of amphibians by zoos and private herpetologists in the “German speaking area”

Peter Janzen, Deutsche Gesellschaft für Herpetologie und Terrarienkunde, DGHT

Sent to you courtesy of:
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The “German speaking area” includes Germany, Austria and the Netherlands, and in that region, Peter Janzen organizes cooperation between zoos and private amphibian breeders. Here are two examples of these cooperative programs.

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Update on Perth Zoo’s breed and rear for release program for threatened amphibian species ***Geocrinia alba*** and ***Geocrinia vitellina***

Caroline Lawrence, Research Assistant, Perth Zoo

In conjunction with the Department of Environment and Conservation, Perth Zoo staff continue their research with two species of local endangered frogs, *Geocrinia alba* and *Geocrinia vitellina*.

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ACC-Mazán: A model amphibian conservation project in southern Ecuador

Ron Gagliardo, Training Officer, Amphibian Ark

The Centro de Conservación de Anfibios del Bosque Mazán is a program involving only four species: *Gastrotheca pseustes*, *Atelopus exiguous* , *A. nanay* and *Hyloxalus vertebralis* and is situated within the Mazán Forest in southern Ecuador.

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Center for Amphibian Research and Education in Cibodas (CARE-C), Indonesia

Mirza D. Kusrini, PhD, Dept. of Forest Resources Conservation & Ecotourism, Bogor Agricultural University

The Minister of Forestry of the Republic of Indonesia unveiled a plan to develop the Center for Amphibian Research and Education (CARE) in Cibodas, Gede Pangrango National Park on 3 February 2010.

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Featured amphibian conservation projects

The AArk has just launched its new conservation project list, FrogMatchMaker.com (see separate article), and we will be featuring different projects from this list on our new web site, and in the AArk newsletter.

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Emerging Amphibian Diseases conference at James Cook University, Australia, June 2010

This five-day conference (23-27 June, including a field day) will highlight international research and management in the fields of diagnosis, epidemiology, microbiology, pathogenesis, virulence, immunity, bioaugmentation and treatment relating to chytridiomycosis.

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Become a frog listener

Wendy Foster, Science and Conservation Coordinator, Zoos South Australia

In South Australia, Zoos SA/Conservation Ark has developed a tool, the Frog Atlas, to help answer questions for the public about frog calls.

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Help save the Panamanian golden frog

The Amphibian Ark is trying to help create a dedicated facility in Panama, at the EVACC, to house an expanding population of Panamanian golden frogs that will hopefully someday be used for reintroduction back into the wild. Your donations will help to expand on this important program.

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An update from the Association of Zoos & Aquariums

Shelly Grow, Conservation Biologist, AZA

Amphibian activities feature highly in AZA's activities - here's an update on some of them.

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POWERED BY INSWORLD

Meet the Amphibian Ark's Steering Committee! (Part 3)

Kevin Zippel, Program Officer, Amphibian Ark

In the June AArk Newsletter (No. 7), we got to know the AArk Executive Committee, which comprises representation from each of the three parent organizations: the IUCN/SSC Conservation Breeding Specialist Group (CBSG), the IUCN/SSC Amphibian Specialist Group (ASG), and the World Association of Zoos and Aquariums (WAZA). The Executive Committee oversees the Steering Committee, which itself brings together representatives from the entire AArk stakeholder community. The Steering Committee is the AArk's primary conduit for sharing information quickly throughout our global network, and for seeking direction from our stakeholders on AArk's strategic directions.

The AArk Steering Committee currently has twenty-one members, including thirteen representatives of regional/national zoo associations, three from the private sector, and one each from communities for academia, aquariums, botanical gardens, ISIS, and natural history museums. We met five Steering Committee members in the September Newsletter (No. 8), and two more in the December Newsletter (No. 9); here, we meet six more:

AArk Steering Committee

The African Association of Zoos and Aquaria (PAAZAB): Dave Morgan [see September Newsletter (No. 8)]

The Association of Latin American Zoological Parks and Aquariums (ALPZA): Diana Sarmiento Parra [see September Newsletter (No. 8)]

The Association of Mesoamerican and Caribbean Zoos and Aquariums (AMACZOOA): Yolanda Matamoros

The Association of Zoos and Aquariums (AZA): Shelly Grow [see September Newsletter (No. 8)]

Botanic Gardens Conservation International (BGCI): David Galbraith [see September Newsletter (No. 8)]

The Canadian Association of Zoos and Aquariums (CAZA): Greg Tarry

The Chinese Association of Zoological Gardens (CAZG): Zhang Gaofeng

The European Association of Zoos and Aquaria (EAZA): Gerardo Garcia

Euro-Asian Regional Association of Zoos and Aquariums (EARAZA): Evgeny Ryboltovsky

International Aquarium Congress (IAC): Paul Van den Sande

Having received his diploma of zoology at the State University in Gent in 1959, Paul was in charge of a study on fisheries problems on Lake Albert in the former Belgian Congo. In 1963 he became the curator of the aquarium at the Antwerp Zoo and remained in this position until 1984 when he became general curator of the animal collection.

Before retiring in 2000 he was nominated Operations Manager of the Antwerp Zoo. As zoologist he participated in three consecutive summer campaigns of the Belgian Antarctic Expedition and studied behavior and aspergillosis problems in Emperor and Adelie Penguins in the neighbourhood of the King Boudewijn basis. In 1972 several European aquarium curators felt the need for a professional organization and he was co-founder of the European Union of Aquarium Curators. In 1980 he was nominated until 1999 as secretary-general. In 1999 he became Executive Director, a function which he still occupies today.

Upon the ratification of the CITES treaty by Belgium in 1984 he became a member of the Belgian Scientific Authority and participated in the Conference of the Parties as a member of the Belgian delegation. From 1985 to 1990 he was a consultant and member of the "Comité des Sages" to the planning, realization of the "Biodôme" in Montreal.

Since 1988 he has been a member of the Steering Committee of the International Aquarium Congresses. In 2004 it was decided to create the IAF – International Aquarium Forum, a worldwide professional aquarium organization to

ease the professional exchange between public aquariums world-wide. He was nominated president of this organization. From 1991 to 1993 he participated in the meetings of the working group in Antibes in charge of the creation of an international national reserve for Marine Mammals in the West Mediterranean Sea.

Today Paul is retired, but continues to represent the IAF on the AArk Steering Committee.

Museums: Andrew Gray
Andrew is Curator of Herpetology at The Manchester Museum, England. Here, his principal activities include overseeing the management of the Museum's live reptile and amphibian collection, the development of public exhibits, and actively participating in the interpretive and educational use of the collection. As a member of the Museum's Learning Team, Andrew contributes to the development and delivery of a wide range of learning programs, and particularly those which fulfill the live animal collections' underpinning purposes for education and conservation. He also teaches on zoology and biology courses at The University of Manchester.

Over the past fifteen years, Andrew has been supporting the conservation of amphibians through the captive breeding of many rare and endangered species, helping to establish key initiatives, and by raising awareness of amphibians at an international level. He has a great interest in neotropical hylid frogs, has extensive experience working in the field, and is extremely passionate about advancing the public understanding of amphibians and their conservation.

He blogs at: www.frogblogmanchester.wordpress.com

International Species Information System (ISIS): Nate Flesness

Japanese Association of Zoos and Aquariums (JAZA): Kaszushi Kuwabara

Private sector Australia: Gerry Marantelli (Amphibian Research Centre, ARC)
Gerry has extensive experience in husbandry and reintroduction programs for amphibians. He has collaborated with wildlife managers in providing husbandry support for management of wild amphibian populations since 1992.

He is recognised at national and international levels as an expert on biosecurity and husbandry for amphibians. He has been enormously successful in developing frog community groups and public projects, interacting with the public, and instrumental in the development of internet sites on amphibian issues. He has delivered lectures by invitation in over twenty cities in nine countries. He has been pivotal in the discovery of and research into the amphibian chytrid fungus now known to be the leading cause of the global decline of amphibians and for this work was part of the team awarded the prestigious CSIRO Medal in 2000.

He is the originator of the concept of keeping frogs in modified cargo containers.

Private sector Europe: Peter Janzen (Deutsche Gesellschaft für Herpetologie und Terrarienkunde, DGHT) [see December Newsletter (No. 9)]

Private sector USA: Mike Ready (Tree Walkers International, TWI) [see September Newsletter (No. 8)]

The South Asian Zoo Association for Regional Cooperation (SAZARC): Sally Walker/Sanjay Molur

The South East Asian Zoo Association (SEAZA): Mirza Kusrini

Mirza is lecturer at the Department of Forest Resources Conservation & Ecotourism at Bogor Agricultural University, Indonesia. An Ecologist by training, her interest in amphibian began in 2000 which led her to take a postgraduate study at James Cook University, Australia, supervised under Prof. Ross A. Alford. Her PhD thesis on the ecological impact of Indonesian frog leg trade was completed in 2005.

After coming back to Indonesia, she devoted her time to advocate amphibian and reptile conservation although her research is mostly on the biodiversity and ecology of amphibians. Her research at Gede Pangrango National Park with her team has

uncovered the first known Batrachochytrium dendrobatidis infection in Indonesia, as well as in Southeast Asia.

Mirza is also passionate about conservation education for children. She lead several conservation education projects in Indonesia through wildlife camp, teacher training and school counselling. Currently she serves as Chair of the Indonesian Herpetologist Society until 2012 and is a member of Steering Committee for the Species Survival Commission IUCN.

The Society of Brazilian Zoos (SZB): Raquel von Hohendorff
Raquel has been a vet at the zoo in Rio Grande do Sul (in the south of Brazil, near Argentina) since 2000. She is also “almost a lawyer”! She works with many species of animals at the zoo, where the collection count is almost 1,500 animals. She did her graduate work at Universidade Federal do Rio Grande do Sul between 1993-1998 and in 2003 earned her masters degree. In 1998, she spent three months in South Africa, working with birds, in Durban.

The Zoo and Aquarium Association (Australasia): Susan Hunt [see December Newsletter (No. 9)]

Universities: David M. Green (McGill University)
I employ evidence from biochemical and molecular genetic variation in frogs and toads to decipher the relationships of species, the structure of populations, and mechanisms of evolutionary change. Compared to the attention given to the factors that influence population size and persistence, little has been paid to what determines the extent of a species' range. Yet population declines and species endangerment are only a facet of the greater issue of species range expansion and contraction. My research centres on species ranges and boundaries and thus looks beyond traditional population-level approaches to understanding biodiversity origins and maintenance.

Range edge populations are reasoned to be genetically depauperate and isolated, and therefore prone to local extinction. These same parameters govern a species' endangerment and risk of decline thus a solid basis for assessing endangerment will benefit from comprehension of the range edge. The range edge is also predicted to be limited by gene flow from the range centre constraining local adaptation.

Amphibian species are demonstrably in global decline and they often have complex local or regional population dynamics. They are excellent subjects for ecology, conservation biology, and molecular genetics as they exhibit a range of life history strategies and breed in discrete sites such as ponds where they are easily sampled. They are not highly mobile and have characteristic patterns of dispersal. I am analyzing ecological data and genetic variation to estimate population structure and gene flow, as a measure of dispersal, in common and endangered species of frogs, toads and salamanders in Canada and in the tropics.

My continuing study of Fowler's toads (Bufo fowleri) at Long Point, Ontario has now run continuously for over two decades. It has charted how the number of animals has fluctuated, how radical year-to-year changes in age structure depend upon recruitment of juveniles and winter survival, and how far and fast both adults and juveniles disperse. Through this work, Fowler's toad is the one of the most thoroughly studied of amphibians. I chair the Recovery Team for Fowler's Toad, a federally recognized Threatened species in Canada. By seeking to understand range edge populations more fully, my research program aims towards understanding the biology of extinctions, the persistence of populations, and the conservation of species. I am the former Chair of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which determines the conservation status of Canadian wildlife, and current Co-chair of its Amphibians and Reptiles Specialist Subcommittee. I am also formerly a member of the Science Advisory Council

of the Department of Fisheries and Oceans (Canada). I am the Canadian member of the IUCN Amphibian Specialist Group, an international network of professionals and volunteers organized to survey, map and monitor amphibian populations across the globe. I am a former President of the Society for the Study of Amphibians and Reptiles (SSAR).

We extend our deepest appreciation to them all for their time and guidance.

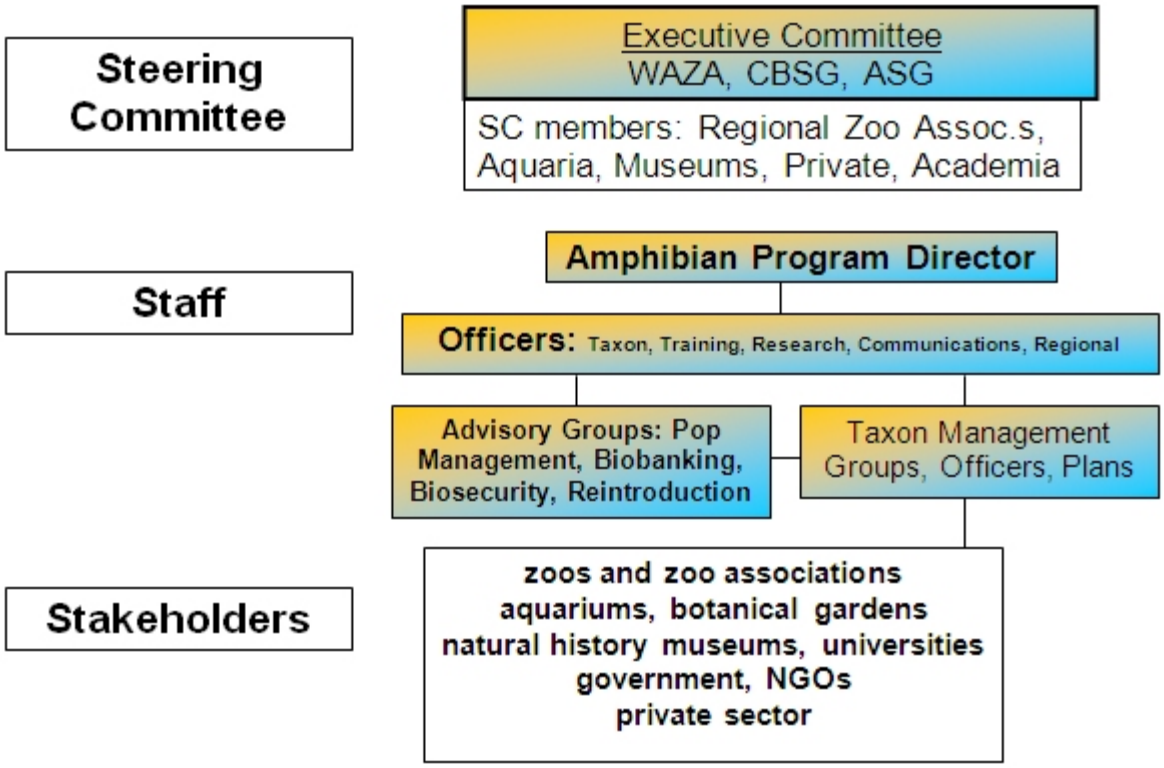

Fig.1: AArk's organizational hierarchy.

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Amphibian Ark launches FrogMatchMaker.com

Kevin Johnson, Taxon Officer, Amphibian Ark

The Amphibian Ark is pleased to announce the launch of a new Conservation Project List, known as Frog Match Maker – *where frogs find their princes*!! The list can be found at http://www.aarkfrogmatchmaker.com and it includes organizations and projects throughout the world, which are currently seeking external support for their amphibian conservation projects. We hope this list will foster partnerships between suitable funding and support organizations and amphibian conservation projects.

These projects need your support to help save threatened amphibians!

This database currently includes fifty projects in nineteen countries on four continents and can be searched by country, region, species, funding required, and by project type. Two programs from the list, Field work with amphibians in Sumatra and Population recovery for *Rhinella quechua*, are featured in this edition of the AArk Newsletter, and others will be featured on our new web site, and in forthcoming newsletters.

Anyone who would like to have their project included in this database should fill out the AArk conservation project data form and return it to KevinJ@AmphibianArk.org.

Please visit FrogMatchMaker.com to see how you and your organisation might be able to form on-going partnerships with others who might require some assistance to continue their much-needed amphibian conservation work.

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Amphibian Ark Visa Platinum rewards cards

Amphibian Ark has five exciting new credit cards, featuring endangered frogs, and US residents can help support Amphibian Ark with every purchase:

- No Annual Fee.
- Low Introductory APR on purchases and no balance transfer fees for 6 months.
- Earn bonus points for FREE airline tickets, merchandise, cash-back and more at participating merchants.
- $50 donation by the bank when you first use the card and ongoing contributions.
- Enhanced Visa Platinum benefits, including 24/7 Emergency Customer Service, 100% Fraud Protection, Auto Rental and Travel Accident Insurance and much more.

Funds from our Visa program will help save the species pictured on our cards and similar species from extinction. Thank you for choosing and using your favorite card! If you have ideas for new card choices, let us know!

Click any of the cards, or click here for additional information or to sign up for one of these eye-catching credit cards.

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Amphibian Ark Seed Grant announcement

Kevin Zippel, Program Director, Amphibian Ark

Grant description

Amphibian Ark is pleased to announce the second annual call for proposals for its Seed Grant program. This $5,000 competitive grant is designed to fund small start-up projects that are in need of seed money in order to build successful long-term programs that attract larger funding. Successful proposals will reflect AArk values, as described below.

Grant guidelines can be found on the Amphibian Ark website at http://www.amphibianark.org/seed_grant_announcement.htm.

Applications are due no later than May 1, 2010. Award announcements will be made on May 15 and funds dispersed by June 1, 2010.

Inquiries can be directed to Kevin Zippel, Program Officer KevinZ@AmphibianArk.org

General proposal guidelines

- Proposals should be submitted in English in font type no smaller than Times 12, with a minimum of one inch (2.5 cm) margins all around.
- The body of the proposal must not exceed three pages, excluding budget and literature cited. Proposals longer than three pages in body length will not be reviewed.
- Proposals should stress the conservation significance of the work, including the specific conservation need of all species involved (e.g., AArk Priority, IUCN threatened or DD, national priority, etc.) and how the work will help address the threats to the species.
- All materials should be submitted together attached to a single e-mail as .doc or .pdf files. Only e-mailed proposals will be accepted. Submit proposals to: Dr. Kevin Zippel, Amphibian Program Officer, KevinZ@AmphibianArk.org. All correspondence should have “AArk Seed Grant Proposal/principal researcher’s name” in the subject line.
- Applications are due no later than May 1, 2010. Award announcements will be made on May 15 and funds dispersed by June 1, 2010.
- Progress reports must be submitted every year on award date until completion of the project.

Funding priorities

Successful proposals will reflect AArk values, including:

- focusing on species whose threats cannot be mitigated in nature in time to prevent their extinction and who therefore require *ex situ* intervention to persist (see Conservation Needs Assessment Workshop results).
- working with species within their native range country
- involving range-country biologists
- adhering to recommended biosecurity standards for *ex situ* programs
- linking *ex situ* programs to *in situ* conservation
- having partnerships in place or identified to help ensure long-term programmatic support

Specific proposal content requirements

1. Project title
2. Names, institutional affiliations, and email addresses of project leaders
3. Total funding amount requested from Amphibian Ark in US$
4. Executive summary (300 words or less), including brief background, methods, and anticipated outcomes, with emphasis on actions utilizing AArk funds
5. Introduction, identifying the main conservation problem, the proposed corrective actions, the anticipated outcomes, and how these relate to the AArk values
6. Methodology, including a succinct description of the proposed work with enough technical detail for evaluation by experienced reviewers.

The cumulative length of sections 1-6 should be three pages or less.

7. Budget, no more than one page, with distinction between funds requested from AArk and those from other sources, with the latter specified as ‘requested’ or ‘received’ and from where. Clearly identify the role of AArk

funding as a proportion of overall project cost. All costs should be in US$. See sample below:

Budget category	Item/amount (Examples)	Requested from AArk	Other sources/status
Transportation	airfare, 1 roundtrip ticket	$1100	
	field vehicle rental, fuel, $60/day, 10 days	$600	
Food	5 people $20/day, 10 days	$1000	
Lodging	5 people, $50/day, 2 days	$500	$500 requested from WCS
Personnel costs	local guide $30/day, 10 days	$300	
	PI salary for 14 days		$3000 received from employer
Bd testing supplies	$5/swab, $20/test, 20 samples	$500	
Field equipment	10 data loggers, $50/each		$500 received from CI
Total		$4000	$4000
Percentage		50%	50%

8. Scientific citations, limited to half page, not counted towards body of proposal
9. Timeline of work (example below) and intended dissemination of results

Activity	Jul-Sep '09	Oct-Dec '09	Jan-Mar '10	Apr-Jun '10
Fieldwork	X	X		
Data analysis, writing		X	X	
Fundraising for program expansion			X	X
Manuscript submission				X

10. All applicants - whether applying as individuals or as employees representing their organizations - must include at least one letter of endorsement from someone at an unrelated organization. That person should be a recognized leader in the field or at least from an internationally-known organization.
11. Employees representing their organizations must also submit a letter of institutional support from their employer. One such letter is required for each project leader on the application who has a different employer.

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AArk launches web page to inform partners about use of cargo containers as amphibian facilities

Kevin Zippel, Program Director, Amphibian Ark

Insulated shipping containers can make ideal rescue facilities for amphibians. They are:

- relatively inexpensive, often cheaper than new 'traditional' construction (see pricing below)
- available everywhere in the world, often as discounted 'retired' units that are still fit for our use
- easily modified to meet particular specifications; every major port in the world seems to have a company that specializes in retro-fitting units for other uses (offices, storage, housing, etc.)
- modular, easily placed adjacent to or on top of each other, and so can be added one at a time to increase capacity at a given facility; ideal where space is limited
- mobile and made to be easily transported, so they can be delivered 'ready-to-go' to a point of use, or if need be, relocated from one site to another (try doing that with traditional construction!). All they need is a concrete pad to sit on and hookup to the local water and electric supplies.
- the perfect size to house an entire rescue population of an average-sized amphibian
- easily modified to be an attractive exhibit by adding large viewing windows and graphics

Above: An amphibian container at the Amphibian Research Centre, Australia. Photo: Gerry Marantelli. Below: The exterior of the Atlanta Botanical Garden's frog pod. Bottom: Taronga Zoo's container for Corroboree Frogs has been turned into an educational display. Photos: Kevin Johnson.

The use of insulated shipping containers for housing amphibians was pioneered by Gerry Marantelli at the Amphibian Research Centre (ARC) in Australia. The ARC has modified containers to order and supplied them to other organizations, including, Tidbinbilla Nature Reserve, Taronga Zoo, Chester Zoo, and Durrell Wildlife Conservation Trust.

There are a number of organizations around the world that are currently using shipping containers for amphibian conservation programs:

- Amphibian Research Centre, Australia
- Atlanta Botanical Garden, USA
- Chester Zoo, UK (see article in this newsletter)
- Durrell Wildlife Conservation Trust, Jersey/Channel Islands
- EVACC (imminent), Panama
- Phoenix Zoo, USA
- Summit Zoo, Panama
- Taronga Zoo, Australia
- Tidbinbilla Nature Reserve, Australia
- Universidad de Concepción, Chile

Below are some example expenses associated with purchasing and fitting out shipping containers:

- ~US$30,000 for used insulated 8’x8’x40’ (320ft2) shipping container and modifications to significantly improve the infrastructure and electrical service, upgrade air conditioning unit, add durable/waterproof rubber flooring, etc.
- ~USD$10-15,000 for outfitting the container with everything needed for amphibian husbandry (shelves, tanks, lights, filters, mist system), the range allowing for variation in the level of automation and number and size of tanks, complexity of plumbing, etc.
- ~USD$5,000 to ship it internationally (if point of use is different)
- ~USD$2,000 for installation (pad, utility hookup)
- ~USD$500 for portable generator (backup power is vital)

The AArk does not sell or benefit financially from the sale of these containers. We merely propose that they can be practical in many applications, and our partners are available to discuss their experiences (and vendors) with you.

Australia: Michael McFadden mmcfadden@zoo.nsw.gov.au
UK: Richard Gibson richard@AmphibianArk.org
USA: Ron Gagliardo ron@AmphibianArk.org

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Guatemalan Amphibian Conservation Needs Assessment Workshop

Kevin Johnson, Taxon Officer, Amphibian Ark

The Amphibian Ark facilitated an amphibian Conservation Needs Assessment workshop for Guatemalan species, from 4th-6th February at the Museum of the University of San Carlos in Guatemala City. Participants at the workshop were Carlos Vasquez, Jonathan Campbell (Guatemalan Regional Chair of the IUCN/SSC Amphibian Specialist Group), Ted Papenfuss, Manuel Acevedo, Roderico Anzueto, Liza García, Jacobo Conde, Alejandra Zamora and Gustavo Ruano, and the workshop was facilitated by Kevin Johnson.

During the workshop, 142 Guatemalan amphibian species were evaluated by the participants to assess actions that are required to ensure their survival, with species falling into one or more of six different conservation roles:

- 34 species requiring rescue – Species that are in imminent danger of extinction (locally or globally) and require *ex situ* management, as part of an integrated program, to ensure their survival.
- 42 species requiring ***in situ*** conservation – Species for which mitigation of threats in the wild may still bring about their successful conservation.
- 58 species requiring in situ research – Species that for one or more reasons require further *in situ* research to be carried out as part of the conservation action for the species. One or more critical pieces of information is not known at this time.
- 12 species requiring ***ex situ*** research – Species undergoing specific applied research that directly contributes to the conservation of the species, or a related species, in the wild (this would include clearly defined 'model' or 'surrogate' species).
- 12 species suited to conservation education – Species that are specifically selected for management – primarily in zoos and aquariums - to inspire and increase knowledge in visitors, in order to promote positive behavioural change. For example, when a species is used to raise financial or other support for field conservation projects (this would include clearly defined 'flagship' or 'ambassador' species).
- 37 species which do not currently require conservation action.

The complete lists of species reviewed during the workshop can be found on the Amphibian Ark's data portal.

At the end of the workshop, participants discussed the results, and the next steps that are required. Further *in situ* research work is currently underway, with a number of universities currently involved in field research. Interest is high in holding an amphibian husbandry workshop in Guatemala over the coming months to increase the in-country capacity to establish successful *ex situ* conservation programs.

A proposal is currently being drafted to seek support for a small amphibian conservation breeding and display facility, with display facilities for one or two common frog and salamander species, and an off-display area where husbandry skills can be increased, and several species can be established for captive breeding.

Participants at the Guatemalan Amphibian Conservation Needs Assessment workshop. Photo: Carlos Vasquez.

Funds for the workshop were generously provided by the Columbus Zoo and Aquarium Conservation Fund, and we are grateful for their support for this workshop.

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Frog vets on the road

Ron Gagliardo, Training Officer, Amphibian Ark

The Balsa de los Sapos (http://www.puce.edu.ec/zoologia/balsasapos/) program in Ecuador is one of the leading amphibian conservation programs in Latin America. In late January, I visited the program which is based at the Catholic University (Pontificia Universidad Católica del Ecuador) in Quito, Ecuador along with pathologist Allan Pessier (from San Diego Zoo) and veterinarian Brad Wilson (from Atlanta).

Our mission was to help Dr. Luis Coloma and his staff with health and disease issues within their collection. Heidi Ross, co-director of the El Valle Amphibian Conservation Center (EVACC) in Panama also joined us to relate her experiences working with an equally large and diverse collection of threatened amphibians. We worked side by side with Balsa staff, helping them with necropsy, diagnostic and husbandry techniques, aimed at helping them improve overall animal welfare. As part of this informal program to help existing ex situ programs reach higher levels of success in long-term maintenance of healthy populations, we will visit Ecuador and Panama several more times this year for continued consultation and follow-up.

There is a possibility to use one of these visits back to Ecuador to conduct a multiple-day workshop on amphibian health, nutrition and disease, open to regional participants. Any firm plans for such an event will be announced as soon as possible. We thank the Laura Turner Seydel and the Turner Foundation for their support of our efforts.

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Above: Allan Pessier demonstrates necropsy techniques to an enthusiastic Balsa staff. Below: Marsupial Frogs (*Gastrotheca litonedis*) are among the target species of the Balsa program. Bottom: Atlanta veterinarian Brad Wilson discusses treatment options with Heidi Ross (EVACC) and Balsa staff. Photos: Ron Gagliardo.

New developments in our understanding of amphibian declines

Kevin Zippel, Program Director, Amphibian Ark

Disease

The origin of the deadly fungus that causes chytridiomycosis in amphibians (*Batrachochytrium dendrobatidis*, Bd) is still unknown. Some researchers think it originated in South Africa and spread largely by trade in clawed frogs. Others think it came from the eastern United States and spread through trade in bullfrogs. And in the last newsletter we learned of a new study suggesting it might have come from Japan. Now a new publication provides evidence of widespread occurrence of Bd in Africa since the 1930s, lending further support to the 'out of Africa' hypotheses. I say again, we clearly still have much to learn about this disease, particularly its origin, but it has long been apparent that there are parts of the world naïve to this pathogen and with imperilled amphibians requiring the urgent action of AArk partners.

Reid Harris and colleagues continue to give us hope that live bacteria might be used to safeguard Bd-susceptible amphibians in the wild. They have published another paper documenting how south-western US ranid populations with more anti-Bd bacteria are more likely to persist when Bd arrives. Other researchers have attempted to use Bd-derivatives to induce immunity in susceptible amphibians, but unfortunately they have been unsuccessful so far.

Toxins

Amphibians have evolved thin permeable skin that helps them drink and breathe cutaneously. However, this trait has left them susceptible to the absorption of toxins from the environment. The effects of herbicides (e.g., the endocrine disruptor atrazine) and pharmaceuticals from sewage (e.g., anti-depressants, birth control pills) are well known. A recent study in Canada showed that levels of atrazine observed in the wild can also significantly affect survival through metamorphosis as well as the gender ratio of animals that do metamorphose.

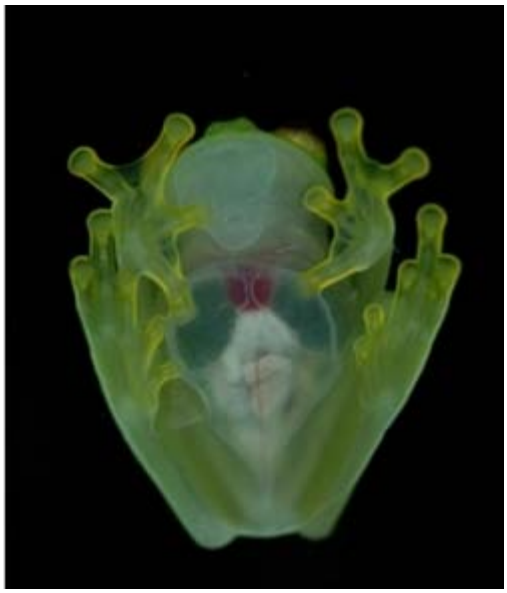

Photo: Bill Konstant.

Another study demonstrated that not only do environmental toxins impact amphibians living in that environment, their spawn is also contaminated via biomagnification before it ever reaches the outside world. While amphibians are often touted as 'canaries in the coal mine' and attributed with superlative sensitivity to all toxins, one recent study questioned that dogma, offering that, relative to a number of invertebrates and fish, amphibians are "canaries" perhaps only for the contaminant group phenols. On the other hand, another study described how amphibians are far more sensitive than mammals to a range of contaminants. Because of their generally conspicuous presence in the environment and chemical sensitivity relative to other tetrapods, the role of amphibians as sentinels to potential human threats should not be discounted.

One group of scientists is even conducting research to genetically modify tadpoles to be better canaries. Thanks to the insertion of jellyfish genes, these tadpoles light up in response to toxins from metal and plastic.

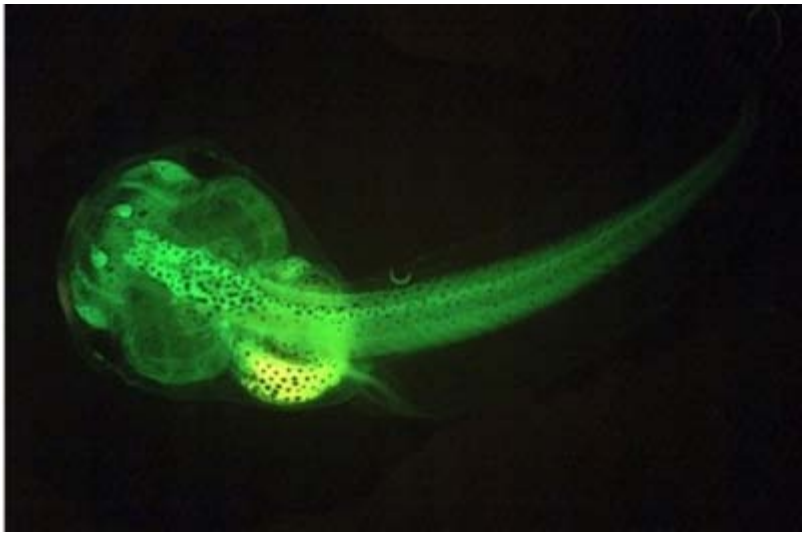

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Photo: AP.

Regional updates on biobanking activities

Compiled by Rhiannon Lloyd, Chair, Amphibian Ark Biobanking Advisory Committee

For more information amphibian biobanking, please visit the biobanking sub-portal or email cryobanking@amphibianark.org.

Cryopreservation for conservation: an update on biobanking research at Memphis Zoo

- Jennifer M. Germano[1], Erin Willis[1], Carrie Vance[1], [2], Scott Willard[2] and Andy Kouba[1]

[1] Conservation and Research Department, Memphis Zoo

[2] Department of Biochemistry and Molecular Biology, Mississippi State University

The Conservation and Research Department at the Memphis Zoo has been involved with amphibian work for the past ten years. The program's focus has been mainly on the development of assisted reproductive technologies (ARTs) and genetic resource banking with the goal of creating and improving techniques that are applicable to the conservation of endangered amphibian species. Published research to date on amphibian sperm cryopreservation has utilized testis macerates for obtaining sperm.

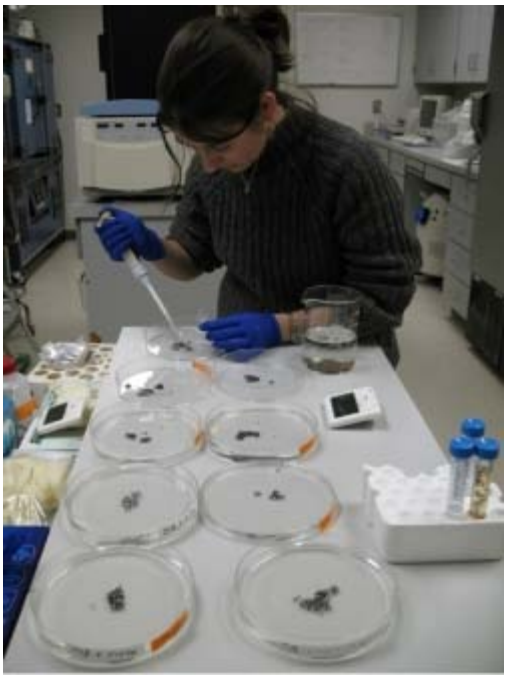
Though this has provided great insights into many different aspects of freezing amphibian sperm, many of these protocols cannot be transferred to the endangered and declining species that are most in need of a genetic resource bank due to the fact that the animal must be sacrificed to collect the sperm. For this reason, cryopreservation research at the Memphis Zoo has focused on improving protocols that can be used to freeze sperm collected non-invasively from frogs and toads (see Image 1).

Above: Image 1 - Andy Kouba collecting spermic urine from a Mississippi gopher frog. Below: Image 2 - Jen Germano using the spermatozoa to artificially fertilize eggs from the same species (right).
Photos: J. Germano & A. Kouba.

Hormone injections can be used to induce male toads and frogs to release spermatozoa directly into urine, which can then be collected without harming the individual. Though sperm collected in this manner can be used to successfully fertilize eggs (Image 2), freezing and thawing non-invasively collected sperm has much lower success rates than those collected from testes macerates. In general, our lab has found that only 10-15% of non-invasively collected sperm are motile after the freeze-thaw process while other studies of frozen sperm from testes macerates often reach 30-50% motility post-thawing. Despite this low recovery of motility, Fowler toad (*Bufo fowleri*) tadpoles have been produced from artificial fertilization with post-thawed sperm collected non-invasively. Current holdings of cryopreserved sperm at the Memphis Zoo include samples from Fowler toads and endangered Wyoming toads (*Bufo baxteri*).

With recent support from the Morris Animal Foundation and the Institute of Museum and Library Services, two new post-docs, a Masters student and a Ph.D. student are being added to the Memphis Zoo's amphibian conservation team in 2010. Additionally, a partnership with scientists at Mississippi State University will also allow us to expand our research. Planned work for the coming years is intended to examine protocols for freezing both amphibian sperm and embryos with researchers working on several species including; Fowler toads, Wyoming toads, boreal toads (*Bufo boreas*), Puerto Rican crested toads (*Peltophrynes lemur*), Leopard frogs (*Rana sphenocephalus*), and Mississippi gopher frogs (*Rana sevosa*). We will be testing several commercially available diluents as well as sugar solutions and other combinations of cryoprotectants.

In addition to basic research into developing ARTs for amphibians, we have also been supporting capacity building and technology transfer for the Native Aquatic Species Restoration Facility (NASRF) in Alamosa, Colorado to train researchers in artificial fertilization and other ARTs. This work has paid off with more than 5,000 boreal toad tadpoles released into



the wild, all produced by artificial fertilization.

Introducing the CRYO-Brehm: Germany implements the cryobanking of biological materials for conservation purposes

- Dominik Lermen[1], Philipp Ciba[2], Charli Kruse[2], Günter R. Fuhr[1,2]

[1] Fraunhofer Institute for Biomedical Engineering, 66386 St. Ingbert Germany

[2] Fraunhofer Research Institution for Marine Biotechnology, 23562 Lübeck, Germany

As we all know, the rapid and continuous decline of the world's biodiversity is a deleterious consequence of the activities of mostly one species – *Homo sapiens*. To successfully conserve biodiversity a variety of conservation strategies must be implemented. Besides common *in situ* and *ex situ* conservation measures, the potential of further strategies to preserve biological information should be realized before it disappears at an ever increasing rate.

Cryopreservation, the process where cells or tissues are preserved by cooling to sub-zero temperatures, offers the possibility of storing biological materials over long time periods without any significant biochemical and physical change. So, to date cryopreservation is the method of choice to preserve valuable biological samples.

In general, the value of cryopreserved gametes, embryos, somatic and stem cells of endangered animals for future generations of mankind is immense. Cryopreservation allows viable material to be available for conservation and fundamental research and, using modern reproduction methods, allows genetic material to be exchanged between enclosed animal populations to counter inbreeding effects (Lermen et al. 2009).

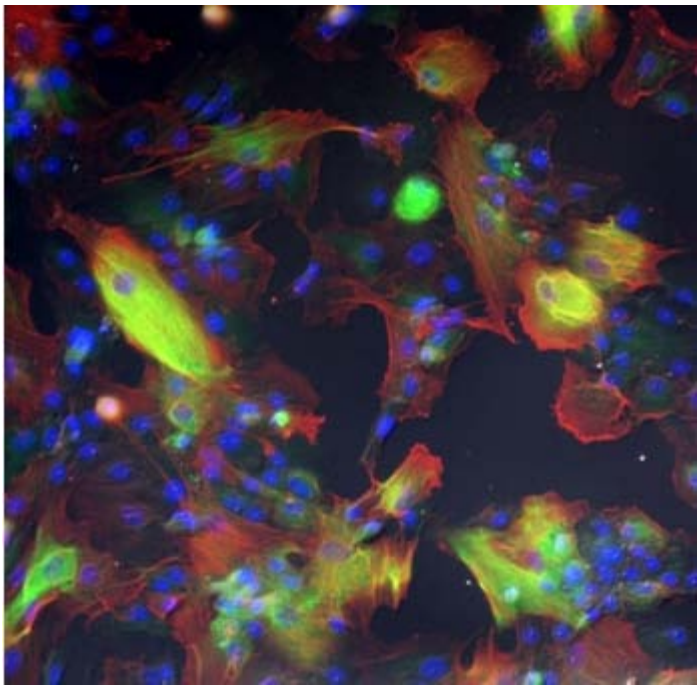
In November 2007, the Fraunhofer Research Institution for Marine Biotechnology (EMB, Lübeck) and the Fraunhofer Institute for Biomedical Engineering (IBMT, St. Ingbert) established the *Deutsche Zellbank für Wildtiere "Alfred Brehm"*® (CRYO-Brehm in short), a cell-bank for endangered wildlife. The primary aim of the cell-bank is to assemble knowledge about vertebrate species that structure our current biodiversity and to save this information in its entire and fundamental design – the living cell.

Its name reaches back to the zoologist and author of the zoological encyclopedia *Brehms Thierleben*; Alfred E. Brehm (1829 – 1884). Like Alfred E. Brehm once saved the knowledge at the time in his books, the CRYO-Brehm aims to represent a modern encyclopedia of biological knowledge saved as a cryopreserved collection of living reproducible somatic cells and stem cells.

In cooperation with German zoological gardens (e.g. Tierpark Hagenbeck, Zoo Neunkirchen, Zoo Rostock) only samples from animals that die in a natural manner will be saved. Following standardized protocols (Kruse et al. 2004, Kajahn *et al*. 2008, Lermen *et al*. 2010), adult stem cells will be isolated from different tissues like skin, pancreas (and other glandular tissues) and placental tissue. These valuable samples will then be stored in two independent modern cryobank systems to guarantee a maximum of safety. Since the CRYO-Brehm recognizes itself as an institution that is run by public authorities, samples will be made available for the scientific research

community whereby a core collection will remain untouched.

The storage of adult stem cells from endangered animals provides much more than the information than is available using alcohol fixed DNA. The high proliferation potential of adult stem cells facilitates a nearly infinite availability of the preserved sample. Besides the usage of DNA for phylogenetic studies, the whole proteome is available, which allows a deeper insight in species specific development related aspects. Furthermore, wildlife pathogens can be studied and using the isolated cells as test system, vaccines may be developed that could be used to combat pathogenic infections. To cut a long story short, most *ex situ* approaches and associated research rely on such viable samples. Up to now, the cryostorage of living cells is the only opportunity to fit the needs of modern biological research.



Pancreatic stem cells from the adult snow leopard (*Panthera uncia*) differentiate spontaneously into smooth muscle-like cells (α-SMA, red) and neuronal cell types (neurofilaments, green) as revealed by immunocyto-chemistry. Photo: P. Ciba.

To date, more than forty animal species are represented by more than 2000 specimen in the CRYO-Brehm. These include cells from birds like the white-naped crane (*Grus vipio*), fish like the Siberian sturgeon (*Acipenser baerii*) (Ciba *et al*. 2008) and mammals like the snow leopard (*Panthera uncia*).

In light of the enormous number of amphibians that face extinction due to threats like habitat destruction and pathogens like the Chydrid fungus; the CRYO-Brehm would like to cooperate with zoological gardens that are running *ex situ* breeding programs to establish primary stem cell lines from critically endangered amphibian species.

For further details please contact:

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E-mail: charli.kruse@emb.fraunhofer.de

Ciba P, Schicktanz S, Anders E, et al. 2008. Long-term culture of a cell population from Siberian sturgeon (Acipenser baerii) head kidney. Fish Physiology and Biochemistry, ***34 (4)****, 367-372.*

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News from Panama

Brian Gratwicke, Conservation Biologist, Smithsonian National Zoological Park

Panamanian herpetologists' workshop

The Autoridad Nacional del Ambiente of Panama (ANAM) and the Smithsonian Tropical Research Institute convened Panamanian herpetologists in January, 2010 to begin drawing up a National Amphibian Conservation Action Plan as mandated by recent legislation on amphibian declines. This work builds upon an Amphibian Ark species prioritization exercise for Panama.

Participants at the January 2010 Panamanian herpetologists' workshop. Photo: Brian Gratwicke.

The Panama Amphibian Rescue and Conservation project

The Panama Amphibian Rescue and Conservation project has started bringing in priority rescue species for eastern Panama to be housed in a modified shipping container at the Summit Park in Panama. We are preparing for the delivery of two more newly outfitted amphibian rescue pods donated by Maersk later this month. We have begun a volunteer program to assist with amphibian husbandry, and more technical projects such as assembling the plumbing, and tanks for the pods. If you are interested in volunteering with this project, please see www.amphibianrescue.org for more information.

The project is run by a consortium of partners: Africam Safari, Autoridad Nacional del Ambiente of Panama, Cheyenne Mountain Zoo, Defenders of Wildlife, Houston Zoo, The Smithsonian Institute, Summit Municipal Park and Zoo New England. It is intended to build on the successful efforts of the famed El Valle Amphibian Conservation Center, by providing more in-country capacity to respond to ongoing Bd-related declines in Eastern Panama and to facilitate work on developing science-based tools to mitigate Bd in wild situations, primarily through the use of probiotic cures. A team of scientists from the University of Zurich, VirginiaTech and Vanderbilt University recently finished a bioprospecting field trip in January to try and isolate native anti-Bd bacteria from Panamanian amphibians.

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APOD II – the return of the big metal box

Richard Gibson, Curator Lower Vertebrates and Invertebrates, Chester Zoo

Chester Zoo holds the world's only *ex situ* population of the Critically Endangered green-eyed frog (*Lithobates vibicaria*) from Costa Rica. A frog population of this importance warrants appropriately grand accommodation and thanks to the generous support of the Oglesby Trust, this is exactly what they have.

A brand new Amphibian Pod (APOD) was designed and manufactured locally following the specification of the Chester Zoo herpetology team. This new unit is situated beside, and is attached to, our first APOD and provides a dedicated and spacious facility for breeding the frogs in complete, climate-controlled, isolation. This development released APOD I for another Critically Endangered species, the black-eyed tree frog (*Agalychnis moreleti*) from Central America.

Above: APOD's I (left) and II (right). Photo: Richard Gibson.

Our animals originate from Belize and are believed to be the only biosecure and genetically viable *ex situ* population as well as being the subject of unique nutritional research investigating the impact of dietary carotenoids on skin coloration and ultimately mate attraction and reproductive success. This PhD, in conjunction with the Manchester University, will hopefully be followed by further research in 2010 investigating the benefits of ultraviolet light on health and reproductive success.

The Amphibian Ark has recently produced a new page on its web site providig details of how partner organizations can use shipping containers for amphibian conservation programs.

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Green-eyed frog (*Lithobates vibicaria*). Photo: Douglas Sherriff.

Cooperative breeding of amphibians by zoos and private herpetologists in the “German speaking area”

Peter Janzen, Deutsche Gesellschaft für Herpetologie und Terrarienkunde, DGHT

The “German speaking area” includes Germany, Austria and Switzerland, and in this region, I help to organize cooperation between the zoos and private amphibian breeders. Through this cooperation partners can exchange knowledge and publish information about the amphibian crises. In this newsletter I will give two examples of our cooperating members.

The first is the team “endangered amphibians” of the Gerhart-Hauptmann-School in Gelsenkirchen, Germany. The participants in this program are fifteen students and their biology teacher, Peter Bartsch. They bought three terrariums, one for quarantine purposes, one to bred frogs in and the third for four dendrobatid frogs of an endangered species. These frogs were bred in Germany and have now been living at the school for four months. The kids organize breeding of insects (food items) and they measure important physical parameters like temperature, humidity and the condition of the water. The students have also attended courses at the Aquazoo in Duesseldorf (climate change and tropical rain forests). The Aquazoo is also a partner in the amphibian breeding programs and has experience breeding endangered amphibian species.

Above: Students from the Gerhart-Hauptmann-School in Gelsenkirchen, Germany with one of their amphibian terrariums. Below: *Mantella aurantiaca* is being successfully bred by Andreas Altenmüller. Photos: Peter Janzen.

Due to their research into the reasons for the threat of these frogs and their regular activity with the animals, the kids developed an expanded understanding for the needs of conservation activities, and they are keen to contribute to amphibian conservation. The daily care and the study of the behaviour of these frogs continues, and the students are very seriously about being responsible for the amphibians. In the future the kids hope for breeding success. Ilze Dunce from Riga Zoo will send some captive-bred specimens of Neurergus kaiseri to the school in the near future. That will be the next step to help the kids gain more experience with amphibians.

The second example is the breeding success of Andreas Altenmüller. Andreas organizes our breeding program for *Mantella* species. Frogs of the genus *Mantella* occur in Madagascar and some species are critically endangered. Andreas is working together with private individuals and zoos like the zoo in Zürich, Switzerland, which is specialised in Malagasy amphibians. Mantellas are protected by the CITES regulation (Index II), and are not allowed to be imported into the European community. Andreas was lucky to receive some confiscated specimens from the Customs Department and he has had great breeding success last year. In 2009 he produced approximately 560 young frogs of five different species in the genus *Mantella*. Most notable is his success with the Endangered *Mantella viridis* (280 frogs produced) and the Critically Endangered *Mantella aurantiaca* (150 frogs produced). Most of these frogs are now in the hands of other private enthusiasts and some zoos. Andreas’s success continues this year, with egg clutches of *Mantella* already being laid.

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Update on Perth Zoo's breed and rear for release program for threatened amphibian species *Geocrinia alba* and *Geocrinia vitellina*

Caroline Lawrence, Research Assistant, Perth Zoo

Since the last newsletter, Perth Zoo and Department of Environment and Conservation staff have undertaken a second field trip to collect *Geocrinia* specimens, with six more nests of *Geocrinia alba* collected and brought back to Perth Zoo. From the nests collected over the two trips, eighty-four *G. alba* (eight nests) and fifteen *G. vitellina* (two nests), metamorphs are now being raised. These tiny froglets, which emerge weighing approximately 0.03 g, have now tripled their weight.

A translocation proposal has been prepared by key personnel within the Western Australian Department of Environment and Conservation. Once approved, the aim is to translocate animals from different age cohorts to areas where they are currently locally extinct within the Witchcliffe Forest Block near Margaret River in the south-west of Western Australia. The translocation is planned for early spring (August) when water levels will be at their highest

Investigations are continuing into the possibility of marking individuals – possibly with visible elastomer markers which have been successfully used in fish and some amphibian species in the USA.

The creation of a new post doctoral position, in conjunction with the University of Queensland, will allow the trialling of enzyme immunoassay testing of frog urine to determine the sex of the individuals. As *Geocrinia* spp. have a very small home territory (~ 30 cm x 30 cm for males) this knowledge will be very important in deciding how the individuals will be placed in the wild. The ability to locate females close to males should greatly enhance the chance of breeding subsequent to release.

Long-term goals of the project are to measure the success of the breed for release program as well as investigating the optimum age for animals to be introduced into the wild.

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ACC-Mazán: A model amphibian conservation project in southern Ecuador

Ron Gagliardo, Training Officer, Amphibian Ark

When I met Ernesto Arbeláez at the AZA Amphibian Biology, Conservation and Management School in Toledo in April 2009, I knew there was something good going on in his mind. He was eager to learn and fired off many questions about setting up amphibian conservation programs, etc. He scribbled out sketches of facilities and finances on pieces of paper over lunches and dinners. He clearly listened to the presentations on planning, biosecurity and husbandry. He was on a mission, to be blunt!

Above: The ACC is situated at 3,100 meters (10,170 ft) above sea level within the natural environment of the target species. Its open-air design allows for near perfect climate control for the colonies. Below: Innovation in the ACC facility. These recycled water bottles (cost: <$3) and="" are="" used="" for="" rearing="" juvenile="">*Gastrotheca*. Bottom: An amplectant pair of *Atelopus nanay*. Photos: Ron Gagliardo.

Ernesto's plans were new to me but he had already been in touch with Amphibian Ark Program Director Kevin Zippel with his thoughts on amphibian conservation in southern Ecuador. As Director of the Amaru Zoo in downtown Cuenca, Ernesto is juggling several important projects including his existing zoo, the planning and construction of a new 6.5 hectare public bio-park just over-looking Cuenca, and more recently, a significant amphibian conservation facility. In late January, I went to see the facility for myself. Brad Wilson, Atlanta-based veterinarian, Allan Pessier, pathologist from the San Diego Zoo, and Heidi Ross, co-director of the El Valle Amphibian Conservation Center in Panama, joined me to learn from and share ideas with the Amaru Zoo staff.

The Centro de Conservación de Anfibios del Bosque Mazán (or ACC - Amphibian Conservation Center-Mazán as it is known) is a program involving only four species: *Gastrotheca pseustes* (Endangered), *Atelopus exiguous* (Critically Endangered), *A. nanay* (Critically Endangered) and *Hyloxalus vertebralis* (Critically Endangered) and is situated within the Mazán Forest, the natural habitat of these species adjacent to the Cajas park just minutes from downtown Cuenca. This project is currently being supported financially by the Philadelphia Zoo. The Zoo's conservation biologist (and Amphibian Ark Taxon Officer) Carlos Martinez spends a great deal of time in southern Ecuador, helping Ernesto and his team to manage the facility and field studies. With the in-country support of Zoo Amaru, ETAPA (the local utility company that manages the Mazán Forest and the Cajas National Park) and volunteers, they have constructed an excellent open-air facility for housing assurance colonies of these species.

This program features adequate, off-site food colonies, dedicated staff and biosecurity measures, and a sustainable approach in working with a limited number of species that should be highlighted.

Ernesto, Carlos and staff work in collaboration with Dr. Luis Coloma and the Balsa de los Sapos program in Quito and are also conducting field studies (funded with the support of Disney Worldwide Conservation and AZA Amphibian Taxon Advisory Group grants) with the help of local undergraduate students to compliment their *ex situ* efforts. In terms of proper planning, resource allocation and management, this program has really gotten off to a great start and is an excellent example of how an amphibian conservation program should be executed. Ernesto clearly paid close attention at the amphibian course in Toledo and it is paying off for Ecuadorian amphibians!

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Center for Amphibian Research and Education in Cibodas (CARE-C), Indonesia

Mirza D. Kusrini, PhD, Dept. of Forest Resources Conservation & Ecotourism, Bogor Agricultural University

The Minister of Forestry of the Republic of Indonesia unveiled a plan to develop the Center for Amphibian Research and Education (CARE) in Cibodas, Gede Pangrango National Park on 3 February 2010. The National Park management has collaborated with the Faculty of Forestry, Bogor Agricultural University to develop a three-year plan for the Center which will include regular population monitoring of amphibians within the national park, research, capacity building and conservation education.

The CARE-C is a complex consisting of an education centre, mini-lab, frog ponds, and natural enclosed areas for research, and will be built in an area of 1,530 square metres. As the first phase, a five metre by four metre frog house has been built to assist in tree-frog research in a controlled environment. The habitat inside the enclosure mimics the natural environment, with relatively low maintenance or disturbance by humans. It is surrounded by wire-mesh, in which the environmental variables will be the same as its natural surroundings.

The Gede Pangrango National park is home to at least nineteen species of amphibians, including the critically endangered bleeding toad, (*Leptophryne cruentata*) and the beautiful but Vulnerable pearl tree frog (*Nyctixalus margaritifer).* However, the finding of frogs infected with *Batrachochytrium dendrobatidis* several years ago has posed a threat to the conservation of amphibians in this National Park.

Above: The 20 square metre frog house to assist in frog research. Below: The inside of the frog house, which is part of the first phase of this program. Photos: Mirza Kuzrini.

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Featured amphibian conservation projects

The AArk has just launched its new conservation project list, FrogMatchMaker.com (see separate article in this newsletter), and we will be featuring different projects from this list on our new web site, and in the AArk newsletter. The first two projects we'd like to let you know about are Field work with amphibians in Sumatra and Population recovery for *Rhinella quechua*.

Project title	Field work with amphibians in Sumatra
Region	South & South-east Asia
Contact	Mistar Kamsi
Position	Field biodiversity specialist
Primary institution	Yayasan Ekosistem Lestari or YEL-PanEco Switzerland
Address	Jl. Wahid Hasyim no. 51/74 Kelurahan Babura, Medan 20154. PO Box 1472 Medan 2001.
Email	mistar_kamsi@yahoo.com
Other institutions	Medan Area University-biology faculty
Subject	*In situ* conservation; *In situ* research; Long-term monitoring
Species	All amphibians in Sumatra
Comments	Normally our study is an inventory of amphibians, in conjunction with other organizations e.g. Fauna Flora International, Conservation International, Birdlife Indonesia, and YEL-PanEco in Sumatra and Borneo (Kalimantan-Indonesia). PanEco in 2006-2007 has support for investigated into the Sumatran Toad (*Bufo sumatranus*) in Lubuk Selasih area.
Total project amount	$3,000
Yearly $ support	$3,000
Other non-amphibian programs	At the moment, Mistar is undertaking surveys of the Sumatran orang-utan population in Leuser National Park. At the same time he is looking for an opportunity to monitor amphibian populations in Sibolangit Reserve.
Country	Indonesia

Project title	Population recovery for ***Rhinella quechua***
Region	South America
Contact	Teresa Camacho Badani
Position	Adjunct Researcher
Primary institution	Centro de Biodiversidad y Genética de la U. Mayor de San Simón, Cochabamba Bolvia
Address	Casilla Nº 538, Cochabamba, Bolivia.
Email	t_u_t-_e@hotmail.com
Web page	http://www.fcyt.umss.edu.bo/investigacion/biodiversidad/index.php
Subject	Captive propagation; *Ex situ* conservation; *In situ* research; Population recovery; Reintroduction
Species	Rhinella quechua
Comments	This toad was once very abundant in La Paz, and other major cities around Bolivia. However, this emblematic toad of urban Bolivia is disappearing fast from our cities and from its nearby forest as well and immediate action should be taken. Data suggest that if action is not taken fast, the Quechua toad might go extinct
Yearly $ support	$10,000
Supplies	Terrariums, life support systems (filters, tubing, mist heads, pumps, water quality testing equipment), data loggers, GPS, field equipment, digital cameras, education supplies
Training needs	Husbandry workshop (bio-security, husbandry, small population management, collection management, feeder insect colony start up)
Country	Bolivia

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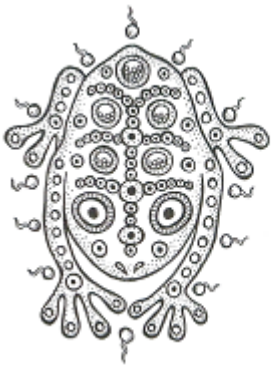

Emerging Amphibian Diseases Conference and Workshop James Cook University Australia 23 June- 2 July 2010

Conference Information

The 5 day conference (23-27 June, including a field day) will highlight international research and management in the fields of diagnosis, epidemiology, microbiology, pathogenesis, virulence, immunity, bioaugmentation and treatment relating to chytridiomycosis. One day will be dedicated solely to other emerging amphibian diseases. Oral presentations will be delivered by those leading their field of research. Short presentations will include preliminary research, species case reports and range extensions.

Workshop Information

The 4 day workshop (29 June-2 July) following the conference is most suitable for early-career researchers, wildlife managers, amphibian keepers and students new to the field of amphibian diseases. The workshop will not run unless a minimum of 20 participants are registered by late April. We will help you to develop skills in diagnosis, treatment, microbial studies and culture, collection of anti-microbial peptides, field methods, husbandry, necropsy, hygiene, study design and epidemiological analyses. Sessions will be presented by researchers internationally recognised for their contributions to the study of amphibian diseases.

Tentative Program

The tentative program has been outlined below. Times and sessions may change because of interest.

	Session 1 *0830-1200*	**Session 2** *1330-1700*	**Session 3** *1930-2100*
Day 1 Conference Wed 23 June	Chytridiomycosis		Discussion Panel- Management
Day 2 Conference Thurs 24 June			Discussion Panel- Research Priorities
Day 3 Conference Fri 25 June	Field Day- Reef HQ, Wallaman Falls, Magnetic Island.		
Day 4 Conference Sat 26 June	Chytridiomycosis		Conference Dinner
Day 5 Conference Sun 27 June	Ranaviruses	Other Amphibian Diseases	
Day 6 Mon 28 June		Free Day	
Day 7 Workshop Tues 29 June	Life History & Culture of Bd	Necropsy Techniques and Samples	Field and Laboratory Hygiene
Day 8 Workshop Wed 30 June	Diagnosis-PCR	Diagnosis-Histology	Husbandry
Day 9 Workshop Thurs 1 July	Study Design & Modelling	Field Studies & Data Collection	Treatment
Day 10 Workshop Fri 2 July	AMPs	Skin Microbiota	Social

Registration
Registration and abstract submission will open on 15th March and close 14th May. Conference registration will cost AU$380 and include attendance, satchel, book of abstracts, lunches and conference dinner. Delegates are invited to nominate for a long talk (25mins + 5mins questions), short talk (15mins + 5mins questions) or speed session, however, the final allocation will be made by a selection committee. The workshop will cost an additional AU$400 and includes laboratory costs and notes from all presentations.

Venue
James Cook University (Townsville) is close to the Wet Tropics and Great Barrier Reef of Australia. The conference will be held during the Austral winter, so expect balmy weather between 15-26°C (58-78°F). Days are usually clear with a high UV index (bring a hat and sunscreen!).

Accommodation
Budget accommodation will be available at James Cook University for AU$71 per night. The on-campus accommodation includes all meals, an individual room with single bed, shared bathroom, and immediate proximity to the conference venue. These rooms can be booked with your registration in March.

Other accommodation, closer to the city and beach is available for families (email andrea.phillott@jcu.edu.au for details). Breakfast will be available for purchase at this location, and we recommend dinner be purchased from the James Cook University residence dining hall as there will be evening discussion groups. We will assist delegates with organising transport between the alternate accommodation and James Cook University at their own cost (approximately 20min drive). We recommend that workshop attendees stay at James Cook University for easier and more timely access.

Transport
Many international flights fly to Cairns, Brisbane and Sydney on a daily basis. From these international airports it is easy to fly to Townsville on Qantas, JetStar or VirginBlue airlines. Taxis are available from the Townsville airport.

Field Trips
Field trips will be offered on the 25th June. Options include a combined Reef HQ Aquarium, IMAX movie and beach trip in Townsville (AU$43), snorkelling and scuba diving at nearby Magnetic Island (AU$45-$105), hiking at Magnetic Island (AU$40 plus local bus fare), and mountain biking at Wallaman Falls with TuffTrax tours (AU$150).

Conference Dinner
The conference dinner will be held at Billabong Sanctuary on 26th June. Prior to the dinner, delegates will have the opportunity to watch a crocodile feeding show, interact with koalas, wombats, and snakes and tour the animal exhibits. Additional tickets may be purchased for accompanying family members ($60/adult, $30 per child).

Travel Grants
Students and researchers from developing countries may be eligible for financial assistance to cover travel, registration and accommodation. Please contact Andrea Phillott (andrea.phillott@jcu.edu.au) immediately for more details.

Become a frog listener

Wendy Foster, Science and Conservation Coordinator, Zoos South Australia

Have you ever been curious about the frog noises you hear when in the bush? Perhaps you have wondered what frog it is that you are hearing. In South Australia, Zoos SA/Conservation Ark has developed a tool, the Frog Atlas, to help answer those questions for the public.

Our site will help South Australians to identify the frog calls of their local region and beyond and also contribute to a better understanding of frog population changes.

The site has been designed with a few things in mind:

1. To increase the awareness of the plight of frogs in Australia and around the world.
2. To help people get out there and be actively involved in conservation. Members of the public can become frog listeners and take part in monitoring of frog populations.
3. To provide a record of frog presence and absence in waterways around Australia that can be used to help with environmental management.
4. To help people see the connections between human activity and impacts on wildlife.

At Conservation Ark our goal is to save species from extinction. One of the ways we do this is by understanding the needs of a species and preserving their habitat. Our web-based system for collecting frog monitoring data provides a simple and central location for entering, maintaining and searching frog distribution data.

The Frog Atlas has grown from the South Australian Frog Census program that was run by the Environment Protection Authority. We have South Australian records gathered by almost 2,000 contributors spanning the last fifteen years, and are also including the Melbourne area in our database by linking with Melbourne Water.

Please visit us at www.frogatlas.com.au and become part of our frog listening team.

Project Partners

Environment Protection Authority
Department for Environment and Heritage
Natural Resource Management Boards
Department for Water, Land and Biodiversity Conservation
Bridgehead
Melbourne Water

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Help save the Panamanian golden frog

The beautiful Panamanian Golden Frog (*Atelopus zeteki*) is considered Critically Endangered by the International Union for Conservation of Nature. Only three animals of this species have been seen in the wild since late 2007 and it is now quite possibly Extinct in the Wild.

Fortunately for the species though, approximately 1,500 animals still exist aboard the AArk, thanks to the work of Project Golden Frog (www.ProjectGoldenFrog.org) and the El Valle Amphibian Conservation Center (EVACC) (www.houstonzoo.org/amphibians/) in central Panama.

The Amphibian Ark is currently trying to help create a dedicated facility in Panama, at the EVACC, to house an expanding population of golden frogs that will hopefully someday be used for reintroduction back into the wild. Work on building this his facility is almost complete, but requires an additional $15,000 to complete. An amphibian pod was generously donated for the project by Smithsonian's National Zoological Park.

Please give the gift of gold - make a donation (maybe in someone else's honor) and help us to save one of the most spectacular amphibian species, the Panamanian Golden Frog, from extinction. Please click here to make your donation.

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An update from the Association of Zoos & Aquariums

Shelly Grow, Conservation Biologist, AZA

Register now for AZA's Amphibian Biology, Conservation, and Management Course

Registration for AZA's April 17-23, 2010 Amphibian Biology, Conservation, and Management course, to be held at the Toledo Zoo in Ohio, is now open. Learn more and register at: http://www.aza.org/ProfTraining/detail.aspx?id=496.

Member magazine features amphibian conservation

The March 2010 issue of AZA's member magazine, *Connect*, features some of the amphibian conservation initiatives being undertaken by AZA member institutions. *Connect* reaches approximately 6,000 subscribers and can be accessed online at: http://www.aza.org/azapublications/.

FrogWatch USA chapters opening at AZA-accredited zoos and aquariums

AZA now has materials that allow AZA-accredited zoos and aquariums to open their own Chapter of FrogWatch USA. Local Chapters can be branded by the facility and tailored to meet their community's needs. Citizen science programs offer strong educational opportunities for connecting people to nature through local experiences and opening a FrogWatch USA Chapter represents an opportunity to further connect the community to accredited zoos and aquariums.

AZA offered a full-day training program for becoming a FrogWatch USA Chapter Coordinator on 1 March 2010 at the AZA Mid-Year Meeting in Virginia Beach, Va. Additional training opportunities will be available soon. Learn more about FrogWatch USA at: www.aza.org/frogwatch/.

Amphibian conservation highlighted at AZA's Mid-Year Meeting 2010

Two amphibian conservation experts gave keynote addresses at the General Sessions of AZA's Mid-Year Meeting 28 February – 5 March. The presenters were Dr. James Collins, co-chair of the IUCN Amphibian Specialist Group, professor at Arizona State University, and author of the recently published book, Global Amphibian Extinctions: The Mysterious Environmental Die-off and Don Church, Conservation International's Director of Biodiversity Assessment who assists the Co-Chairs of the IUCN/SSC Amphibian Specialist Group (ASG) in the strategic planning of ASG and the management of an Amphibian Conservation Action Fund at Conservation International.

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