Amphibian News & Activities

Asia's 1st amphibian that doesn't lay eggs

Instead, this unique species gives birth like mammals
Scientists of the Bombay Natural History Society (BNHS) have discovered Asia's first amphibian species that gives birth to its young ones rather than laying eggs. Named *Gegeneophis seshachari,* it was recently discovered at Baraki village near Kolhapur. Amphibians are usually oviparous — egg-laying — but a few species are also known to be viviparous — where embryo develops inside the body of the mother like in mammals.

Gegeneophis seshachari is one of the most poorly known caecilian, a legless amphibian species.This is for the third time in recent past that new species have been found in Maharashtra. Earlier, BNHS scientists had discovered an all new species of lizard near Junnar in Pune district and also rediscovered Indian egg eater snake, considered to be extinct, near Wardha in Vidarbha."Reproduction and its evolution is one of the most interesting aspects of the biology of amphibians like frogs, toads, salamanders and caecilians.

Amphibians not only include species that have the classic biphasic lifestyle — eggs laid in water metamorphosis into terrestrial adults — but also many other types, including terrestrial eggs that hatch as miniature adults and 'live birth' — viviparity," said Varad Giri, Scientist 'B', BNHS, one of the key figures in the latest discovery."This is a path breaking development that a caecilian has managed to evolve to become viviparous unlike its cousins. This kind of behaviour is reported from Western Ghats only," Giri said. The discovery is part of the research project on conservation of herpetofauna — amphibians and reptiles living in a particular geographical area — in the northern Western Ghats, which BNHS started in 2006. In June 2006, scientists stumbled upon a species which resembled caecilian but its behaviour was contradictory to the established one when it came to breeding. ***DNA NOW****, Ashwin Aghor Saturday, September 13, 2008*

Panchayat digs lake, saves salamander

Barunroy, The Himalayan Beacon - http://beacon online.wordpress.com/2008/09/18/

Jagat Syangbois a school teacher whose passionate mission it has become to save the Himalayan Salamander, a tiny amphibian facing extinction because of rapid urbanisation in the hilly regions of West Bengal. The Himalayan Salamander is listed as an endangered species under the Wildlife Protection Act of 1972. Syangbo has revived the Bhanzang Salamander Lake, located 14 km from Kurseong town in Darjeeling district. A former gram panchayat pradhan from the Gorabari-Margaret's Hope Tea Estate area. Syangbohas carried with him 23 fellow gram panchayat members. "We have revived the lake only for the salamanders which exist in large numbers in this area," says Syangbo. "The salmander is currently facing the threat of extinction here mostly because of lack of awareness. As soon as we realized the plight of the salamander we decided to revive the lake, which was once looked after and maintained by the British tea estate managers."

The lake is very essential for the salamanders since they start their life cycle from the water. explains Syangbo. It was created, probably, just before India's Independence in 1947. Hanagen, a manager of Margaret's Hope Tea Estate, started to dig the lake after noting that natural waters existed in the area encircled by tea bushes. "We were very young then. The manager had most probably dug the lake for a nice view and some entertainment. A singleboat was also parked there," said Syangbo.

Unknowingly, the lake helped the salamanders multiply day by day. "But then in 1968 a huge landslide occurred in the Darjeeling hills. The lake got completely filled by debris. Only a small portion was left with a little water. The salamanders lost their habitat. A few continued to exist in the remaining portion of the lake," recalls Syangbo. In 2003, Syangbo was elected as pradhan and 23 people as members of the gram panchayat. "This was the first time a panchayat was started in the the whole lake which is 3.200 square feet in size,"he says. At an altitude of 5.413 feet the lake now offers a magnificent habitat for the salamanders. From the lake. ringed by mountains, there is a great view of Kurseong town too. It is becoming one of the favourite destinations of tourists. The salamanders are happily breeding.

"Over the past four or five years we have found that the number of salamanders has increased a lot. Though we do not have any scientific knowledge on salamanders we feel that they find it much easier to multiply. At every step you walk around the lake you will find "agora", the local name for a salamander. Residents too have started to understand that their efforts have not gone in vain." Syangbo explains. The lake has made it easy for researchers from many universities in India to come and study the salamanders. Recently, a group from a university in Kolkata came for study. Zoological Survey of India visited the spot recently to see the area and study the salamanders. Though members of the panchayat have finished their tenure they are thinking of forming a committee to maintain the lake and protect the salamanders.

The team has plans to dig up two small swamps in the area to provide more habitats for salamanders. Once the committee is formed Syangbo,said that they will try to get some funds by approaching government bodies. "We may also generate funds through cultural programmes like performing plays and other means apart from approaching the government," he said.

"The population of salamanders in the hills certainly decreased over the past few years. In Pacheng, which is some 10 km from the lake, we used to have a lot of salamanders. Now the lake has completely vanished. People have started to build houses. There is lack of interest, no peoples' initiative and no funds. There is no proper social organization either." says Syangbo. The tea gardens of West Bengal and we were the first people in the 'whole area to be elected. We were enthusiastic about working for the betterment of our area. And we always had it in our minds to work for the salamanders also. This is how it all began."

"We saved some of the funds that come to our panchayat for development without, of course. hampering development work. We started to create awareness among villagers about the plight of the salamanders. We told them that the species was in danger. Finally, one day we decided to dig the lake and bring it back to its original size."

The residents, including the youth and tea garden labour, started to work shoulder to shoulder with their panchayat representatives. "The entire residents, who are mostly tea garden labour. worked in the revival project. Since we did not have much money we could not pay the labourers. The people too did not work for money but gave us their full support. In return, we provided them meals. It took us more than one month to dig up" says Syangbois.

Captive breeding introduced infectious disease to Mallorcan amphibians

A potentially deadly fungus that can kill frogs and toads was inadvertently introduced into Mallorca by a captive breeding program that was reintroducing a rare species of toad into the wild, according to a new study published in the September 23rd issue of the Journal Current Biology.

The study, by researchers from Imperial College London and international colleagues, reveals that captive Mallorcan midwife toads released into the wild in 1991 were infected with the chytrid fungus *Batrachochytrium dendrobatidis* (Bd). Measures to screen the health of the toads did not pick up the fungus, because at the time it was not known to science. The chytrid fungus, which lives in the water and on the skin of host amphibians such as frogs, toads, salamanders and newts, has been known to cause amphibian population extinctions in Europe. Globally, the disease has been found in over 87 countries and has driven rapid amphibian declines in areas including Australia and Central America, pushing some species to extinction. Bd is currently rare in the UK, having only been detected in three locations.

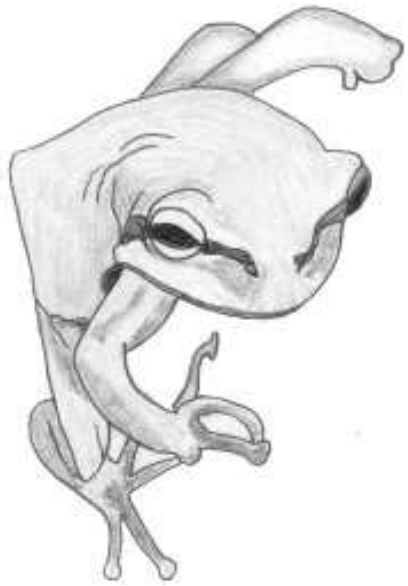
The new study suggests that an endangered species of frog from South Africa, *Xenopus gilli*, which was housed in the same room as the Mallorcan midwife toads, was responsible for spreading the infection to them. The captive breeding and reintroduction program for the Mallorcan midwife toad has been highly successful in increasing the numbers of the rare toad on the island. Over half of all the current populations on Mallorca are derived from reintroductions. Although the chytrid fungus can be deadly, toads appear to be doing well in three out of the four populations in Mallorca infected with the chytrid fungus. This finding suggests that there are unidentified factors that are preventing the extinction of these populations. The situation is being closely monitored by the Mallorcan conservation authorities.

Global efforts to save amphibians from extinction hinge on species being taken into captivity and bred until they can be reintroduced to the wild. The researchers behind the new study say their findings reveal the risks of reintroducing species into the wild even when health screening is carried out, and highlight the need to ensure that species bred in captivity do not become infected with pathogens from other species.

As soon as Bd was discovered in the late 1990s, screening for the disease was incorporated into amphibian conservation plans. Zoos are now moving towards breeding threatened frogs in strictly quarantined, biosecure facilities in an effort to prevent the disease spreading in captivity.

The chytrid fungus has also been added to a list of diseases that need to be quarantined compiled by the World Organization for Animal Health. It is hoped that these quarantine measures will help those involved in conservation efforts to stop Bd from spreading http://www.eurekalert.org/pub_releases/2008-09/cp-cbi091708.php

Contact: Cathleen Genova, cgenova@cell.com 617-397-2802, Cell Press



ZSL Symposium -- Halting the Global Decline in Amphibians: research and practice

On 20 and 21 November 2008, the Zoological Society of London (ZSL) is holding the symposium "Halting the Global Decline in Amphibians: research and practice". This symposium will bring together researchers and conservation practitioners working both in the field and in captive collections to discuss current threats and present potential solutions to address this biodiversity crisis.

Full details including the programme for this two-day symposium can be found along with registration and poster submission forms at www.zsl.org/zsl-london-zoo/whats-on/amphibian-declines-symposium ,293, EV.html. The deadline for registrations is 7 November 2008 and research poster submissions should be received by 27 October 2008.

This symposium has been organised by Lesley Dickie (EAZA & Amphibian Ark), Kevin Zippel (Amphibian Ark) and Jenny Pramuk (WCS).

The 2004 Global Amphibian Assessment concluded that amphibians are at far greater risk of extinction than either mammals (23%) or birds (12%), with a third of all extant and currently described species listed as Critically Endangered, Endangered or Vulnerable and 43% of all amphibian species in decline. The attributed reasons for this dramatic decline in amphibian populations are varied, involving habitat loss and alteration, unsustainable trade, invasive species, climate change and disease, particularly the chytridiomycosis fungus.

In many areas where chytridiomycosis has been identified as the cause of high or complete mortality in amphibian populations habitats remain pristine, indicating that more traditional conservation responses, such as protected area systems, will be ineffectual. However, no single factor is responsible for the scale of decline and a combination of threats may be working in synergy to produce the observed losses.

Speakers will assess the current knowledge of amphibian declines worldwide and detail the methodology being employed both *in-* and *ex-situ* to combat losses. The role of the 2008 global campaign by the world's zoos, the 'Year of the Frog', in catalyzing required funding and stimulating both government and public action will also be described. *Organised by Lesley Dickie (EAZA & Amphibian Ark), Kevin Zippel (Amphibian Ark) and Jenny Pramuk (WCS)*

Registration: Please find further information including a programme for this 2-day event above. Please note updates to the programme will be available from this website cited as soon as possible. www.zsl.org/zsl-london-zoo/whats-on/amphibian-declines-symposium ,293, EV.html.

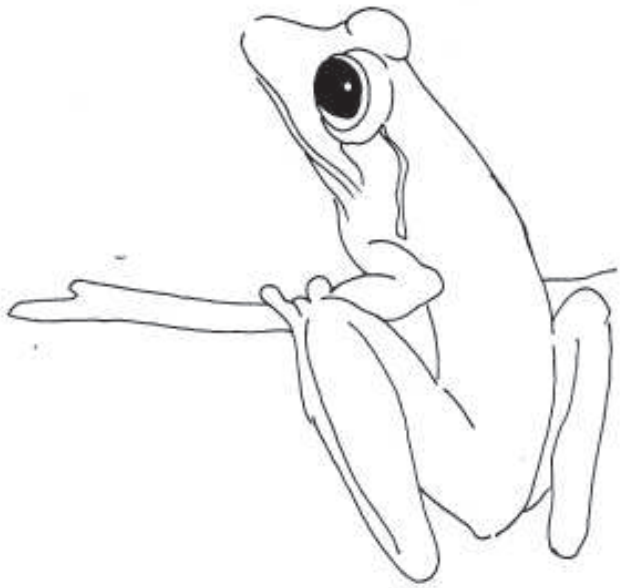
Posters relating to the symposium topic will be displayed throughout the meeting and attendees will have plenty of time to study posters during tea/coffee breaks. Posters will be accepted on a first-come first-served basis and abstracts of no more than 250 words outlining poster content should be emailed to joy.hayward@zsl.org by 27 October 2008 for consideration.

Tickets and enquiries: All tickets for attendance must be purchased in advance and will be available on a first-come, first-served basis; please complete and return all registration forms along with payment to Joy Hayward, Scientific Meetings Co-ordinator, Zoological Society of London, Regent's Park, London NW1 4RY, UK.

Workshop to prepare *ex-situ* and *in-situ* conservation action plan for the Amphibians in India.

The Central Zoo Authority (India) is a statutory autonomous body under the Ministry of Environment & Forests, Government of India. The Authority was established in the year 1992 to oversee the functioning of Zoos in the country and to provide them technical and other assistance for the improvement.

The Central Zoo Authority is organizing a two days "Workshop to prepare *ex-situ* and *in-situ* conservation action plan for the Amphibians in India" from 7th – 8th January, 2009 at Mysore (Karnataka), India in collaboration of Shri Chamarajendra Zoological Gardens, Mysore, Karnataka, India. The conservation action plan for the Amphibians in the India is with special reference to zoos in India.



Selections of Monthly Activity Report of AArk Central Office

Amphibian Ark is a partnership between the World Association of Zoos and Aquariums (WAZA), IUCN/SSC Conservation Breeding Specialist Group (CBSG), and IUCN/SSC Amphibian Specialist Group (ASG). **www.amphibianark.org.**

General updates from the amphibian community News/Publications

• Washington State University offers services including DNA extraction from swabs or tissue samples and real-time PCR quantification of chytrid fungus and ranavirus with each sample run in triplicate. Sample processing will be $10 per sample for Federally-funded projects or $11 for non-federally funded projects. For more information, please contact Andrew Storfer (astorfer@wsu.edu).

Funding available

• ASG calls for proposals for up to $30,000 matching funds for critical habitat protection, no deadline
• Columbus Zoo continuously accepts applications for grants and emergency grants and has a strong record of supporting amphibian conservation work. For more information, contact Rebecca Rose, Field Conservation Coordinator.
• Emergency funds are also available through Memphis Zoo and Disney. see AArk website
• Other grant opportunities are described in Appendix 3 of AZA Amphibian Resource Manual.

AArk Coordination (compiled by AArk Program Officer Kevin Zippel).

• We welcome 2 new members to the AArk Steering Committee: Dr. Gerardo Garcia of Durrell Wildlife Conservation Trust takes over as EAZA represen-tative, and Dr. Peter Janzen of DGHT takes over as representative from the European private sector.
• Gerald Dick (WAZA) is leading efforts on a resolution calling for support of ACAP from the IUCN secretariat, commissions, and members.
• We are collecting and analyzing results from an e-survey for the *ex situ* community to evaluate recent and planned amphibian conservation activities.
• Vast majority of AArk coordination efforts going into enabling partners for the YOTF campaign and various capacity building efforts.

Taxon Survival Efforts (compiled by AArk Taxon Officers Kevin Johnson and Richard Gibson)

• On behalf of the AArk Cryobiology Advisory Committee, San Diego Zoo is accepting amphibian tissue samples for cell culture. The protocol is available online. These cell lines will provide valuable material for research and preserving genetic diversity. If an invaluable animal dies in captivity, or you encounter a freshly dead specimen of a rare species in the field, please consider utilizing this free service. Biopsy kits are available through the contact information in the online protocol.

Research Efforts (compiled by AArk Research Officer Robert Browne)

• There is a major drought in Iran that threatens the survival of several endangered amphibians including highly prioritized *Neururgus* salamander species. Surveys are being conducted to elucidate the status of these and other Iranian amphibians.

• Two major Chinese universities have agreed to support a distribution survey of the Chinese giant salamander combined with the collection of DNA samples. Interest from zoos is sought from zoos to participate in a program to test techniques developed in China for reproduction of their giant salamanders.

• A valuable part of the research section on the AArk website will be illustrated techniques. Pages showing subjects including counting eggs, measuring animals from images, weighing and manipulating tadpoles, restraining frogs are already in production. Pictorial essays on other techniques that you have found valuable can be sent to Robert.

• The survey of the amphibian research efforts and needs of zoos is in the final stages of compilation. This is being done in conjunction with the production of a web based guide for amphibian research in zoos. Please email any research priorities that you consider need canvassing to Robert.

• The development of reliable and efficient means to preserve genetic variation, and reproduce amphibians with the genetic variation of the source population, is essential in conservation breeding programs. Dr Chester Figiel, USA, National Fish Strain Registry and Robert are preparing a book chapter " Cryo-preservation of amphibian cells and tissues. *In.* Cryopreservation in Aquatic Species" which will correspond with associated information on the AArk website of reproduction technology for amphibians.

• **The AArk website**:
An Info pak (two versions in English and one in Japanese), and the AArk Banner (24x60inches) with the campaign slogan are available for download.

• **Online Petition:** An online petition urging politicians and parliaments of the world to commit resources for urgent global action is now available online. The petition is available in English and German, and is currently being translated into Spanish. It is also available in French on the WAZA website. So far, 4.669 signatures have been received via the online petition.

• **Videos online:** A number of videos, including Jeff Corwin, Kevin Zippel and others are available online. Sir David Attenborough records interview for YouTube. Jean-Michel Cousteau records PSA for YouTube.

• **News From the Zoos:** The new page News From the Zoos is ready for all regional associations who want to post information about their YOTF activities. Currently there are links to each region's web page but those who want AArk to create a new page for them please send the information to Lesley. You can also send to Lesley the names of the regional representatives for the YOTF campaign if not listed on the website.

Visitors: Site visitation has decreased again this month, for the second month in a row. 36,924 visits, resulting in 44,003 page views.

Fundraising and sponsorship
• Our wonderful friends at Froguts Inc. have very generously offered to give a free copy of their virtual dissection software to any interested AArk partner institutions. You can review the product at www.froguts.com, and request your copy from David Hughes, Co-Founder Froguts Inc. david@froguts.com.
• HOPart: IUCN Asia regional office is planning at least six high-profile gala art auctions in key locations around the world in late 2008 to raise $1-4 million for AArk and other ACAP activities.

From WAZA
• **Petition:** As of August 11 we had 20,923 signatures at the Office. Major collectors: **ZOO/SAZARC 5276 (and they have about 6000 more we didn't receive yet),** Dudley Zoo (UK) **2668**, Riga Zoo (LV) **1794**, Leipzig Zoo (DE) **1601,** Basel Zoo (CH) **1338,** DGHT **883**, St. Louis Zoo (US) **823,** Münster Zoo (DE) **813**, German Zoo Educators - VZP **620**, Wilhelma Stuttgart (DE) **538,** Augisburg Zoo (DE) **477,** Vivarium de Lausanne (CH) **4078**, Papiliorama (CH) **393**, Worms Animal Park (DE) **312**, Augsburg Zoo (DE) 269, Worms Animal Park (DE) **174,** Papiliorama Kerzers (CH) **45**

• WAZA website AARK-related pages opened / downloaded in July: Campaigns – 931 (includes also some non-amphibian related pages), Frogpages in German – 223, Ripley's Frog Book 139, Silence of the Frogs – 44, Amphibian petition English – 34, Amphibian Petition French – 5, Amphibian Petition German – 4, AARK Infopack in German 10, EAZA Infopack in German 2, Thomas Ziegler's article in WAZA Magazine Nr. 9 – 4,

Letter from Kevin Zippel to Captive facilities about biosecurity

Dear AArk associates,
In recent years our community has seen an increas-ing awareness of biosecurity in captive amphibian programs. The concern is that if amphibians intended for release are NOT kept in strict isolation then there is a considerable risk of accidentally introducing exotic pathogens when the animals are eventually released. Pre-release screening does not eliminate the risk, as such screening is (1) not 100% effective at finding known pathogens, and (2) can fail to detect unknown pathogens.

Unfortunately, the reintroduction program for the Mallorcan midwife toad learned this lesson the hard way when they accidentally introduced chytrid (prior to its 1998 discovery) from their cosmopolitan collection into wild toad populations. Fortunately in this case, the wild populations do not appear to have been severely impacted. However, this incident clearly demonstrates the potential role the ex situ conservation community can play in inadvertently spreading disease and therefore also our ethical obligation to do everything in our power to reasonably assure that we do not spread disease. Please, as associates of the AArk, it is your duty to share this story with your members and colleagues; we must practice good biosecurity and ensure that we are a part of the solution, not the problem. You can read more about biosecurity here http://www.amphibianark.org/pdf/Husbandry/A%20guide%20to%20husbandry%20and%20biosecurity%20standards%20for%20amphibians.pdf, and more about the Mallorcan midwife toad story through the links below.

A guide to the biosecurity and husbandry standards required for the safe and responsible management of *ex situ* populations of amphibians – 11th January 2008. These standards are based upon those reported in the proceedings of the CBSG/WAZA Amphibian Ex situ Conservation Planning Workshop, El Valle, Panama, 12-15th February 2006.

Introduction
Ex situ breeding of selected amphibian species is recognised as an essential and integral part of the IUCN Amphibian Conservation Action Plan to stem the loss of amphibian species worldwide. However, the emergence of the infectious disease chytridiomycosis (caused by the fungus *Batrachochytrium dendrobatidis*) as a significant factor in the recent decline and extinction of many amphibian species, raises specific challenges for *ex situ* conservation.
Additionally, the difficulty and expense involved in reliably testing amphibians for this disease means that it may often go undetected for extended periods of time and even re-emerge in animals thought to be negative.

Therefore, the safest and most responsible way to proceed with the keeping of all amphibians in captivity is to treat all animals as potentially infected (with chytrid and/or other pathogens) and avoid the discharge of potentially infectious water and other materials into the environment (where they may
infect local native amphibian populations).
Furthermore, increasing awareness of biosecurity issues and introducing a quarantine-like approach to amphibian husbandry of enclosures/rooms within an institution and between institutions will significantly reduce the risk of an epidemic outbreak of chytridiomycosis (or other disease) in captivity.
Attempting to screen for and treat, known and unknown diseases is no substitute for bio-security – i.e. implementing strict and thorough quarantine
and maintaining high levels of barrier management.
For more information on amphibian diseases and chytrid fungus detection, management and treatment see: http://www.jcu.edu.au/school/phtm/PHTM/frogs/ampdis.htm and http://www.amphibianark.org/chytrid.htm

Biosecurity and husbandry standards
Biosecurity and husbandry standards can be divided into three categories based on the intended Role of the animals in captivity.

1. Specimens maintained ex situ for Educational* purposes *with no requirement for research and no prospect of release to the wild.*

BIOSECURITY
• Separate footwear per room; footbaths entry/exit.
• Treatment/decontamination of all waste water from enclosures and rooms housing amphibians prior to discharge/disposal.
• Incineration (or disinfection by means of suitable chemicals, heating to 60°C for 5mins, or complete desiccation) of all amphibian enclosure waste – soil, leaves, plants, food items, faeces, bodies (after postmortem exam).
• Escape-proof housing sized appropriate for species.
• Pest-proof housing (rodents, cockroaches, ants, etc) to prevent pathogen transfer, predation of amphibians, and escape of food insects.
• Water free of pathogens & chemical contaminants.

HUSBANDRY
• Regular water changes – automated or manual.
• Appropriate cage furnishings wherever necessary.
• Exposure to natural light (or good artificial equivalent) if exposure is normal in natural history
• Appropriate temperature/humidity for natural history of the species.
• Appropriate food, dependent on species – with supplementation (vitamin/mineral).

2. Intermediate Specimens *maintained ex situ for Conservation Research* purposes with no prospect of release to the wild.*

All Basic standards, but also:

BIOSECURITY
• Individual instruments (tongs, nets, bowls, tanks, pumps, filters etc) per enclosure and/or species.
• Change gloves (non-powdered) for each enclosure.
• Design of enclosure should minimize keeper/animal contact.
• Maximize use of automation in water quality maintenance/watering.
• Maintain a consistent/directional flow of husbandry routine – from low risk and high importance species/individuals to high risk and lower importance species/individuals.

HUSBANDRY
• Climatic conditions (lighting, photoperiod, temperature, rainfall, humidity, etc) should follow the natural cycle for the species and be automated wherever possible.
• Highest level of record-keeping.

3. Advanced*. Specimens maintained ex situ for conservation breeding purposes (Ark/Rescue/Supplementation)* with the ultimate expectation of release to the wild.*
All Basic and Intermediate standards, but also:

BIOSECURITY
• One species or local assemblage of species per room/unit – a state of permanent quarantine.
• Separate uniforms/overalls per room (stays in room unless disposable).
• Food coming from known and trusted source; 3-month period of familiarization with natural food types recommended prior to any release.
• Pre-release, monitor condition of specimens to determine fitness for release – thorough health screening including; regular and frequent PCR screening for chytrid fungus over several months; screening for Ranavirus; regular bacteriological and parasitological screening; and thorough necropsy and histological examination of deceased animals
and a representative subset of the intended release animals – see Pessier, A. P. (In press): Management of disease as a threat to amphibian conservation. International Zoo Yearbook, 42, for a comprehensive overview of amphibian health screening needs.

Conservation Role
Simply keeping and breeding threatened amphibian species in captivity does not in itself equate to conservation. As part of a genuine amphibian conservation initiative, the *ex situ* captive management should not only form part of the recommended conservation action for the species but must also have a clearly defined role in the conservation of the species or its habitat:

a) Ark – An amphibian species that is extinct in the wild (locally or globally) and which would become completely extinct without ex situ management.

b) Rescue – An amphibian species that is in imminent danger of extinction (locally or globally) and requires *ex situ* management as part of the recommended conservation action.

c) Supplementation – An amphibian species for which *ex situ* management benefits the wild population through breeding for release as part of the recommended conservation action.

d) Conservation Research – An amphibian species undergoing specific applied research that directly contributes to the conservation of that species, or a related species, in the wild (this includes clearly defined 'model' or 'surrogate' species and husbandry research).

e) Conservation Education – An amphibian species that is 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 includes clearly defined 'flagship' or 'ambassador' species).

NB – *ex situ* includes any and all animals removed from their wild habitat whether within or outside of their native range and country.