



Newsletter of the Declining Amphibian Populations Task Force

August 2000, Number 40.



Seed Grants 2000

We will be announcing this year's Seed Grant application round in the next issue of Froglog. The DAPTF Board of Directors agreed at its recent meeting that we should encourage more applications from developing countries, where amphibian diversity is generally high, but the number of active herpetologists low. To this end, we will accept applications in Spanish, Portuguese and French, as well as English. Furthermore, we strongly encourage joint applications, in which individuals in developing countries form a partnership with a herpetologist in a developed country. Potential applicants are reminded that the value of DAPTF Seed Grants does not normally exceed \$2000.

Tim Halliday



Evidence of a Chytrid Fungus Infection Involved in the Decline of the Common Midwife Toad in Protected Areas of Central Spain

By Jaime Bosch, Iñigo Martínez-Solano and Mario García-París

During the summers of 1997, 1998 and 1999 mass mortality episodes of post-metamorphic *Alytes obstetricans* occurred in Peñalara Natural Park. The park is an alpine area at about 2000 m elevation that has been protected for 70 years. Since the Park is very close to the city of Madrid, every year it receives more than 100,000 visitors. *Alytes obstetricans* was one of the most common species in the past, having high larval densities in several ponds in the Park.

The population has suffered a sharp decline: tadpoles have

disappeared from 97% of the ponds which were used by this species, and the lack of direct or indirect observations of adults suggest that just some individuals remain alive. Scanning electron microscopy and histological techniques support chytridiomycosis as the most plausible cause of the decline of the species in the area (the diagnosis was supported by Dr. L. Berger, James Cook University, Australia). This is the first report of an apparent amphibian decline caused by chytridium in Europe.

The circumstances here are quite similar to those described for other chytridiomycosis epidemics throughout the world: rapid declines in populations living in well preserved habitats at high altitudes, involving species with extended larval periods and small clutch sizes.

Two mutually exclusive hypotheses are plausible in this case: environmental changes that can increase sensitivity of the host to parasites or produce fungus blooms, and a recent accidental introduction of the pathogen in the area. A pH increase in some ponds of the Park detected in a limnological study performed in the summer of 1998, supports the former. On the other hand, there is also evidence of both relatively old and recent amphibian species introductions into the Park. In addition, it is also possible that the disease was carried there by humans, but not much is known about this subject at present.

Most amphibian species in Central and Southern Spain are patchily distributed, and populations are largely isolated from each other, rendering recolonization unlikely. This is the case for the *A. obstetricans* population in Peñalara, the extinction of which is likely to take place in a few years.

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Frogs' Paradise has Gone

By Denis Vallan

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The region of Andasibe (formerly Périnet), one of the best studied places in Madagascar with respect to zoology, shows an incredibly high number of species in several animal taxa, especially frogs. In the last two years, a forest near Andasibe with probably the highest frog species diversity world-wide has been cut down.

At an altitude of 900 m above sea level, the Andasibe forest is situated right in-between the low and high altitude forests. It therefore shows an advantageous mixture of low and high altitude faunas (Lees 1996), as is known for some other regions (Raxworthy 1996). The mountainous topography of the region further contributes to the elevated species number by offering different habitats with disparate microclimatic conditions. For the high diversity of several taxa in Andasibe, the word "Périnet effect" has been coined (Lees 1996). Around this village, nearly 100 anuran species have been found (Glaw & Vences 1994; pers. observ.), more than half of the anuran species present in Madagascar.

During different surveys conducted in An'Ala (a forest in the region of Andasibe) between 1994 and 1997, 50 anuran species could be identified in less than 3 ha (pers. observ.; Glaw, pers. comm.). This incredible and unique species richness was due to a mosaic of streams, brooks and swamps in the plain and to drier plots on the slope of the valley. Several anuran species were only known from this forest, hence the value of the forest was not only due to its richness but also to the degree of endemism.

A survey in October 1999 showed that this particular forest has been destroyed to a large extent.

During the last two years, all high-grade timber has been collected. This "official", albeit illegal, activity left behind a "forest" consisting only of broken trees, brush, vines and herbs. According to farmers living near An'Ala, next year the remaining forest will be burnt down to grow rice, a logical second step after timber collection. This frogs' paradise has gone.

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Amphibian
Conservation
at the Detroit
Zoological
Institute

By Andy Snider and Kevin Zippel

The Detroit Zoological Institute (DZI) has a long history with amphibians. When the Holden Museum of Living Reptiles opened to the public in 1960, amphibians were already a part of the collection. The first amphibian breeding, Colombian giant toads (*Bufo blombergi*), occurred the following year. In 1969, our first gymnophionan was born, an Upper Amazon caecilian (*Nectocaecilia petersi*), and the first of many clutches of axolotls (*Ambystoma mexicanum*) was produced and reared soon thereafter. In 1990 (for the 30th anniversary of the Museum), the name of the facility was officially changed to the Holden Museum of Living Reptiles and Amphibians to acknowledge the importance of this class. Since 1994, increased emphasis has been placed on amphibian husbandry and conservation, and many significant species have been reproduced. These include: emperor newts (*Tylotriton shanjing*), for which we won an AZA "Significant Achievement" award in 1998 for long-term propagation; Anderson's newts (*Echinotriton andersoni*), bred here in 1999 for the first time in a U.S. zoo; Wyoming toads (*Bufo baxteri*), extremely endangered and rarely bred

in captivity; and golden mantellas (*Mantella aurantiaca*), a Vulnerable species (IUCN) which we now produce by the hundreds for breeding programs at other institutions.

In 1997, DZI intensified its commitment to amphibian conservation with the inception of the National Amphibian Conservation Center (NACC), the first facility in the world designed, constructed, and interpreted specifically for amphibians. Set in a 2-acre resurrected Michigan wetland, this 12,000-square-foot facility is dedicated to saving amphibians and shaping public attitude toward these threatened and valuable animals. Nearly half the facility will be off-exhibit, comprising holding and breeding rooms, offices, and research space. Four to five staff members will be present to take care of the day-to-day needs of the animals and to support breeding and research programs. Scheduled to open in June of 2000, the facility will contain nearly 100 species of amphibians, and over 1000 specimens. The NACC will serve as a national resource that physically and programmatically provides a foundation for amphibian research and conservation.

The goals of the NACC are:

1. *To educate.* The NACC will present millions of visitors and students with live animals and exhibits that inspire a sense of appreciation and public stewardship for amphibians and their habitats. Through interpretive graphics in and around the building, distance-learning programs, and educational amphibian "kits" distributed to elementary schools, the NACC strives to shape public attitude and provide creative ways for citizens to understand and take responsibility for these animals and their environment.
2. *To save.* The NACC will provide an *ex situ* site for the maintenance and breeding of rare and endangered amphibians to complement *in situ* conservation programs. The facility provides physical space for maintaining genetic reservoirs of endangered species in the event that wild populations become extinct, and to hold wild animals and their offspring until a time when they can be reintroduced into their native habitats or transferred to other zoo conservation programs. NACC will also work cooperatively with field research and conservation programs in an attempt to study and reverse unnatural amphibian declines. Furthermore, provision of captive-bred animals to the zoo community will help alleviate some of the stress on wild populations caused by over-collection.

3. *To study.* The NACC will serve as a resource for academic, governmental, and other conservation-oriented amphibian biologists from around the world. The facility will provide a controlled environment for amphibian observation and non-invasive research on all aspects of biology, from basic husbandry requirements to reproductive behavior and embryology/development. Video and audio recording equipment with computer analyzing programs, and microscopes with digital downloading capabilities will facilitate these studies. An Endowed Chair of Amphibian Conservation will support top researchers from around the world for three-month terms to complement the continuous research programs of permanent staff. The NACC will also provide logistic and financial support for field studies of amphibian ecology, both locally and globally. The facility will further serve as a database of knowledge regarding amphibian biology and conservation. *Froglog*, the international publication of the Declining Amphibian Populations Task Force, is now published with the support of DZI, and DZI is currently discussing a partnership with the U.S. Geological Survey for the co-administration of the national "Frogwatch" program.

4. *To pioneer.* The NACC will bring together cutting-edge techniques of education, conservation, and research, providing a model for future conservation facilities around the country and the world.

The NACC provides a unique environment for the celebration of an often-overlooked group of animals. Through conservation-oriented education and research, we are striving to change public attitude and address widespread declines in an effort to ensure that amphibians will persist into the future. *Educators and researchers interested in sharing ideas and collaborating on projects should contact curators Andy Snider <asnider@detroitzoo.org> and/or Kevin Zippel <kzippe@detroitzoo.org>*





Seychelles
Amphibia - a
Mixture of
Secure and
Declining
Species

By Justin Gerlach

The Seychelles islands support an important amphibian fauna with the majority of species evolving in isolation for 65 million years. The fauna comprises 5 frog species (3 members of the endemic family Sooglossidae - *Nesomantis thomasseti*, *Sooglossus gardineri* and *S. seychellensis*; an endemic rhacophorid genus - *Tachycnemys seychellensis* and a widespread ranid - *Ptychadena mascariensis*) and 7 caecilians (all endemic genera - *Praslina cooperi*, *Hypogeophis rostratus*, *Grandisonia alternans*, *G. brevis*, *G. diminutiva*, *G. larvata*, *G. seychellensis*). Of these, the sooglossids and *T. seychellensis* are considered to be threatened by their restricted ranges and most of the caecilians are rare and poorly known.

The Seychelles amphibians have been well studied from a taxonomic point of view and some of their ecological aspects have been investigated. Conservation status has only recently been considered in any detail. Since 1986 I have been studying all aspects of the Seychelles ecosystems, including amphibian abundance. Over the last 14 years populations of all frog species appear to have remained relatively stable. *Ptychadena mascariensis* is abundant in coastal and lowland areas on all the larger islands and is clearly a highly adaptable species. *Tachycnemys seychellensis* is rarely located in most areas due to its excellent camouflage. It does have a wide habitat range and large chorusing aggregations can be heard along several rivers on Mahé island. These aggregations have been found in the same locations in all years since 1986 and there is no evidence of any decline in this species in any habitat or locality. The sooglossids are largely restricted to high altitudes. *Nesomantis thomasseti* is a mist-forest specialist and has a very restricted range. Within this habitat it is rarely located although, from the number of individuals heard calling at night, it appears to exist at high densities. The mist-forests are climatically stable and not threatened by any development pressures; accordingly there is no evidence of a decline in this species. *Sooglossus gardineri* occurs in a wide variety of high and mid-altitude sites and is the most adaptable of the sooglossids, being able to exist in secondary

habitats. The lower altitudes are not as climatically stable as the mist-forest and in 1997-99 exceptionally low mid-year rainfall was recorded, resulting in low and mid-altitude areas becoming unusually dry. During the dry months no sooglossids were heard in these areas, but during the normal heavy rainfall of December-March *Sooglossus gardineri* was located in all previously recorded localities. Abundance data have not been fully analysed but no marked declines are apparent. *Sooglossus seychellensis* is intermediate between the previous two species, being restricted to high-altitude forests, although with a greater altitudinal range than *N. thomasseti*. The lower parts of this range were affected by the low rainfall and no *S. seychellensis* were located. Unlike *S. gardineri* the affected populations of this species are slower to recover and the species is presently almost entirely restricted to the mist-forest areas.

Studies of caecilian abundance have only recently been initiated and many very restricted species are now being found in a wide variety of localities. For most populations insufficient data are available to allow population trends to be described. Species such as *Grandisonia brevis* appear to be able to tolerate seasonal drought but records of others are very restricted (especially *Praslina cooperi*). There is evidence of decline in two species; *G. alternans* and *Hypogeophis rostratus*. Both species were formerly common in lowland marshy areas but have suffered significant range contractions with the drainage of most lowland marshes. This process continues, with the loss of one of the largest marshes (Anse Kerlan on Praslin) in 1999. By 1988 large populations were restricted to Fregate island. In the late 1990s tourism development on Fregate resulted in extensive modification of the marsh and river areas on the island. *H. rostratus* has direct development and loss of standing water areas has not affected this species, it has, however, removed the larval habitat for *G. alternans* which appears to be extinct on the island. *G. alternans* was abundant on the island in the past and was easily located, but in 1999 not a single individual could be found. *H. rostratus* remains abundant but in 1999 many dead adults were found, the fresh dead specimens being partly eviscerated. These had not been eaten despite having obviously been killed by an animal. Rats are abundant on the island and have been widely assumed to be responsible for caecilian declines. However, the eviscerated *H. rostratus* showed marks of having been pecked

and pulled apart by Seychelles magpie robins (*Copsychus sechellarum*). This is an endangered bird which has been the subject of intensive management by BirdLife International since 1989. Management techniques such as supplementary feeding have resulted in the recovery of the magpie robin population to a level which is above the natural carrying capacity of the island. Although there have been declines in the magpie robin population since the project was passed to BirdLife Seychelles it remains above natural levels and the killing of caecilians continues without the motivation of hunger. At present the *H. rostratus* population remains high but in the long-term impact of this unnaturally high level of predation is not known.

Although there are some declines in the Seychelles amphibian fauna there are no general trends. Some species remain restricted to their natural ranges whilst others may be declining as a result of very specific factors. There is no evidence of disease in Seychelles amphibians at present and the effect of climatic change is equivocal. The decreasing mid-year rainfall is having a significant impact in mid-altitudes but some species appear to be tolerant of such changes, others may be less adaptable. Monitoring of the Seychelles amphibian fauna will continue and a particularly important aspect of this will be determining the ecological responses to changing rainfall patterns.

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Froglog Shorts

ABOUT OUR NEW CHAIR:

James Hanken is a professor in the Department of Organismic and Evolutionary Biology at Harvard University, where he also serves as curator in herpetology in the Museum of Comparative Zoology. He earned a Ph.D. in zoology from the University of California, Berkeley, and previously served on the faculty of the University of Colorado, Boulder. His principal area of research is evolutionary morphology and development, which has included studies of all three groups of living amphibians. He also studies the systematic biology of neotropical salamanders, especially the genera *Thorius* and *Bolitoglossa* in Mexico and Central America. Contact information: James Hanken, Museum of Comparative Zoology, 26 Oxford Street, Cambridge, MA 02136, USA hanken@oeb.harvard.edu

DONATIONS Due to a glitch in the tracking system, some donors were previously unacknowledged for their donations in response to the appeal included in Froglog 36. Please accept my apology (Ron Heyer) on behalf of the Task Force to the following: Allen Allison, William Armes, Bayard Brattstrom, Gary Casper, Beth Churchwell, Martha Crump, William Davis, Kenneth Dodd Jr., Edward Ervin, Richard Glogowski, Dan Holland, Terry Keiser, Erik Kiviat, Joseph MacDonald, James Mac Mahon, Kendrick Moholt, Barbara Samora, Norman Scott, Henri Seibert, and Robin Whittall.

We also gratefully acknowledge receipt of the following donations from individuals received during May and June 2000: Jim Armelagos, Malcolm Braid, Steve Gorzula, Ben Hong, Moira Hope, Peter Hovingh, Karen L. Jacobs, Beth Leuck, Paul Moler, Edward Victoria Jr., Gregory Vagle, and Beatrice Busch von Gontard. Carol Metcalfe Spann made a donation in memory of her sister, Sarah Metcalfe Talpey.

Chiricahua Leopard Frog Proposed for Threatened Listing Phoenix, Arizona: The USFWS has proposed to list the Chiricahua leopard frog (*Rana chiricahuensis*) as threatened under the Endangered Species Act. The listing proposal includes a special rule encouraging cattlemen to continue their regular management of livestock tanks that are harbouring leopard frog populations. The Chiricahua leopard frog is found in ponds, streams, stock tanks, and other aquatic sites in the mountains of central and east-central Arizona and west-central New Mexico, and in the mountains and valleys of southeastern Arizona and extreme southwestern New Mexico. The species is also known from several sites in Chihuahua, and from single sites in Sonora and Durango, Mexico. Biologists believe this frog faces a variety of threats including non-native predators, particularly fish, bullfrogs, and crayfish. Habitat loss and fragmentation, disease and environmental contamination present additional threats. The species has disappeared from entire mountain ranges, valleys and river drainages within its historic range. Copies of the proposal are available at: <http://arizonaes.fws.gov/public1.htm>. USFWS will accept public comments on the proposal until September 12, 2000. (ENVIRONMENT NEWS SERVICE, USA)

Details of a Herpetologist's Position at the Upper Midwest Environmental Sciences Center will appear at: <http://www.usajobs.opm.gov/>

Check out the website of the Cairns Frog Hospital:

<http://www.internetnorth.com.au/~frogcrusader/>

The 5th Annual Meeting of the Canadian Amphibian and Reptile Conservation Network will be held at Penticton Trade & Convention Centre, Penticton, British Columbia, September 22-25, 2000. It includes symposia on wetland conservation issues, important amphibian and reptile areas, and volunteer monitoring programs. There will also be a full program of contributed papers and posters. To register for the conference or to submit an abstract, check out the CARCNET web site at <http://www.cciw.ca/ecowatch/dapcan/intro.html> or send your name, address, e-mail, fax and telephone number to: Laura Friis, Wildlife Branch, PO Box 9374, Stn Prov Govt, Victoria, BC V8W 9M4, CANADA.

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DAPTF Rapid Response Fund Readers are reminded that we will consider, at any time, applications for financial support, usually up to \$2,000, for projects that address emergency situations facing amphibian populations. For example, we will support investigations of mass mortalities or outbreaks of disease, especially if these are in areas where these have not been reported before. Anyone wishing to make use of this fund should contact Tim Halliday at the DAPTF office (address below).



Publications of Interest

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