

FROGLOG

Newsletter of the Declining Amphibian
Populations Task Force

October 2003, Number 59.



DAPTF SEED GRANTS 2004

We are pleased to announce a new round of Seed Grants for 2004. These are intended as one-time awards of between \$500 and \$2000 for the support or initiation of research that furthers the DAPTF's mission to determine the nature, extent and causes of amphibian population declines. There are two categories in this year's round, thanks to generous support from the US Department of the Interior's Amphibian Research and Monitoring Initiative (ARMI). We will accept applications in Spanish, Portuguese and French, as well as in English.

ARMI AWARDS. The criterion for these awards is that the proposed work should be done on species or issues of concern in the USA. ARMI is particularly interested in funding research on potential stressors of amphibian populations. For more information about ARMI, go to:

<http://edc2.usgs.gov/armi/>

UNRESTRICTED AWARDS. The DAPTF welcomes applications that address any aspect of amphibian declines, but favours joint applications that involve a partnership between herpetologists in developed and developing countries. We are also prioritizing research that investigates synergistic effects between two or more factors that have been identified as actual or potential causes of amphibian population declines.

Applicants should indicate which of the above categories they have in mind, but we will consider applications in the *ARMI* category also in the *Unrestricted* category. Do not hesitate to contact Tim Halliday if you need clarification or advice.

Proposals of no more than 4 pages should be addressed to: Tim Halliday, DAPTF International

Director, at the address on the back of *Froglog*, or by e-mail to t.r.halliday@open.ac.uk

Proposals should contain: (1) Name, affiliation and contact information of proposer(s), (2) Project title, (3) Description of the intended work, including localities and species involved, (4) Start date and schedule of the project, (5) Explanation of how the project will further the DAPTF's mission, (6) Budget breakdown, including details of additional funding obtained or sought from elsewhere (note that we do not provide funds to support salaries), (7) References, if appropriate, and (8) Any other pertinent information.

All information acquired with the support of the DAPTF remains the intellectual property of the grant recipient, but must be freely available to the DAPTF and for the DAPTF's use in furthering its mission.

The closing date for applications is 15th December, 2003.



It's Not Carnival for the Harlequin Mantella! Urgent Actions Needed To Conserve *Mantella cowani*, an Endangered Frog from the High Plateau of Madagascar

By F. Andreone and J. E. Randrianirina

Little is known about the conservation status of amphibians in Madagascar. Ninety-nine per-cent of the (more than 210) anuran species are endemic and are represented by four families (Hyperoliidae, Mantellidae, Microhylidae, and Ranidae). Since many of the Malagasy amphibians are connected with forest habitats it is not unreasonable to suggest that the high deforestation rate occurring in this country has been accompanied by the extinction of many (possibly

undescribed) frog species. It is therefore a race against time to discover these taxa and protect them. Furthermore, due to their biological peculiarities and very colourful appearance, many frogs are annually exported for the pet trade: *Mantella* (Mantellidae), some *Scaphiophryne* and *Dyscophus* (Microhylidae), and, in a few cases, *Mantidactylus* and *Boophis* (Mantellidae).

A recent conservation synthesis (Andreone & Luiselli, 2003) indicated that the harlequin mantella *Mantella cowani* is likely the most threatened Madagascan amphibian because of a combination of sensitivity to habitat alteration and to exploitation for the pet trade. The few remaining plateau forests where this species still lives are highly fragmented and subject to intensive timber harvesting. The species is known from small forests near Ambatolampy and Antoetra. Furthermore, some museum vouchers record its presence (at least in the past) in other localities. At Antoetra *M. cowani* was said to be quite common until several years ago and, for this reason, it has been captured in large numbers (Rakotomavo, 2001).

During January-February 2003, we carried out a pilot project on this mantella, trying to identify sites with viable populations. Around Antoetra we confirmed the species' presence at four sites. In general, the habitat consists of narrow bands of original upland forests along montane streams, or humid stone walls on montane moors. The surrounding habitat is the "typical" deforested upland savannah. At Site 1, despite an intensive search, only a very few individuals were found. There, the collecting pressure is apparently high since the site is close to the village of Antoetra. Children visit it almost every day to collect the mantellas. We learnt that the current price per individual of *Mantella cowani* is 4-5000 FMG (0,7-0,8 ₺) vs. 250-500 FMG (0.04-0.08 ₺) for *Mantella baroni*. At Site 2, we

found >20 individuals in four research days. At Site 3 there are still large forest fragments surrounded by slash-and-burn agriculture (*tavy*) with maize cultivation. Within the forest we found frog species typical of the eastern rainforests, while within the forest and nearby *tavy* we found a rich *M. baroni* population. A few individuals were phenotypically recognised as *M. cowani*. Furthermore, we found in the *tavy* several specimens with intermediate chromatic traits between *M. baroni* and *M. cowani*; we suspect that most of them are hybrids. The two species are indeed very closely related (Vences et al., 1999). Finally, we surveyed a fifth site at about 150 Km North of Antoetra, near Ambatolampy. This area too consists of small forest parcels within savannas, and a narrow riverine forest. Along the stream we found only a single specimen of *M. cowani*. It is difficult to understand if the very low occurrence of *M. cowani* reflects a real scarcity of the species, or if it is due to unsuitable weather conditions.

In terms of habitat requirements, *M. cowani* appears a typical stream and moor species. Although we cannot draw a realistic figure of the size of the visited populations, our feeling is that they do not exceed more than a few hundred individuals, usually less than one hundred. We are concerned about the fact that the harvesting of wild animals is likely to affect natural populations. During our stay at Site 1, we heard rumours of the activity of local people, who collected about 250 individuals in one week from about five populations. Since the number of persons engaged was not less than 50, the mean capture capacity is about 1 mantella per person per day. This is indeed a very low number when compared with the very high densities of *M. aurantiaca*, *M. milotympanum* and *M. baroni* (M. Vences, pers. comm.).

Of course more data are needed to reach a comprehensive conservation scenario. Like all the other mantellas, *M. cowani* is currently listed on CITES Schedule II, and because of this is theoretically subject to some control and protection. The very critical ecological situation, however, demands drastic political initiatives. Due to the high retail price, local people are induced to collect a large number of specimens, and to stock them whilst waiting for the final decision of the exporter (with an obvious high mortality). This has an evident negative effect on the natural populations, which already live in degraded habitats. The trade and collecting of *M. cowani* should thus be

prohibited for some years. Since the decline for *M. cowani* is due to a combination of habitat alteration and capture for the pet trade, a limitation of the latter should hopefully result in the species' recovery where habitat is still suitable. During this period of suspension, research must be carried out to ascertain the population size and a realistic distribution pattern.

Acknowledgements. We thank for financial support DAPTF, WCS and NACC. For companionship and exchange of information thanks to G. Aprea and M. Vences. E. J. Edwards helped with logistics and personal information.

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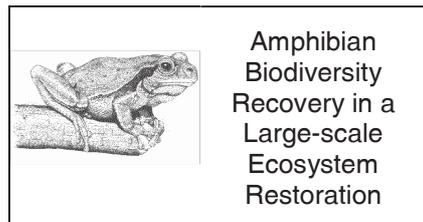
pbzt@dts.mg

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**Amphibian
Biodiversity
Recovery in a
Large-scale
Ecosystem
Restoration**

**From Bob Brodman
Indiana State Coordinator
US Central Working Group**

Reports of recent amphibian declines (Blaustein and Wake 1990, Houlahan et al. 2000) and malformations (Helgin et al. 1998, Hayes et al. 2002) have given those of us who care of about amphibian conservation little reason to be optimistic. Perhaps we need some good news.

The US Nature Conservancy (TNC) purchased the Kankakee Sands property and has initiated a wetland/sand prairie restoration on a 3,000-hectare tract in northern

Indiana. This project is designed to restore connectivity and ecosystem function between three natural area remnants (totaling ca. 4000 ha). Wetland/prairie complexes have been severely impacted by conversion to agriculture in the United States, and surviving remnants are generally small and isolated. This restoration is designed to create a highly viable wetland/grassland complex that will maintain biodiversity into the foreseeable future. Once completed, the restoration will create a contiguous wetland, grassland and savanna mosaic harboring a rich assemblage of native plants and animals.

The restoration at Kankakee Sands represents a bold attempt by TNC to use landscape-scale restoration/reconstruction as a strategy to achieve conservation goals at a fragmented high-biodiversity site. Ecological restoration is increasingly touted as a technique for conserving biodiversity in highly modified and fragmented landscapes. Indeed, restoration may be the only method of enhancing the integrity of ecological systems that have been so fully degraded that few, if any, large natural examples remain. But to play a significant role from TNC's unique perspective, restoration must move beyond simple stand-alone projects where the restoration is viewed as an end unto itself, to become a widely used strategy to alleviate threats to biodiversity.

To help achieve this, in 1998 TNC organized a multidisciplinary consortium of regional biologists from nine colleges and universities to develop a coordinated research effort centered on ecosystem recovery at Kankakee Sands. The primary question guiding the consortium is: *Can restoration heal ecological damage caused by historical land conversion and fragmentation at a high-biodiversity site?*

Our preliminary results indicate that amphibians previously existing at Kankakee Sands rapidly colonized restored wetlands. Amphibians exponentially increased from 14 populations at 7 remnant breeding sites in 1998 to 172 populations at 44 breeding sites by 2003. All seven of the species present in 1998 have greatly increased in abundance and three new species (*Rana catesbeiana*, *Hyla chrysoscelis* and *Ambystoma tigrinum*) have colonized Kankakee Sands since 2001. Survival of tadpoles to metamorphosis occurred in large numbers at most wetlands in 2002 and 2003. Only about half of the property has been restored to date, so there is reason to believe that

populations will further increase over the next five years.

Acknowledgements

Funds for this research were provided by the Indiana Department of Natural Resources, The Nature Conservancy, and Saint Joseph's College. My thanks to Spencer Cortwright, the TNC staff, and to my students who helped conduct surveys.

Full copies of this report can be obtained from: Bob Brodman, Biology Department Chair, Saint Joseph's College, Rensselaer, IN 47978, USA.

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Amphibian Mortality by Road-Kill in a National Park

By John Serrao

Many of the causes of global amphibian declines are so complex in nature that they seem well beyond the ability of the amateur herpetologist or nature lover to become involved. Ozone layer depletion, global warming, agricultural chemicals, chytrid fungi and other phenomena have all been implicated. One other cause, however, is very localized as a possible major problem for amphibians, especially in the heavily-developed eastern United States: automobile traffic. On rainy spring evenings, for example, when the majority of adults of several species of amphibian migrate to their ancestral breeding sites, road-kill can represent a substantial mortality factor. A high percentage of a given area's frogs and

salamanders travel to breeding sites on just a few evenings when the weather is right, and many of these may be crushed beneath the wheels of cars along roads that must be crossed.

In the spring of 2002, such a slaughter occurred near a major breeding wetland in the Delaware Water Gap National Recreation Area in Bushkill, Pennsylvania. The evening of March 9th was the first mild, rainy evening at the end of winter and the first night for the emergence of five species of amphibians: the spotted salamander (*Ambystoma maculatum*), Jefferson salamander (*A. jeffersonianum*), red-spotted newt (*Notophthalmus viridiscens*) spring peeper (*Pseudacris crucifer*) and wood frog (*Rana sylvatica*). Along a 150 m section of the infrequently-travelled road bordering the large wetland, I counted 650 dead wood frogs and peepers, 30 dead spotted salamanders and at least 25 dead newts. The National Park Service was notified of this mortality and advised to close the road under similar circumstances the following spring. The Park administration responded favourably to this idea, and on the evening of March 21st, 2003 (the first mild, rainy evening of the year) the road was closed with barricades and patrolled by Park Rangers to prevent any cars from travelling through the breeding area. Park biologists, newspaper reporters, photographers and myself walked the same 150 m stretch of road and watched hundreds of frogs and salamanders cross over safely. The road was also closed to traffic on three other rainy evenings to ensure the safe crossing of later amphibians. Future plans of the National Park may involve the construction of culverts to allow the passage of amphibians beneath the road.

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Amphibians in Argentinean Soybean Croplands: Implications for Biological Control

By R. Lajmanovich, P. Peltzer, A. Attademo & W. Cejas

Argentina has long been the third world's largest producer of soybeans, with high output levels supported by a considerable use of agrochemicals (fertilizers and crop protection products). In 2002-2003, soybean

cultivation totalled 11.28 million ha in the center, east and north of the country. Despite this, remnant patches of natural vegetation still exist, embedded in the agricultural matrix to the point where existing amphibian populations may be dependent on altered wetlands or ephemeral ponds for their survival and reproduction. Anuran species living surrounded by croplands may benefit from the crops grown but may be inadvertently exposed to pesticides used to reduce insects, weed, and disease pests of those crops. In this context, amphibians have been proposed as a model for studying biological control due to their carnivorous diet as adults. Few field studies, however, have elaborated the relationship between insect pests and the trophic ecology of wild amphibians. Our objectives, therefore, were to examine the diversity and trophic ecology of anurans in soybean croplands of the Córdoba and Entre Ríos Provinces of Argentina.

Amphibian diversity, abundance and species richness were estimated using pitfall trapping. We analyzed the diet of two anuran species per field of crops that represented the highest biomass and abundance. We studied specimens of *Bufo arenarum* (Anura: Bufonidae) and *Leptodactylus latinasus* (Anura: Leptodactylidae) for Córdoba Province; and *Physalaemus albonotatus* and *Leptodactylus chaquensis* (Anura: Leptodactylidae) for Entre Ríos Province.

A total of 15 anuran species belonging to three families (Bufonidae, Leptodactylidae and Microhylidae) were recorded in the two soybean croplands located in the central eastern region of Argentina. Our results suggest that soybean cropland supports numerous individuals of a population and varies in capacity to support species. The abundance, diversity and richness of anurans increased with increasing complexity and height of soybean plants, probably because of the damp soil surface and low air temperature. The diet of the anurans studied consisted of a much higher quantity of mobile insects than other arthropods. The majority of insects we found were species harmful to soybean production. In particular, the anurans fed on lepidopteran larvae, e.g. *Spilosoma virginica*, *Anticarsia gemmatilis*, *Peridroma saucia*, *Rachiplusia nu*; immature instars of homoptera, e.g. *Scapteris borelli*; adults of *Schistocerca* sp., *Empoasca fabae*, *Edessa mediatubunda*, *Nezara*

viridula, *Delphacodes kuscheli* and leaf-cutter ants (*Acromyrmex* spp.).

In this context, we suggest that anurans should be considered as potential natural enemies or included in the testing of new agricultural chemicals prior to government approval. In other words, we suggest that anuran populations are an important biological control factor in the natural suppression of species harmful to soybean plants. Management practices that improve the range of conditions and habitat for insectivorous wildlife can reduce or prevent extreme plague population fluctuations and help reduce damage to the crops. As the farmers use fewer pesticides, they may increase the effectiveness of anurans as natural enemies against multiple pests, so the benefit to the farmer may be much more than just saving the cost of the chemical and its application.

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Reports on DAPTF Seed Grants

Recipients of DAPTF Seed Grants are generally expected to publish the results of their projects in refereed journals, or as articles in *Froglog*. They are also required to send us reports, so that their results can be made available to DAPTF members. Below is a list of reports that we have received recently. Anyone wanting a copy of a report should contact the author in the first instance; we can supply copies if you cannot reach the author.

J. Meren Ao (2002) Amphibian fauna of Nagaland with nineteen new records from the state including five new records from India.

[\(sabitorybordoloi@rediffmail.com\)](mailto:sabitorybordoloi@rediffmail.com)

Nancy E. Karraker & James P. Gibbs (2002) Impacts of de-icing salts on vernal pool-breeding amphibians.

[\(nekarrak@syr.edu\)](mailto:nekarrak@syr.edu)

Savitha Krishna (2001)

Establishing the baseline data to monitor the fluctuations in the populations of anurans in the Western Ghats of Karnataka (South India).

[\(savithakn@hotmail.com\)](mailto:savithakn@hotmail.com)

Magno Segalla & Eloísa Wistuba (2002) Estudo das populações de anuros em uma área de transição

florestal (Floresta Atlântica, Floresta com Araucária) em mananciais da serra (Piraquara, Estado do Paraná, Brasil)

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Froglog Shorts

Russian and Spanish translations are now available for the book, "**Measuring and Monitoring Biological Diversity: Standard Methods for Amphibians**," published by the Smithsonian Institution Press in 1994.

The Russian version was translated by Dr. Sergei M. Lyapkov, edited by Dr. Sergius L. Kuzmin, and printed by KMK Scientific Press Ltd. The Russian translation was printed in June 2003. The cost per copy is \$29 US plus shipping. Orders should be sent to Dr. Kirill Mikhailov at: kmk2000@online.ru

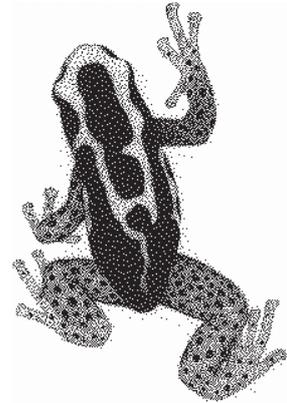
The Spanish version was translated by Dr. Esteban O. Lavilla, edited by Olga MacBryde, and printed by Editorial Universitaria de la Patagonia. Although the book was printed in 2001, the Editorial Universitaria de la Patagonia has not been able to distribute it, due in large part to the Argentine economic crisis. Dr. Néstor Basso has successfully acted as an intermediary with the Editorial to resolve the distribution problem. The book is now available from Bibliomania. The cost per copy will be \$24.95 plus shipping. Orders should be sent to Bibliomania either at: breck@Herplit.com or the Bibliomania web site: <http://www.herplit.com>

The USDA Forest Service, Izaak Walton League of America and Ducks Unlimited, Inc. are pleased to announce the publication of "**A Guide to Creating Vernal Ponds**". This easy to understand book contains techniques that the educator, private landowner and public land steward may use to establish ephemeral wetlands. Vernal ponds provide critical habitat to amphibian, reptile, waterfowl, shorebird and bat species throughout North America.

Please visit: <http://www.southernregion.fs.fed.us/boone/> to view on online version of the book, or to download an order form for a paper copy. Alternatively, the Guide and Order Form are available from the "Herp Center" web site at: <http://herpcenter.ipfw.edu/outreach/VernalPonds/index.htm>

Fauna Forever is a research initiative of the Tambopata Reserve Society

(TReeS, UK Registered Charity No. 298054) that aims to determine the effect of tourism on mammals, reptiles, frogs and birds at 5 lodges in the Tambopata Area of Madre de Dios, Peru. Over the 1-year duration of the project, the Project Fauna Forever research team will require the assistance of 24 volunteers to contribute their time and energy towards a challenging initiative that aims to improve the way man uses the rainforest and its natural resources. International volunteer assistants will be required to cover the costs of their participation. **Volunteers are especially sought for the herpetology teams!** For further details, please visit the website at: www.fauanforever.com



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FROGLOG is the bi-monthly newsletter of the Declining Amphibian Populations Task Force. *Articles on any subject relevant to the understanding of amphibian declines should be sent to:*

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