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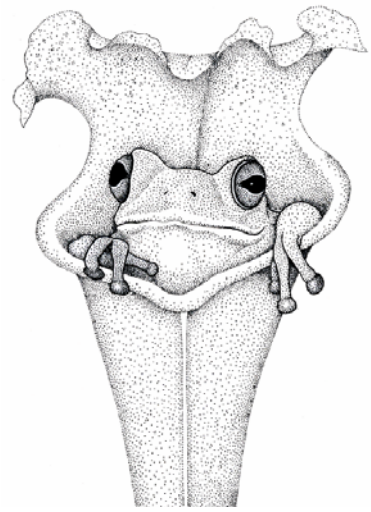

FROGLOG

Newsletter of the Declining Amphibian Populations Task Force

April 2004, Number 62.

Southern African Frog Atlas Project completed!

By Marius Burger and J.A. Harrison

The Southern African Frog Atlas project (SAFAP) was first conceived (with the assistance of a few beers) by Les Minter (University of the North) and Phil Bishop (then of the University of the Witwatersrand, now at the University of Otago, New Zealand), who figured that if it could be done for birds, then why not for frogs? The next logical step was to contact the Avian Demography Unit (ADU; University of Cape Town) who had produced *The Atlas of Southern African Birds* (Harrison et al. 1997). James Harrison, who was coincidently brewing similar plans at the time, took to the idea immediately. An initial meeting was held at Wits, followed later by the launch of the project (combined with the launch of Passmore and Carruther's field guide) in November 1995. Starting with no funds, but with high expectations and some trepidation, the project got underway in 1996. Fortunately, funds were eventually found and the project was set for the long haul. Now, eight years, hundreds of thousands of kilometres, tens of thousands of records, and hundreds of thousands of written words later, the job is done!

In addition to records gathered during the atlas period, historical data from all the major national museums were incorporated into the SAFAP database. The database contains 42,536 records; 25,486 (60%) of these were collected during the atlas period (1996-2003), and the balance predates 1996. There are records from 1756 quarter-degree grid cells, that is 88.1% of all the 2008 grid cells in the atlas region. It is interesting to note that 107 frog species were known from the region in 1995, but new discoveries and species descriptions over the atlas period pushed this tally to 115 species, and several more are known and will be added in the near future.

With the combined efforts of National Coordinators, Regional Organisers, public participants and professional fieldworkers employed to survey target areas, SAFAP traversed almost the entire region and clocked an estimated 350,000 km (see Braack 2002)! Public participation was not as good as we had hoped for. Even though SAFAP has about 600 names on its mailing list and contributions were received from only about two thirds of these. Yes, frogs may be popular with the man in the street, but *frogging* as an outdoor activity, including getting wet and cold and mosquito bitten at night, is only for the dedicated. To those dedicated few we extend our warmest thanks.

During 2003, four introductory chapters were written, covering the methods of the project, an overview of the conservation status of the region's frogs, a biogeographic analysis of the database, and a discussion of global amphibian declines (Burger and Harrison 2001; Minter et al. 2004). Data collection continued up to the last minute, even as the finishing touches were being put to the text. The editors edited, re-edited and re-re-edited. The conservation assessments were checked and ratified by Simon Stuart of the Global Amphibian Assessment programme (IUCN and Conservation International) in September 2003. Marja Wren-Sargent of the ADU did a sterling job of typesetting 400 pages under considerable pressure. We now have a complete manuscript of the *Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland* that has been sent to the Smithsonian Institution in the USA for final checking prior to publication in 2004.

Has it all been worth it? Emphatically YES! The atlas period focussed everyone's attention on frog distributions and provided a wealth of new information on frog taxonomy, biology and conservation. One of the most important spin-offs was the Conservation Assessment and Management Plan that was drawn up for southern African frogs (Harrison *et al.* 2001). The results of this initiative, and subsequent revisions of the assessments, are presented in the atlas publication which thus doubles as a revised Red Data book. The species accounts in the atlas are, in many cases, the longest essays ever written for particular species and comprehensively bring together all the not-so-available information between one set of covers. With the atlas, conservation of the region's frog fauna can proceed from a more solid knowledge base than before.

Acknowledgements

SAFAP acknowledges the invaluable contributions of the Regional Organizers, and the records submitted by numerous project participants. Generous financial support was received from the Department of Environmental Affairs and Tourism, WWF-SA, Mazda Wildlife Fund, Total South Africa, the Smithsonian Institution (USA), National Research Foundation, Conservation Breeding Specialist Group of the IUCN/SSC, the Declining Amphibian Populations Task Force, Joan St. Leger Lindbergh Charitable Trust, Syfrets, and Sea World Inc. (USA). Mazda Wildlife Fund also provided the vitally important bakkie!

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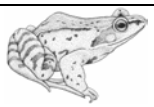

Mark Twain's frog not croaked after all!

The above headline appeared in Georgia's *Atlanta Journal-Constitution* at the end of 2003. The big news was the re-discovery in Calaveras County of the California red-legged frog (*Rana aurora draytonii*), generally believed to be the inspiration for Mark Twain's "Celebrated Jumping Frog of Calaveras County." It was this short story that launched his literary career. The last time a red-legged frog had been seen in the county was way back in 1969.

In October 2003, a rancher's young children discovered a small population of "strange" frogs while playing near a waterhole used by the family's cows. The frogs were different from any the kids had ever seen before; they were coral coloured on their hind legs and belly, and had a prominent "ridge" (i.e. dorso-lateral fold) on either side of their back. The family contacted the Jumping Frog Research Institute (JFRI, **www.jumpingfrog.org**) in Calaveras County and asked for help in identifying their mystery frogs. JFRI is a small research and advocacy group that works to further the conservation of the native amphibian species of California's Sierra Nevada mountain range. Dr. Robert Stack, Executive Director of JFRI, went out to the ranch and identified the species as California red-legged frogs - a "threatened" species under the U.S. Endangered Species Act (ESA). Dr. Stack discussed with the family the pros and cons of going "public" with the news, but it didn't take them very long to make a decision. They were proud to have the only known descendants of "Twain's frog" in the county living on their ranch, and they were determined to do everything in their power to help save it. That meant contacting various state and federal agencies like the US Fish and Wildlife Service (FWS) for additional help.

To keep potential sightseers from trespassing on their property and interfering with their cattle operation, not to mention disturbing the frogs, the family decided not to disclose publicly either the location of the ranch or their last name. They also asked JFRI to help coordinate the efforts of a team of biologists who are now working to combine protection of the frogs with continued operation of the property as a working cattle ranch. The rancher believes his cows are compatible with the frogs: "Cows have grazed this ranch for 150 years," he said. "They must get along with the frogs or the frogs wouldn't still be here."

Many ranchers are reluctant to come forward in cases like this because so much fear of the federal government has been sown by those who are fundamentally opposed to the US ESA. JFRI is working hard to create an innovative program whereby Sierra ranchers that volunteer their stock ponds to help in the recovery of Twain's frog would become eligible to receive certain economic benefits, along with assurances that their property rights would be respected. They call this the "Dan'l Webster Project," honouring the name of the celebrated frog in Twain's tale.

JFRI-coordinated field studies to be initiated this March will attempt to determine how many of the frogs are on this particular ranch. Everyone is hoping that there are enough frogs to maintain their numbers, or maybe even increase. There is also a back-up plan being developed to create an assisted-breeding program in collaboration with the University of Pacific in Stockton, CA.

Ranging from 4 to 13 cm long, *R. aurora draytonii* is the largest native frog in North America west of the Rocky Mountains. While originally found from just north of San Francisco, CA south into Baja California, and from the Pacific coast to the western foothills of the Sierra Nevada, today the frog is found mostly in isolated watersheds along the Central California coast. Only a few small, isolated populations are hanging on in the Sierra Nevada. Unfortunately, most of these are not believed to be viable. Habitat loss and conversion, introduction of various non-native predators (especially the American bullfrog, *R. catesbeiana*) and pesticide drift are the primary factors responsible for the frog's demise. In fact, bullfrogs are now the primary contestants in Calaveras County's annual world frog jumping championship, held every year at the county fairgrounds during the third weekend in May.

For more information contact: Dr. Robert Stack/JFRI, PO Box 1416, Angels Camp, CA 95222, USA.
bob@jumpingfrog.org
Donations and/or potential funders are urgently needed to help assist in JFRI's efforts.

Decline of the Kihansi Spray Toad, *Nectophrynoides asperginis,* from the Udzungwa Mountains, Tanzania

By Ché Weldon & Louis H. du Preez

The Kihansi spray toad, *Nectophrynoides asperginis,* is distinctive in Africa in terms of the habitat it occupies. Its entire known habitat is restricted to less than 5km^2 of a unique vegetation type. Continuous spray generated by the Kihansi River, as it flows over the Udzunqwa scarp, showers patches of herbaceous vegetation to create a series of spray wetlands. *N. asperginis* is considered to be critically endangered and is listed under Appendix 1 of the Convention on International Trade on Endangered Species.

Concurrent with the description of the Kihansi spray toad in 1998, concerns were felt about the chances of survival of this Tanzanian endemic (Poynton *et al*. 1998). The spray wetlands were in danger of undergoing severe alteration because of a reduction in water flow due to the requirements of a hydro-power plant.

The bypass flow released from the newly constructed dam above the main Kihansi falls was not enough to generate the spray. Consequently, the *N. asperginis* population experienced a decline in spray toad numbers. The Lower Kihansi Environmental Management Program (LKEMP) instigated the construction of an elaborate sprinkler system to simulate the spray zone conditions. Following these mitigation measures the spray toad population rebounded in the affected areas.

During July/August 2003, population numbers of *N. asperginis* unexpectedly plummeted. The estimated population size was the lowest since the construction of the sprinkler system, causing renewed concern for the survival of the critically endangered spray toad of Kihansi. No apparent explanation could be given for the mass disappearance and the only evidence was a few spray toad carcasses.

The dead specimens were collected for post mortem examination. Histological sections of skin tissue revealed the presence of the amphibian chytrid fungus, *Batrachochytrium dendrobatidis* in some of the specimens. Shortly after this discovery was made, LKEMP assigned an amphibian survey of the Kihansi and the adjacent Udagaji Gorge to determine the status of chytridiomycosis in the remaining spray toads and other anurans.

The survey was conducted in November by C.W., Jeremy Thompson (Technical Advisor for LKEMP) and James P. Gibbs (Conservation Biologist, State University of the New York College of Environmental Science and Forestry). More that three months had passed since the last sighting of a live *N. asperginis* had been made. Despite intensive searching during the day and at night, we did not find any spray toads in any of the spray wetlands where the species is known to occur. Five species of anurans were found through simultaneous searches along streams and amongst forest litter in the gorge: *Schoutedenella xenoudactyla*, *Nectophrynoides tornieri*, *Afrixalus fornasinii*, *Arthroleptides yakusini* and *Ptychadena aequiplicata*. Chytridiomycosis was subsequently detected in *P. aequiplicata* from Kihansi Gorge and in *A. yakusini* from Udagaji Gorge.

It is suspected that the prevalence of chytridiomycosis in *N. asperginis* played a role in the species' decline. Mass mortality of amphibians associated with the amphibian chytrid fungus is widely documented. The full extent of the Kihansi decline is not completely understood. Multiple stressors that might have acted in combination with chytridiomycosis are being investigated. The current status of the Kihansi spray toad is unresolved as spray wetlands continue to be monitored by LKEMP staff. The failed efforts to detect *N. asperginis* could predict the extinction of this species in the wild. Part of the mitigation measures for this species was the establishment of a captive population of spray toads in the United States. In recent months, however, the captive animals have suffered from nutritional disorders, among other setbacks; while numbers are continuing to drop (Lee 2004).

An imminent danger is the likelihood that the amphibian chytrid fungus could spread to other amphibians in the region, which could lead to similar results in species that are susceptible to disease. The Udzungwas form part of the Eastern Arc Mountains, a biodiversity hotspot well known for its diverse and endemic amphibian species. A document containing amphibian disease management was compiled for Kihansi Gorge following the survey and discussed for implementation at a panel meeting in Washington D.C. in January 2004. Maintenance of the sprinkler system and monitoring of spray wetlands implies that the opportunity for human induced transmission of the amphibian chytrid fungus remains high. Apart from the advantages of staff and researchers practicing sterilization procedures for the well being of amphibians within Kihansi Gorge, it will restrict the spread of diseases to other areas.

Acknowledgements
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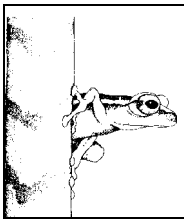

The Amphibian Fauna of Nagaland, India: Species and Habitats

By Meren Ao & Sabitry Bordoloi, DAPTF Seed Grant Recipients, 2002

The state of Nagaland in north-east India abounds with unexplored virgin forest. It is part of the Eastern Himalayan region, one of India's two biodiversity hotspots. The state's climate is subtropical, but altitudinal variation leads to varied climatic conditions which contribute to this high biodiversity. Due to its inaccessibility and other problems inherent of remote areas, published reports on the amphibian fauna are scarce. The present study has revealed that the area supports many more species than were previously known. 32 species have so far been identified.

New records for India:
Megophrys wuliangshanensis, M. glandulosa, Amolops viridimaculatus, Rana humeralis, Rhacophorus gangshanensis.

New records for Nagaland:
Megophrys major, Amolops gerbilus, A. monticola, Fejervarya teraiensis, F. nepalensis, Hoplobatrachus crassus, Philautus garo, Phrynoglossus borealis, Polypedates megacephalus, P. teraiensis, Rana garoensis, R. livida, R. mawphlangensis, R. tytleri, Rhacophorus bipunctatus, R. maximus, Theloderma aspermum.

Previously-recorded species:
Bufo melanostictus, Hyla annectans, Microhyla ornate, Amolops marmoratus, Chirixalus vittatus, Euphlyctis cyanophlyctis, Hoplobatrachus tigerinus, Hoplobatrachus tigerinus, Philautus annandalii, Paa mokokchungensis,

Rana khare.

Rana limnocharis as recorded by earlier authors is mentioned here as *F. terainensis* and *F. nepalensis*. Similarly, *Polypedates leucomystax* is *P. teraiensis* and *P. megacephalus* in this study.

Based on our survey and the presence of various life-history stages in these habitats, five habitat-specific types have been identified: 1) species living in open tropical habitats and breeding in temporary water bodies, 2) species living in disturbed habitats and breeding in temporary water bodies, 3) species living in open tropical habitats and breeding in permanent water bodies, 4) species living in disturbed habitats and breeding in permanent water bodies and 5) species living in forest habitats and breeding in running water. Altogether, 100 amphibian habitats were surveyed and certain physico-chemical parameters were recorded. Water chemistry data on the various breeding habitats were as follows.

Lentic Systems

Dissolved O_2 (2.5-7.5 mg/l), free CO_2 (2.5-7.0 mg/l), pH (6.2-7.5), alkalinity (70.3-100.0 mg/l), phosphate (0.02-0.3 mg/l), nitrate (0.01-0.21 mg/l). Trace elements detected were Fe (0.02-16.5 ppm), Mn (6.8-65.3 ppm), Zn (0.2-1.0 ppm), Mg (39.0-47.6 ppm).

Lotic Habitats

Dissolved O_2 (5.6-11.2 mg/l), free CO_2 (2.8-4.8 mg/l), pH (7.0-8.1), alkalinity (62.0-82.1 mg/l), phosphate (0.24-0.5 mg/l), nitrate (0.27-0.74 mg/l). Trace elements detected were Fe (0.06-16.9 ppm), Mn (1.0-3.9 ppm), Zn (0.1-16.3ppm), Mg (24.3-46.6 ppm).

These data do not reveal any pollution by industrial or domestic wastes.

There is urgent need for extensive exploratory surveys to be undertaken in all areas of Nagaland to create a database of population studies on which future investigations into declines and disappearances can be based. In view of the increasing anthropogenic stress on habitats and global climate deterioration, many species endemic to the region (and perhaps species so far unrecorded) may become extinct in the future.

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SEED GRANT NEWS

DAPTF Seed Grants 2004: We have just completed our allocation of DAPTF Seed Grants for 2004. We received 65 proposals from 34 countries, and we our funding 23 projects, an outlay of $43,123. This year, for the first time, we are funding projects in Honduras, Morocco, Poland, Portugal, Romania, Sardinia, Suriname, Switzerland and Thailand. Six of the projects we are supporting in the USA are funded by ARMI; we are very grateful to them for their continuing support.

Since 1992, the DAPTF has funded 155 projects through its Seed Grant programme, distributing $273,000 to researchers in 76 different countries. ***Tim Halliday***

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.

Jelka Crnobrnja-Isailovic, Jan Willem Arntzen & Ivan Aleksic (2003) The status of great crested newt (*Triturus cristatus* superspecies) breeding sites in Serbia, the central Balkans.
jelka@ibiss.bg.ac.yu

Dustin Perkins & Malcolm Hunter (2003) Effects of riparian timber management on the amphibian community in western Maine: an experimental and retrospective approach.
dustin_perkins@umenfa.maine.edu
hunter@apollo.umenfa.maine.edu

Maria Gabriela Perotti (2003) Effects of natural UV-B radiation on anuran species from northern Patagonia, Argentina. Testing carry-over effects on larval fitness.
gabyperotti@hotmail.com

Froglog Shorts

DONATIONS We gratefully acknowledge receipt of these donations, received prior to March 22, 2004. **Individuals:** Evan C. Evans III, Gale K. Nord, Janalee P. Caldwell, Micheal Sredl, Dinah Bear, Michael J. Lodato, Kathryn L. Molines, Carol Hall, Rebecca Christoffel, Alan Byboth, Lee Kats. **Institutions:** Columbus Zoological Park Association, North Carolina Herpetological Society, Wyoming Natural Diversity Database, Captive Born Reptiles, Geraldine R. Dodge Foundation, Inc.

American Bullfrogs in Europe: Information about the distribution and status of American bullfrogs in Europe can be found at: **www.zavod-symbiosis.si/bullfrog.htm** Anyone who can provide updates, additional information or comments on this issue should contact Jana Kus Veenvliet and Paul Veenvliet at: **info@zavod-symbiosis.si**

Canadian Amphibian and Reptile Conservation Network (CARCNET) – 2004 The 9th annual CARCNET meeting will be held in Edmonton, Alberta on 24-27 September 2004. The conference will offer a platform to exchange ideas and information between leading scientists in the field of herpetology as well as to educate the public and scientific audience about the biology and conservation of amphibians and reptiles. Presentations and posters are open to all aspects of the conservation biology of amphibians and reptiles and herpetological research. Presentations on public education projects and ethics are also welcome. For more information about CARCNET and the meeting please visit the following web site: **http://www.carcnet.ca/**

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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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