



FROGLOG

Newsletter of the IUCN/SSC Declining Amphibian Populations Task Force

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Effects of the El Niño Drought on the Frogs of Papua New Guinea

By David P. Bickford

After more than two years of nearly continuous field work in the rainforests of Papua New Guinea, I have seen the greatest changes in frog calling, reproduction, density and diversity during the past three months (October - December, 1997). The last three months of 1997 coincided with the severe El Niño Southern Oscillation (ENSO) event, which caused unprecedented low rainfall, bush fires, and complete crop failure in the Western Pacific. Papua New Guinea was heavily impacted. A team of fieldworkers and I have gathered data on frog populations from 1995, 1996 and the first part of 1997 (*Froglog* Number 23, August 1997), and I compared frog density, distribution, and diversity as well as reproductive data to the last three months of 1997.

There was an order of magnitude difference between the number of terrestrial clutches of eggs found per 5 x 5 m plot for baseline and ENSO drought data. We observed one clutch per 7.8 plots on average (81 clutches in 632 plots) for baseline conditions. During the low rainfall-ENSO period we found one terrestrial clutch per 71.25 plots (8 clutches in 570 plots). The drought conditions negatively affect terrestrial breeders and direct developing frogs in New Guinea, almost entirely shutting down reproduction.

We also found more frogs during VES transects at night during the low rainfall-ENSO period compared to our baseline data. This was the result of high numbers of normally rare or uncommon arboreal species descending from their arboreal sites, presumably because the drying

effects were even more pronounced in above-ground microhabitats. Frogs also appear to be at slightly higher densities near streams during the drought.

Work on long-term frog monitoring has been supported by the Wildlife Conservation Society, the University of Miami, and the Biodiversity Conservation Network.

I will return to Papua New Guinea and will continue to examine the ongoing effects of the drought as well as other topics. I have used field assistants in 1996 and 97 and anyone interested in working with me can reach me at the following address:

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Bufo marinus Decline and Recovery in Trinidad

By Victor C. Quesnel

The observations recorded in this report were made at Haven Hill Farm in Talparo, Trinidad, West Indies which grew tomatoes hydroponically from 1980-1994. Each of three greenhouses employed for this purpose had a concrete pool alongside for the purposes of storing water. The farm site also had four ponds and three small (about 1m wide) streams. Cane toads (*Bufo marinus*) bred in all the ponds (but apparently not the streams) and could be seen calling from the pond edges. From 1984 onwards, the number of days per annum on which *B. marinus* was heard calling was recorded, and from mid-1987 the number of males seen was also noted. The farm population began to decline in 1990, bottomed out from 1993-95 and recovered in 1996 and 97 (Table 1).

Table 1. Cane Toads at Haven Hill Farm, Trinidad.

Year	Calling Days	Males Seen
84	127	-
85	126	-
86	115	-
87	131	222
88	164	308
89	128	208
90	91	143
91	84	147
92	65	112
93	40	74
94	62	113
95	32	76
96	102	222
97	102	213

This decline appears to have been the result of death prior to metamorphosis. No spawn or tadpoles were observed in 1991 and no metamorphosis was observed from that time until 1993, although some tadpoles were recorded. Taking into account the possible time to maturity this would account for the lack of calling days and males in (especially) 1995 and the apparent recovery beginning in 1996.

B. marinus is usually considered a hardy species, but whatever affected the species on this farm site apparently left at least seven other species unaffected, judging by calls. One other species though, *Bufo granulatus*, also apparently suffered and was not seen at the site between May 1987 and June 1995. The decline of *B. marinus* during this period was noted elsewhere in Trinidad, and was also recorded from Hawaii (see *Froglog* No. 3, September 1992 "A Case of the Missing *marinus*").

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By Mary S. Kostalos

The Pennsylvania Herpetological Atlas Project is a planned, 6-year (1997-2002), statewide effort to determine, in detail, the distribution of all species of amphibians and reptiles within the state. At the present time much of the information available on the distribution of these organisms is based on old records, many of which are fragmentary and incomplete. This project is funded by the Wild Resources Conservation Fund (a state controlled program funded by private donations) and is cosponsored by the PA Biological Survey, the PA Fish and Boat Commission, Carnegis Museum of Natural History, and Indiana State University of Pennsylvania. Dr. Arthur Hulse, Professor of Biology at Indiana State University of Pennsylvania, is the Director of the project and Ms. April Claus is the Grant Project Coordinator.

Project information can be used by environmental managers at all levels in making decisions regarding resource utilization within the state. The data can also be used in the preparation of environmental impact statements, provide baseline data for future comparisons, identify potential critical habitat and help develop recovery and protection plans for amphibians and reptiles. This project will also help to identify the localities of endangered or threatened species and help provide information on species whose present status is undetermined due to lack of data. The project hopes to provide an inventory of breeding localities for frogs and toads. Finally, the data collected can be used for the analysis of distribution patterns with regard to ecological features such as drainage basins, vegetation zones and topographic patterns.

In order to obtain the survey data, the entire Commonwealth of Pennsylvania has been divided into a grid system of approximately 5200 blocks. The basis of the grid system is a series of U.S. Geological Survey maps known as 7.5 minute quadrangles. These are highly detailed topographic maps showing land forms (springs, temporary streams, etc.) and even isolated houses and other structures. Each quadrangle is, in turn, divided into 6 blocks of approximately 10 square miles. Although the desired goal is to survey every block, it is important to have statewide coverage. The

strategy is to cover one priority block within each quadrangle and then expand to cover the remaining blocks.

Individual volunteers select a block or blocks and survey and report information on its amphibians and reptiles on standard report forms (field cards). This information is reported to the Project Director at the end of each field season (approximately October 15th). In addition to recording species, volunteers also report information on the precise location, habitat, behavior, and abundance using a series of codes. A special attempt is being made to gather information on less well known amphibians and reptiles. Additional information is reported on Special Species cards for these species, which are listed in the PA Herpetological Atlas Manual. In addition, any species not previously reported for a county is to be verified by a photograph and specific information on the location is reported. Volunteers are recruited through environmental groups, herp clubs and other individuals or groups who might be interested in participating in this project. Workshops have been provided to help volunteers find and identify amphibians and reptiles.

One component of the project that is stressed is the humane and respectful treatment of the individual organisms and the habitat in which they are found. Although specimens may be briefly captured to confirm identifications or take photographs, all specimens are returned to their place of capture as quickly as possible. All objects such as rocks or logs are returned to their original positions. All laws and regulations regarding posted land areas and collection of organisms on state land, etc. are to be carefully observed by the volunteers.

The initial year of the project was spent in setting up and organizing it. A pilot project was established which involved primarily three counties in southwestern Pennsylvania. Survey work and reporting throughout the state will be done in years 2-5. In year six the Project hopes to concentrate on areas of the state needing the most additional work and the preparation of a manuscript for the Pennsylvania Herpetological Atlas which will include a map for each species. It is hoped that once established, the Atlas will continue to be periodically updated and republished to follow long-term trends on the status of amphibians and reptiles within the state.

At the present time over 500 volunteers are working throughout the state to collect data. A substantial number of new county records have

been established for various species of amphibians and reptiles. For example, a number of reports on Fowler's toad have been reported. This is helping to clarify the distribution of this organism which is poorly known from earlier records. Unfortunately, there are few reports of many other lesser known species such as the mountain chorus frog, broadhead skink, northern cricket frog and marbled salamander, raising concerns about the status of these animals.

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By John W. Wilkinson

At the Herpetofauna Groups of Britain and Ireland Annual meeting, which took place in Cardiff, Wales on the 6th of February 1998, I was invited to speak briefly on the aims and objectives of the DAPTF and I am pleased to say that HGBI (through its secretariat) have agreed to act as the DAPTF Working Group for Britain and Ireland. We hope to cooperate on many amphibian decline issues of mutual interest (for example the worrying spread of the introduced choking pond plant *Crassula helmsii* and its potential effects on populations of UK amphibians). *All correspondence should be addressed to:* HGBI, c/o Jennifer Barr, Triton House, Bramfield, Halesworth, Suffolk IP19 9AE, UK.



By Juris Zvirgzds

The European treefrog (*Hyla arborea*) disappeared from Latvia several decades ago and prior to that it was uncommon because Latvia is at the northern limit of its distribution. The main reasons for its disappearance were the reduction of our wetlands and consequently the treefrog's breeding habitats. The intensive agricultural development in Latvia which began in the middle of the last century is thought to be largely responsible. Wetland losses caused the isolation of treefrog populations,

making them especially vulnerable to other antropogenic pressure. The remaining natural treefrog populations closest to Latvia are located in the south-eastern part of Belarus and in the south of Sweden (Skona peninsula). One small remaining locality is also reported in Lithuania.

The Ecological Laboratory at Riga Zoo was founded in 1988 in order to restore Latvian treefrog populations. Adult treefrogs to be used for breeding were imported from Belarus. Breeding was stimulated by hormone injections given usually at the beginning of May, however identically good results were achieved in March. Thirty-five-litre laboratory aquariums with a water level of about 5 cm were used as a spawning places. A synthetic analogue of luliberin (surphagon - produced by Bapex, Latvia) was used to stimulate breeding. We obtained between 200 - 800 eggs from each female. Hatched larvae were placed in 35 l or 100 l aquariums with a density of 2 - 3 larvae per litre. Photoperiod was regulated using luminescent 40 W lamps. The water temperature in these aquariums was 20 - 23°C during the night and 24 - 27°C during the day. Tadpoles were fed *ad libitum* with boiled nettles, meat, aquarium fish food (Tetra) and ground pollen. Following metamorphosis we fed the froglets with *Drosophila*, small *Gryllus* and later also with *Musca domestica*.

The area chosen for reintroduction is located in the south-western part of Latvia, where the climatic conditions are similar to those in Belarus and in southern Sweden. Later observations, however, showed that treefrogs in Latvia hibernate successfully also under much more rigorous climatic conditions.

Between 1988 - 1992 we released about 4000 treefrog froglets during the months June - August. There are many abandoned agricultural sites in the reintroduction area and the dominant forest types are *Hylocomiosa*, *Murtilloso polytrichosa* and *Drypterioso cariosa*. The area accommodates a large number of small ponds and places subject to flooding by the action of beavers. A Nature Conservation Area covering 300 ha has been established by governmental resolution at the reintroduction location.

The development and distribution of the newly created population was monitored each spring on the basis of breeding calls, and in autumn by searching for tadpoles and froglets. This monitoring provided the following results:

1. The climatic conditions at the reintroduction site satisfy the biological requirements of the European treefrog.

2. The reintroduced treefrogs can successfully breed: by 1997, 4 - 5 generations have already been produced in the wild.

3. Treefrogs are spreading around the reintroduction site and colonizing new breeding sites. The first calling males outside the reintroduction site were observed in 1993. Further spreading has gone rapidly. Forty-eight ponds with calling males were recorded up to 1997. They are situated within a 20 km radius around the reintroduction site, already extending considerably outside the protected area. In at least 10 of these ponds breeding has also been recorded. This may not represent the total number of breeding populations because of occasional technical difficulties in collecting information.

For more complete information about the process and results of this reintroduction see:

Zvirgzds, J. *et al* (1995) Reintroduction of the European Tree Frog (*Hyla arborea*) in Latvia. *Memoranda Soc. Fauna Flora Fennica* 71: 139-142.

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Australian Workshop Reports

From Mike Tyler DAPTF Australia

Australian National Threatened Frog Working Group National Workshop - University of Canberra, 12-13 November 1997

The terms of reference of the working group are based on the recommendations of the Action Plan for Australian Frogs, and its purpose is to implement the Action Plan and reverse the decline in frogs.

The first National Workshop convened by the group targeted those currently involved in the research, management and conservation administration of frogs. The workshop provided numerous diverse perspectives on the state of current knowledge.

The areas considered most promising in terms of research potential were those of fluctuating asymmetry and pathogens. Fluctuating asymmetry is perceived as a possible means of recognizing stress as an early warning guide, and was considered a critical area for future research.

Disease work, specifically that outlined by Lee Berger and Rick

Speare, was recognized to be a significant source of data relevant to existing and past declines. However the fact that expertise is so limited in this specialization of veterinary pathology, and employment opportunities virtually non-existent, attracted considerable concern.

National Threatened Frog Group Teleconference - 1 December 1997

The group reviewed the results of the National Workshop and has agreed to undertake the following actions:-

1. Exploring further expertise in the conducting of frog pathology studies and investigating emergency funding for interim disease studies.

2. Reviewing UV studies at the Australian Society of Herpetology Annual Meeting at Kuranda in February 1998.

3. Maintaining a watching brief on endocrine disruptor studies.

4. Investigating current arrangements on controls of fish imports for the aquarium trade. There is recognition of the potential damage to frogs from particular exotic fish species.

5. Negotiating with State Fisheries departments seeking further management of trout movements because of demonstrable impact on native fish and frogs.

6. Advising various State and Commonwealth bodies of the potential impact on frogs of development.

The group also agreed to publish the Proceedings of the Workshop and to establish a web page.

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Report from Turkey

By Kurtulus Olgun, DAPTF Turkey

The Turkish DAPTF study group actively initiated studies in 1997. We are planning to increase the number of members and give detailed information about the DAPTF at the National Biology Congress which will be held in September 1998. We believe that this congress will provide the participation of most of the herpetologists in Turkey.

Our study group has been interested especially in *Rana holtzi*, which is a species endemic to Anatolia. This species lives in 2 biotopes in the Bolkar Mountains; in

Karagol at 2500m altitude and in Cinigol at 2580m altitude. A two-year study showed that numbers of this species are declining, especially in Cinigol. The reason for this decline is apparently uncontrolled collection by local and foreign researchers. Furthermore, this region is thought to be used for fish-farming. Thus, adult fish and eggs may have been put into the lake. However, this situation is still not confirmed.

Our first aim in 1998 is to conduct further studies on *Rana holtzi* and to prevent the dangers which would cause the extinction of this species. To facilitate this, local people have been informed and sign boards will be put around the lake.

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Request for Proposals

The US National Fish and Wildlife Foundation, through a cooperative agreement with the United States Golf Association, requests preproposals for research and management projects that address wildlife conservation needs on golf courses. Areas of interest include: examination of management and design options for increasing biodiversity on golf courses; research to determine the role of habitat characteristics in the designation of golf courses as wildlife corridors or barriers; preparation of management guidelines for specific species or species suites; programs to monitor the success of wildlife habitat conservation programs on golf courses; and the effects of golfer and maintenance activities on wildlife. All projects must address issues of management concern to the golf industry, and should provide management recommendations applicable on at least a regional basis. Approximately \$80,000 will be available. Requests should not exceed \$25,000, yet multi-year funding is possible. The deadline for preproposals is July 31, 1998; full proposal deadline will be early September 1998; with funding available in February of 1999. For preproposal guidelines, contact: Katie Distler, NFWF, 1120 Connecticut Ave. NW, Suite 900, Washington, DC 20036, USA.

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This grant programme is open to all US citizens and institutions.



Froglog Shorts

Toledo Zoological Gardens Honoured With Top Conservation Award: The American Zoo and Aquarium Association (AZA) has honored the Toledo Zoological Gardens, Toledo, Ohio with the Association's Conservation Award for their participation in the Wyoming Toad Recovery Program. Zoo officials accepted the award at a special presentation during AZA's 73rd Annual Conference. The Wyoming Toad Recovery Program is a cooperative effort between zoos, the Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service. The Toledo Zoo is one of nine involved with the captive management and reproduction of this endangered species.

By the end of 1994, the last Wyoming toad was captured from the wild and fewer than 80 toads were left in the propagation program. Since that time, over 9,500 tadpoles and toadlets have been reintroduced into native habitat within the Laramie Basin of Wyoming. Toads have been released into two sites in the form of tadpoles, some of which have been seen again the following year, after hibernation, as young toads. This is accomplished by allowing captive-bred tadpoles to metamorphose in small, protected areas within the lake where the reintroduction is to take place, and then releasing the newly metamorphosed toads.

The AZA names conservation as its highest priority. The Conservation Award recognizes exceptional efforts by an AZA institution, Related Organization or Society member toward habitat preservation, species restoration and support of biodiversity in the wild. AZA was established in 1924 as the American Association of Zoological Parks and Aquariums (AAZPA) and currently represents 180 accredited zoos and aquariums in North America. It was founded to support membership excellence in conservation, education, science and recreation. For more information, contact: Sharon Armstrong on 419/385-5721.

A mass overwintering site for the European common frog (*Rana temporaria*) in Slovenia which was subject to the large-scale hunting of its frogs (for human consumption) has been protected. The Slovenian Natural History Museum, the local Speleology Society and the Slovenian Ministry of the Environment were successful in closing the cave to the public by the use of iron bars which allow entrance and egress by the frogs.

DONATIONS We gratefully acknowledge receipt of the following donations from 1 March through 30 April 1998. **Organizations:** Columbus Zoo; Mid-Missouri Herpetological Society, Worcestershire Reptile and Amphibian Group. **Individuals:** Andrew J. Crawford; Kurt Henkel; Douglas Holmes; Linda LaClaire; Julian Lee; Allan Muth; Susan Sindt; Will Watson; Arthur Webster.

Contact John Wilkinson at the UK central office for:

DAPTF bumper stickers: £1 / \$2

DAPTF window stickers: £1 / \$2

DAPTF sew-on patches: £3 / \$5

Prices include postage worldwide. Cheques (payable to "DAPTF") in British pounds or US dollars please.



The DAPTF Fieldwork Code of Practice

In participating in amphibian decline fora, especially those covering the disease outbreaks documented from Australia, Israel, Panama and the UK (for example), we are sometimes presented with the suggestion that amphibian researchers such as ourselves could be acting as vectors of the very disease problems which cause us such concern. In response to this suggestion, the DAPTF has produced (with assistance from the UK conservation charity *Froglife*) a **Fieldwork Code of Practice**. Although the factors responsible for the appearance of amphibian diseases in various localities around the world are as yet not fully determined, it is essential that researchers remove the possibility that they themselves have any part to play in increasing the incidence of amphibian decline events. Please read and consider the enclosed leaflet carefully.

John W. Wilkinson, DAPTF International Coordinator.

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