Pseudophryne corroborree

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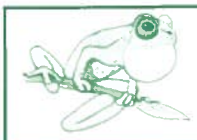

The Negros Cave Frog is Critically Endangered

By A.C. Alcala, Working Group Chair for the Philippines, and E.C. Alcala

The status of the Negros Cave Frog (*Platymantis spelaeus*), a large (SVL 41-60 mm) cave-dwelling platymantine frog endemic to Negros Island, Philippines, should now be changed from Vulnerable, as listed in the 1996 IUCN Red Data Book, to Critically Endangered. The reason is that our recent field work in two localities in the town of Basay, southern Negros (9º 23' 29" N, 122º 41' 29" E; 9º 25' 39" N, 122º 37' 44" E) in January-February 2000 revealed that its present population in the two low-elevation (sea level to 85m), moist, cool limestone caves where it was first discovered on 3 January 1968 consists of no more than 20 individuals and that the environmental conditions in these caves have deteriorated because of dam construction and the destruction of forest cover. As a result of the habitat alteration, the caves have become either flooded or too dry, thus becoming unsuitable as microhabitat for the frog and its prey organisms, and as breeding sites for adults. This species is a direct developer and requires moist to wet (but not flooded) conditions in order to reproduce.

To give an idea of the extent of the population decline, we present the following data: On 3 January 1968, 10 adult specimens were collected and on 18 March 1981, 27 adults were removed for taxonomic study and as the basis for description as a new species (Brown and Alcala 1982). (These specimens have been deposited at the California Academy of Sciences, Golden Gate Park, San Francisco, at Silliman University Biology Department, Dumaguete City 6200, Philippines and at various museums in the U.S.A.) During these two years, we collected only one adult specimen for every five encountered. With this ratio of one to five, there would have been in the two caves about 27 x 5 = 135 adults in 1981. We of course do not know the number of juveniles at that time, but an estimate of about 200 adults and juveniles is probably not too far from the actual number in 1981. If this is so, the population size in 2,000, 19 years later, appears to be less than 10% of that in 1981!

It is unfortunate that this species is on the way to extinction before it has been studied as a species that evolved in limestone caves in the Philippines. According to geologists, southern Negros Island, including the habitat site, is mainly covered with Miocene to Pliocene coralline limestone formed from the accumulation and lithification of corals and other organisms and calcareous sediments. Following lithification in the marine environment, volcanic activity from the Pliocene to Recent (McCabe et al. 1985), which was a predominant geological process in southern Negros during the Pliocene to Recent, caused the uplift of marine limestone formations to levels above mean sea level (see Hamilton 1979). These formations were eroded by acidic precipitation, surface water, and ground water. Areas underlain by limestone are characterized by sinking and underground streams which erode weak areas or fractures in limestone formations. These processes result in caves and karst topography. Caves near shorelines and sea level have lower temperatures most likely due to circulating air in contact with ocean and ground water at lower elevations. The Negros Cave Frog apparently evolved under favorable conditions afforded by the low elevation, cool limestone caves in southern Negros.

It may be too late now to save this species, but it may still be worthwhile to try to prevent further deterioration of the cave environment by reforesting the area around each of the two caves and to enlist the cooperation of local communities and the local government to protect the Cave Frog from further human disturbance. Consequently, efforts are now being made by us to ask local authorities to pass legislation to protect both the Cave Frog and its cave habitat and to disseminate information about the need to conserve it.

Literature Cited

Brown, W.C. and Alcala, A.C. (1982) A new cave *Platymantis* (Amphibia: Ranidae) from the Philippine Islands. *Proc. Biol. Soc. Washington* **95(2):** 386-391.

Hamilton, W. (1979) *Tectonics of the Indonesian region.* U.S. Geological Survey Professional Paper 1078.

McCabe, R., Almasco, J.N. and Yumul, G. (1985) Terrains of the central Philippines. *In:* D.H. Howell (Ed.) *Tectonostratigraphic Terrains of Circum-Pacific Region.* Circum-Pacific Energy and Mineral Resources, Earth Science Vol. 1: 421-436.

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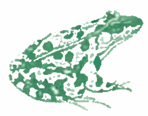

Chytrid Fungi Identified from Dying Frogs in New Zealand

From Phil Bishop, Working Group Chair for New Zealand

Late last year Bruce Waldman from the University of Canterbury, Christchurch, found a large number of sick and dying frogs (of the introduced Australian species, *Litoria raniformis*) in a Canterbury pond. The frogs were extremely lethargic but no obvious skin lesions were apparent. Tissues of affected adults and metamorphs were sent to Richard Norman at the Institute of Veterinary, Animal & Biomedical Sciences (IVABS), Massey University, for pathological analyses. Chytrid fungi were found in all affected frogs that were examined. Identifications were confirmed by Lee Berger (CSIRO, Melbourne).

Despite the large-scale dieoff, numerous apparently healthy frogs remained in the pond throughout most of the summer. Histological examination of the healthy individuals so far has revealed no evidence of chytrid infection. Metamorphosing tadpoles demonstrated a variety of symptoms including skin ulcerations, internal bleeding, and body swellings. To determine possible causal agents, diagnostic samples are being cultured for bacteriological and mycological analyses. Additionally, soil and vegetation samples from the infected pond are being analysed for evidence of chytrids.

Frogs often are collected from this pond by the pet trade. Stock imported into New Zealand is typically held in quarantine facilities on the premises of pet dealers. The possibility thus exists that the fungus was introduced into the pond by collectors. Concern is mounting that commercial trade in frogs may now be spreading the fungus throughout the country. A couple of dead introduced frogs (*Litoria ewingii* and *Litoria raniformis*) from different localities on the South Island have recently been examined by myself and chytrids are again suspected. Prepared slides of their tissues have been sent to IVABS for further pathological investigation.

New Zealand has seven species of frog, four indigenous and three introduced (from Australia). New Zealand's four indigenous species are regarded as amongst the most primitive frogs living in the world today. All are considered threatened, one being endangered and another vulnerable following the International Union for Conservation of Nature's Red Data Book categories. Although three of the four indigenous species are mainly terrestrial, *Leiopelma hochstetteri* may be particularly vulnerable to chytrid infection due to its close association with streams.

All New Zealand Department of Conservation conservancies have been notified of the chytrid fungus finding, and have been asked to investigate, report and sample sick or dead frogs found in their conservancies.

The Ministry of Agriculture and Forestry has offered support for studies delimiting the extent of chytrid spread and determining how the fungus reached the country. To address the latter question, studies are underway by Bruce Waldman and John Klena (University of Canterbury) to assess the genetic similarity of New Zealand chytrids to those that have parasitised frogs elsewhere.

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Crocodile Salamanders of the Eastern Himalayas

By Debjani Roy & Sri Aurobindo

The Indian subcontinent has a rich amphibian fauna, which could be attributed to the country's varied range of climate, geography and topography. Out of the world's 4522 amphibian species, 207 are found in the Indian subcontinent. Despite having such a rich amphibian fauna, the order Caudata has only a single representative - *Tylototriton verrucosus.*

This species is listed under the endangered category of Schedule I of the Indian Wildlife (Protection) Act of 1972. There is very little work done on *T.verrucosus* in comparison to other salamander species. Most reports for this species are confined to distribution records and short descriptions of their breeding pattern. This paucity of information could be due to various reasons: *T. verrucosus* does not produce sound and, as a result, unless detected visually the animals are difficult be find. Moreover, they are dark coloured and slow and sluggish in their movement, which adds to the difficulty of their detection. The animals come out of their hibernation sites under leaf litter or decaying logs and in mud tunnels after the first spring showers in late April, and they can only be found at their breeding sites in cool mountainous lakes and temporary or perennial pools and streams for a very short period from then until early September. Unless the field worker has prior experience, it is very difficult to locate them during this time. Finally, the animals are found at high altitudes ranging from 1500 to 2250m and in the cold climate of the eastern Himalayas. Many field workers find it difficult to work throughout the year under such conditions. *T. verrucosus* swims slowly by the undulatory motion of its tail and occasionally comes up to the surface to breathe. Water beetles and bugs, tadpoles, insect larvae, earthworms, snails and slugs comprise its diet.

Scant knowledge of their population structure and general biology makes it essential to conduct studies on this species. Presently, studies on the habitat, ecology and breeding biology of this species is being conducted by Sri Aurobindo of the Institute of Indian Culture, Shillong since June 1998.

We would like to request through *Froglog* that we are looking for funds to continue our studies on this species. Suggestions will be appreciated.

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The Rise and Fall of a Population of *Hyla boans*: Reproduction in a Neotropical Gladiator Frog - Abstract

From: *Journal of Herpetology* (1999) **33(4):** 647-656.

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A population of *Hyla boans* was studied in central Amazonian rainforest during 15 years. The species differs from other intensively-studied gladiator frogs, *Hyla rosenbergi* and *H. faber*, in that males reach larger sizes than females, most reproduction is in the dry season, males call mainly from trees and rarely from nest basins, and most nest basins have aquatic connections to streams. Many adults (15% of females, 21% of males) were captured over more than one breeding season, and some were captured over five breeding seasons. Sizes of juveniles, and growth of one individual, indicate that males require at least two years between hatching and entering the breeding population. Daily calling was bimodal, with peaks after dusk and before dawn. Rainfall reduced calling activity during the peak of the breeding season. The population at the site declined to zero density after nine years of study and the site still had not been recolonized six years later. The exponential rate of decline of the population (0.58) was more than three times the exponential rate of

increase (0.15) at the beginning of the study.

Reprodução de uma população de *Hyla boans* foi estudado em floresta tropical úmida na Amazônia central durante 15 anos. A espécie difere de outras espécies do grupo que tem sido estudados intensivamente, *Hyla rosenbergi* e *H. faber,* em que a maior parte da reprodução ocorre na época seca, machos atingem tamanhos maiores que fêmeas, chamam principalmente de árvores e raramente de bacias de nidificação, e a maioria das bacias de nidificação tem conecções aquáticas com os riachos. Muitos adultos (15% de fêmeas e 21% de machos) foram capturados sobre mais que uma estação reprodutiva, e alguns foram capturados sobre cinco estações reprodutivas. Os tamanhos de jovens, e crescimento de um indivíduo, indicam que machos requerem pelo menos dois anos depois da eclosão para entrar na população reprodutiva. Vocalização diária foi bimodal, com picos depois do crepúsculo e antes do amanhecer. Chuva reduziu atividade de vocalização durante o pico da época de reprodução. A população local foi extinta depois de 9 anos e o sítio de estudo ainda não foi recolonizado depois de seis anos. A taxa exponêncial de declínio na população (0.58) foi mais que três vezes a taxa exponêncial de aumento (0.15) no começo do estudo.

Amphibian Death Kits

by Lauren J. Livo and Mark S. Jones

In 1998, DAPTF distributed a Fieldwork Code of Practice (these guidelines are posted at the following url: **www.mpm.edu/collect/vertzo/herp/Daptf/fcode_e.html**) as well as an Amphibian Mortality Information Sheet with guidelines for collections of amphibians for pathological examination. Here, we present information directed to field personnel and their managers for enhancing the likelihood of the collection of at least a small number of specimens from areas experiencing amphibian mortality events.

Wildlife and conservation agencies frequently have numerous personnel, often including volunteers, assigned to field work. Many of these individuals are in an excellent position to make opportunistic observations of amphibian mortality events, but their primary responsibilities may involve taxa other than amphibians and they may frequently lack training for an expedited collection of specimens. In some cases, such individuals may find themselves at sites with one or more dead amphibians. Even amphibian survey crew members may neglect to collect dead amphibians. This may be due to lack of training concerning the need for collection, lack of guidelines concerning the kind of specimens to collect, lack of appropriate materials for collection of specimens, and lack of contact information for an individual who would serve as the coordinator for specimens.

Some amphibian mass mortality events may be represented by a very small number of observed mortalities. Factors that may reduce the ability to observe amphibian mortality include small amphibian population sizes, small body size or cryptic behavior of the amphibians, mortality taking place over the course of weeks or months, habitats in which amphibians are not restricted to small areas (such as ponds), and infrequent surveys of sites. For example, a large population of boreal toads (*Bufo boreas*) in Colorado experienced a mass mortality event associated with infection by chytrid fungus over the course of several weeks in 1999. However, despite intensive surveys including work directed specifically at looking for dead toads, only six dead individuals were found between June and October that had not been equipped with radio transmitters (Livo and Jones, in prep.). All observed chytrid-related mortality in this population occurred after the end of the toads' breeding season, indicating that survey programs restricted to breeding seasons may miss most or all opportunities to observe amphibian mortalities.

Because of these factors, in many instances one or two dead amphibians observed opportunistically may be the only direct evidence of a serious amphibian mortality event. As noted in the Amphibian Mortality Information Sheet, if field personnel are not prepared to collect specimens on this initial observation date, there may not be further opportunity to collect evidence even a day or two later.

In addition, specimens sometimes have been collected only to be subsequently destroyed or discarded because personnel lacked clear, written instructions as to specimen disposition. In one instance a freezer failed, resulting in the destruction of a specimen. Consequently, the "Amphibian Death Kit" described here emphasizes preservation of specimens in formalin, with freezing of specimens recommended when more than one specimen is available.

"Death kits"

To enhance the chances of collecting at least some evidence of amphibian mortality events, we developed a self-contained "amphibian death kit" intended for use by field personnel in agencies associated with the Boreal Toad Recovery Team. The kit contains the neccessary materials to make an initial collection of at least a small number of specimens (*plastic storage bag for kit, plastic jar sized for specimens likely to be encountered, glass jar for concentrated formalin [sized to be nested in larger plastic jar], clear adhesive label on plastic jar to indicate fill line for correct dilution of formalin, disposable gloves, one or more whirl-paks sized for specimens likely to be encountered, pencils, pen containing indelible ink, pre-printed labels [>1 set on adhesive labels, >1 set on write-in-the-rain paper], laminated instruction page, individually wrapped sanitizing towelettes*). The kit's laminated instruction sheet includes contact information for an amphibian coordinator and repeats the information requested on the labels (see below).

Kits should be constructed to accommodate the size range of species that may be encountered in a particular geographic area. Because the kits are self-contained, lightweight, and relatively inexpensive, they can be distributed to a large number of field personnel, including those whose responsibilities do not directly include amphibian work. The kits are intended for use as standard equipment, including by individuals who must hike into remote areas.

Amphibian handling and equipment decontamination

The DAPTF field code recommends that amphibians from different sites be kept separate. Use of clear, plastic containers (such as deli food containers) can aid both in keeping amphibians from different sites separate, as well as for individual handling of animals within a population when individuals in the population must be examined for PIT tags or other marks. Empty containers are compact when carried nested, are lightweight, and are available in a variety of sizes. Lids that engage with bases permit secure transport of several individuals in buckets or cloth bags. Balances can be tared for a specific container size and mass of amphibians can be determined without removing them from their container. Although disposable, the containers can be decontaminated and dried for reuse. As per the DAPTF field practice guidelines, we recommend decontaminating items such as footwear and nets before use as subsequent sites. Toothpicks have proved useful in helping to remove mud from the patterned soles of boots. To decontaminate footwear while minimizing the quantity used of bleach or other disinfectants at field sites, we have placed bleach solutions in spray bottles and thoroughly sprayed all outer surfaces of the footwear.

We emphasize the importance of following the DAPTF guidelines at all amphibian sites. If, as we contend, amphibian mortality events may transpire unnoticed, any site occupied by amphibians may also support pathogens.

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Information on laminated instruction sheet contained in Death Kits

If you encounter dead or dying amphibians in the field, use a pencil or indelible ink pen to fill in the requested information on the label forms. Use the adhesive labels for plastic jars and the paper labels for whirl-paks. Use the disposable gloves for handling dead or sick animals. Avoid breathing formalin vapouurs or contact with the skin. If numerous dead amphibians are observed (1) select the freshest ones for the kit and (2) estimate the total number of amphibians while at the site. If you have a camera, take photographs of the dead animal(s) and surrounding habitat. If the specimen is badly decomposed, COLLECT IT ANYWAY.

Dead animals

If multiple dead animals are observed, use formalin for half and whirl-paks for the other half. To preserve in formalin, take small glass jar of formalin out of kit and pour into large plastic jar. Fill plastic jar to line with water. Slit ventral surface of large animals to permit entry of preservative; insert dead animal and close jar firmly. Place adhesive label on jar. To preserve frozen, put each dead animal in a separate whirl-pak or plastic bag. Complete label and insert into bag. Place bag on ice or freeze as soon as possible.

Dead eggs

Collect approximately 100 eggs from the egg mass. Freeze half and put half in a formalin solution (see above).

Sick animals

Place each sick animal in an individual plastic jar without preservatives.

Send specimens to: <INCLUDE CONTACT INFORMATION>

Information to include with specimens:

Date, Time of day, Observer(s), Observer's phone number(s), Locality (e.g. State, County, Grid Reference), Species and number collected, Other dead animals present?, Estimate of total number of dead amphibians present, Water quality comments, Was a water sample collected?, Photos taken of dead animals and site?, Weather conditions, Other observer's comments.

Progress Report of the Southern African Frog Atlas Project

by Les Minter, James Harrison and Marius Burger.

The Southern African Frog Atlas Project (SAFAP), launched in November 1995, represents a collaborative effort by southern African herpetologists, conservationists and interested members of the public to systematically record the distribution of all frog species in South Africa, Lesotho and Swaziland. Data are collected by grid cell using a quarter-degree (15'x15') grid. The area comprises approximately 2000 grid cells divided among 11 regions. A regional organiser (RO) in each region is responsible for collecting, receiving and initial processing of distribution data, while final processing and data capture takes place at the Avian Demography Unit, University of Cape Town.

In contrast to frog atlas projects of similar scale in Europe and the US, in which most of the distribution data consist of historical records, the primary aim of SAFAP is to collect new (current) distribution data from all grid cells. Historical data gleaned from literature sources, museum collections and the data bases of conservation departments and private individuals will be incorporated, but distribution maps will distinguish between current and historical data.

Aural records form the bulk of the new data. Inexperienced observers submit tape recordings which are processed by RO's. Detailed report forms are completed for all records, and audio tapes are archived. Tadpole specimens, photographs, and sight records provide additional distribution data. Data are carefully vetted before they are incorporated in the SAFAP database.

Data collection during 1996-1998 was relatively slow as considerable time and effort was invested in advertising the atlas in the media and in the recruitment and training of volunteer atlasers by means of workshops, public lectures, etc. By August 1998, approximately 9600 records had been collected from 661 grid cells, representing 33% of the atlas area. Subsequently the rate of data collection has increased, and the database presently (March 2000) contains 18,950 records from 1250 grid cells (63% coverage). Approximately 80% of these records are new while 20% are historical records from existing databases.

These data already represent a substantial increase over existing distribution data for the region. For example, Poynton's (1964) revision of southern African amphibia, records specimens from only 338 grid cells, i.e. 17% of the atlas area. A more intensive herpetological survey of the former Transvaal Province (Jacobsen, 1989), which was based on new records and historical data, achieved 75% coverage in the present Northern Province; the atlas project has already achieved 100% coverage in this province and has increased the average number of species recorded per grid cell, by 80%. Complete coverage has also been achieved by SAFAP in the Free State province and Swaziland.

Approximately one third of the SAFAP data were collected by volunteers while most of the remainder were collected by the RO's and, more recently, by students and other competent individuals employed (by SAFAP) to conduct surveys in specific areas. The latter strategy has proved very effective, but costly.

SAFAP's running expenses have been covered by the Mazda Wildlife Fund, WWF-SA and the Department of Environmental Affairs and Tourism. The latter two bodies have pledged support to the end of 2001. A CAMP (Conservation Assessment and Management Plan) workshop is planned for July 2000 under the auspices of the IUCN Species Survival Commission.

At the present rate of progress it is likely that all grid cells will be surveyed by the end of 2001. However, the depth of coverage will vary greatlly, depending upon the sampling effort devoted to each grid cell. For example, although all grid cells in the Northern Province have been sampled, it is estimated that on average, the atlas data still represents less than 50% of the potential species richness of the area (the maximum number of species expected to occur per cell). Additional funding is urgently needed, to increase the sampling depth by revisiting areas that have not been adequately sampled. Also, funding is required for the publication of the Atlas.

This project has shown that aural surveys can dramatically improve our knowledge of frog distributions over a large area in a relatively short period of time. The experience gained from this project and the infrastructure that has been created in South Africa for the analysis of demographic data, could be fruitfully applied in other African countries.

For further information, contact: Marius Burger, Avian Demography Unit, University of Cape Town, Rondebosch 7701, Republic of S. Africa.
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or Les Minter, Dept. of Medical Science, University of the North, P/Bag X1106, Sovenga 0727, Republic of S. Africa .
minter@unin.unorth.ac.za

Poynton, J.C. (1964) The amphibia of southern Africa: a faunal study. *Ann. Natal Mus.* **17:** 1-334.

Jacobsen, N.H.G. (1989) *A herpetological survey of the Transvaal.* Unpublished PhD Thesis, University of Natal, South Africa.

Froglog Shorts

The 2000 DAPTF Board Meeting will take place this year on 19th June. At this meeting, the DAPTF Chair will be taken over by James Hanken of the Harvard Museum of Comparative Zoology. Please direct all enquiries concerning the Board subsequent to this date to Jim. E-mail: **hanken@oeb.harvard.edu**

SEED GRANTS 1999 We have recently completed the 1999 Seed Grant round. we received a total of 44 proposals, of which we have been able to fund 12. A feature of this year's round was a contribution of $12,000 from Conservation International, targetted at projects on amphibians in biodiversity "hotspots'. We are funding six such projects, in Belize, Ecuador, Guyana, New Zealand, Puerto Rico and Sri Lanka. The total value of the grants is $20,228. On behalf of the DAPTF, I would like to thank those who helped referee the proposals: Pim Arntzen, Claude Gascon, Ron Heyer and John Wilkinson. Details of these and previous grants are available from the DAPTF Office.
Tim Halliday, International Director.

Getting the Jump! on Amphibian Disease
Radisson Plaza Hotel at the Pier
Cairns, Queensland, AUSTRALIA
26-30 August 2000
http://www.rainforest-crc.jcu.edu.au/amphibian.asp
Getting the Jump! On Amphibian Diseases consists of:

* Scientific Conference to hear the latest on diseases in wild amphibians including key research findings and case studies on monitoring and control efforts.
* Workshop to concentrate on issues of policy, practice and legislation and to develop recommendations for action.
* Core working group to finalise recommendations and to carry them forward for further action.
* A Public forum.
* Specialist workshops for researchers and wildlife carers.

The Central American Institute of Biological Research and Conservation (CIBRC) is a non-profit organization whose aims are to implement and develop scientific research projects and conservation activities in the Central American Isthmus. The organization also promotes the training of undergraduate and graduate students in areas of Biology and Conservation by means of specialized courses.

CIBRC is now offering a Tropical Ecology and Conservation course in Costa rica. The 6 week course will take place in sites including National Parks and Wildlife Refuges. Students will participate in academic activities such as field research projects, tropical ecology lectures and discussions on Conservation Biology topics. The course begins on July 2, 2000. The application deadline is May 15, 2000. *For more information, visit:* **http://www.cibrc.org**

Yet another Amphibian Disease identified in Italy We hear from Rita Pascolini of the University of Perugia that population declines among green frogs close to Lake Trasimeno in central Italy appear to be related to a disease that affects up to 90% of frogs sampled. The pathogen has been identified by Andrew Cunningham and Peter Daszak as *Dermocystidium* sp. This belongs to the Mesomycetozoa, a protist clade of fish, amphibian and human parasites near the animal-fungal divergence. Details of this study should be published shortly.
Tim Halliday

A new Working Group for Tanzania is being formed. It's co-Chairs will be Prof. Kim Howell and Charles Msuya. *For more information, please contact:* Kim M. Howell, Department of Zoology & Marine Biology, University of Dar es Salaam, P.O. Box 35064, Dar es Salaam, TANZANIA.
khowell@twiga.com

Information is requested about the use of the piscicide Rotenone for the control of predatory fish at amphibian sites. In the United Kingdom this chemical has to our knowledge only been used on two occasions for this purpose. In both instances it was used as part of a program to eliminate the three-spined stickleback (*Gasterosteus aculeatus*) from ponds containing the specially protected great crested newt (*Triturus cristatus*).

Fish predation is recognised in the UK Biodiversity Action Plan as one of the current factors causing decline and local excinction of great crested newts. The three-spined stickleback when introduced into ponds has been shown to prevent recruitment of newts by predating eggs and tadpoles. Many populations throughout the UK are threatened as a result. The initial intention is to conduct field trials in ponds using Rotenone at sites where fish have been deliberately introduced.

What I would like is additional case study data as to the effectiveness or otherwise of Rotenone in the control of predatory fish at amphibian sites. Any information which relates to its use in this area would be welcome. I would also like to hear of any studies relating to the toxicity of Rotenone to amphibians, especially *Triturus cristatus* or other *Triturus spp.*
Please contact: Will Watson, Wildlife Consultant, 25 Pitmaston Road, St. John's, Worcester WR2 4HY, UK.
Tel: +44 (0) 1905 425644
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willwatson@aquabc.freeserve.co.uk

DONATIONS We gratefully acknowledge receipt of the following donations received during March and April 2000. *Organizations:* Arizona Game & Fish, Belize Foundation for Research and Environmental Education, Columbus Zoo, International Amphibian Day, Virginia Herpetological Society (for the USA Working Group). *Individuals:* Chris Banks, Lincoln Brower, Donald & Eugenia Farrar, Julian Harrison, Douglas Holmes, Gilbert P. Kaback, Lynn Kaeding, Charlotte LaTier, Harold Laughlin, Thomas Lewis, Michael McCarthy, Karen B. Menczer, Matthew Mickiewicz, Stephane Ostrowski, William Parker, Thomas Pauley, Joseph Pechmann, Carol & C. Wayne Spann, Michael Sredl, Peter Warny.

Publications of Interest

Broomhall, S.D., Osborne, W.S. & Cunningham, R.B. (2000)

Comparative effects of ambient ultraviolet-B radiation on two sympatric species of Australian frogs. *Conservation Biology* **14:** 420-427.

Carey, C. (2000) Infectious disease and worldwide declines of amphibian populations, with comments on emerging diseases In coral reef organisms and in humans. *Environ. Health Perspect.* **108 (Supp.1):** 1-8.

Crump, D., Berrill, M., Coulson, D., Lean, D, McGillvray, L. & Smith, A. (1999) Sensitivity of amphibian embryos, tadpoles and larvae to enhanced UV-B radiation in natural pond conditions. *Can. J. Zool.* **77:** 1956-1966.

Dalton, R. (2000) WWW project aims to address worldwide decline in amphibians. *Nature* **403:** 471-472.

Daszak, P., Cunningham, A.A. & Hyatt, A.D. (2000) Emerging infectious diseases of wildlife - threats to biodiversity and human health. *Science* **287:** 443-449.

Funk, W.C. & Dunlap, W.W. (1999) Colonization of high-elevation lakes by long-toed salamanders (*Ambystoma macrodactylum*) after the extinction of introduced trout populations. *Can. J. Zool* **77:** 1759-1767.

Gido, K.R. & Brown, J.H. (1999) Invasion of North American drainages by alien fish species. *Freshwater Biology* **42:** 387-399.

Heyer, R. & Halliday, T. (1999) Declining Amphibian Populations Task Force. Past, present, and future. *Species* **31-32:** 117-118.

Hopkins, W.A., Congdon, J. & Ray, J.K. (2000) Incidence and impact of axial malformations in larval bullfrogs (*Rana catesbeiana*) developing in sites polluted by coal burning power plant. *Environmental Toxicol. & Chem* **19:** (April Issue)

Houlahan, J.E., Findlay, C.S., Schmidt, B.R., Meyer, A. H. & Kuzmin, S.L. (2000) Quantitative evidence for global amphibian population declines. *Nature* **404:** 752-755.

Ibáñez D., R., Rand, A.S. & Jaramillo A., C.A. (1999) *Los anfibios del Monumento Natural Barro Colorado, Parque Nacional Soberiana y Areas Adyacentes. The amphibians of barro Colorado National Monument, Soberiana national Park and Adjacent Areas.* Panama: Editorial Mizrachi & Pujol, S.A. ISBN 9962-811-17-1 *An accompanying CD containing the voices of the species covered in this book is also available.*

Iskandar, D.T. (1996) The Amphibians and Reptiles of Sulawesi. with notes on the distribution and chromosomal number of frogs. *Proc. First Int. Conf. on Eastern Indonesian-Australian Vertebrate Fauna.* pp 39-46.

Iskandar, D.T. (1998) Amfibi Jawa dan Bali. *Buku Pengenalan Lapangan. LIPI. Bogor, Yayasan Hayati.* ISBN 979-579-015-1

Iskandar, D.T. (1999) The Amphibians of Java and Bali. *LIPI. The Field Guide Series Bogor, Yayasan Hayati.* ISBN 979-579-014-5

Knapp, R.A. & Matthews, K.R. (2000) Non-native fish introductions and the decline of the Mountain Yellow-legged Frog from within protected areas. *Conservation Biology* **14:** 428-438.

Kolozsvary, M.B. & Swihart, R.K. (1999) Habitat fragmentation and the distribution of amphibians: patch and landscape correlates in farmland. *Can. J. Zool* **77:** 1288-1299.

de Lange, H.J., Verschoor, A.M., Gylstra, R., Cuppen, J.G.M. & Van Donk, E. (1999) Effects of artificial ultraviolet-B radiation on experimental aquatic microcosms. *Freshwater Biology* **42:** 545-560.

Milius, S. (2000) Colossal study shows amphibian woes. *Science News* **157:** 247.

Perkins, P J., Boermans, H.J. & Stephenson, G.R. (2000) Toxicity of glyphosate and triclopyr using the frog embryo teratogenesis assay - *Xenopus. Environmental Toxicol. & Chem* **19:** (April Issue)

Richards, S. (1999) The mystery of the disappearing frogs. *Geo Australia* **21(4):** 68-75.

Rabb, G.B. (1999) The amphibian crisis. **http://elib.cs. berkeley. edu/aw/rabb.html**

Rouse, J.D., Bishop, C.A. & Struger, J. (1999) Nitrogen pollution: an assessment of its threat to amphibian survival. *Environmental Health Perspectives* **107:** 799-803.

Smith, G.R., Rettig, J.E., Mittelbach, G.G., Valiulis, J.L. & Schaak, S.R. (1999) The effects of fish on assemblages of amphibians in ponds: a field experiment. *Freshwater Biol* **41:** 829-837.

Starnes, S.M., Kennedy, C.A. & Petranka, J.W. (2000) Sensitivity of embryos of southern Appalachian amphibians to ambient solar UV-B radiation. *Cons. Biol* **14:** 277-282.

Waldick, R.C., Freedman, B. & Wassersug, R.J. (1999) The consequences for amphibians of the conversion of natural mixed-species forests to conifer plantations in southern New Brunswick. *The Canadian Field-Naturalist* **113(3):** 408-418.

TAILTHOUGHT: Do Amphibian Diseases have Wider Implications?

From Tim Halliday

Two recent papers, by Carey (2000) and Daszak *et al* (2000) (see *Publications of Interest*, this issue), examine recent outbreaks of disease among amphibians within a wider context. Carey highlights a dramatic increase since 1970 in reports of disease among coral reef organisms and the ever-lengthening list of newly-emerged human diseases, and concludes that, as in amphibians, the number of disease outbreaks caused by new pathogens appears to have been increasing over the last 30 or so years. This may be coincidence or it may be indicative of some major ecological change. Daszak et al tabulate a number of emerging infectious diseases (EIDs) among wild animals, categorising them according to whether thy are linked to diseases among domestic animals, whether they are related to anthropogenic disturbance, or whether they appear to have arisen naturally. They suggest that 'pathogen pollution' is becoming an increasingly serious threat to biodiversity.

The current heightened awareness of diseases among natural populations may largely be due to a greatly increased interest, among ecologists and evolutionary biologists, in the impact of infectious diseases on natural populations. It could be that, until recently, EIDs were largely unnoticed. On the other hand, chytridiomycosis and the growing list of other EIDs among amphibians could be part of a real and much larger threat to biodiversity. Both these papers emphasise the massive scale of the problem and the need for a truly interdisciplinary approach to address it. We are very aware within the DAPTF of the need to set up lines of communication with other disciplines within biology with which herpetologists have previously not shared any common ground. It seems likely that we are dealing with something that goes way beyond the question of what is killing frogs.

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