

FROGLOG

Newsletter of the Declining Amphibian Populations Task Force

June 1999, Number 33.



Philippine Amphibians Assessment

By Chris Banks

The 1999 meeting of the Wildlife Conservation Society of the Philippines (WCSP), held in Puerto Princesa, Palawan on 12-14 April, provided the opportunity to assess Philippine amphibians against the latest IUCN criteria for subsequent inclusion in the 1999 IUCN Red List of Threatened Animals, as well as the 1999 Philippine National List of Threatened Wildlife.

The latest publication on Philippine amphibians, a small field guide by Angel Alcalá and Walter Brown (published by Bookmark Inc. in 1998), lists 78 species of anurans and three species of caecilians. However, the authors acknowledge that around 10 additional frog taxa have been, or are in the process of being, described since this book's contents were collated in mid-1998.

The assessment was undertaken by Filipino herpetologists from the Universities of the Philippines and St. La Salle, with material provided by others unable to attend, and facilitated by Chris Banks, Curator of Herpetofauna at Melbourne Zoo.

Prior to this initiative, only two Philippine amphibians were listed by the IUCN: the Isolated Forest Frog, *Platymantis insulatus*, and the Negros Cave Frog, *P. spelaeus*, both of which were listed as Vulnerable. However, the recent assessment may see this figure jump to over 30, as 32 additional species have been recommended for inclusion:

Critically Endangered:	7
Endangered:	7
Vulnerable:	10
Near Threatened (Lower Risk):	1
Data Deficient:	9

These are distributed across the Philippines, although proportionally more of these species are found in South Luzon/Polillo Islands, North Luzon, the West Visayas and

Mindanao/Sulu Islands. These regions generally coincide with the biologically more important biogeographic areas of the country.

The recommended species are disproportionately distributed within the anuran families of Ranidae (23 of 39 described species, or 59%) and Rhacophoridae (5 of 17 described species, or 29%). Of the ranids, 15 of the 22 described species of *Platymantis* spp. (68%) are recommended for inclusion, 10 as Critically Endangered or Endangered. These are generally small-medium frogs inhabiting closed canopy forests and it comes as no surprise that so many are threatened, given the high rate of forest loss in the Philippines.

Two of the three described caecilians are also included.

The list has been submitted to the IUCN and population assessments will be revisited at the 2000 meeting of the WCSP. These are intended to jointly support more direct conservation action on the ground.

Contact: Chris Banks, Coordinator, South East Asian Conservation Programs, Melbourne Zoo, PO Box 74, Parkville, Victoria 3052, AUSTRALIA.

cbanks@zoo.org.au



Report from Panama

By Roberto Ibañez
Co-Chair, DAPTF Costa Rica & Panama Working Group

In February 1998, Cesar Jaramillo and Roberto Ibañez visited the Reserva Forestal Fortuna on the western highlands of Panama, a site where a massive die-off of amphibians was witnessed by Karen Lips in December 1996-1997, noticing the drastic reduction in frog abundance in the area, especially along Quebrada Arena. Frogs have not recovered at this site.

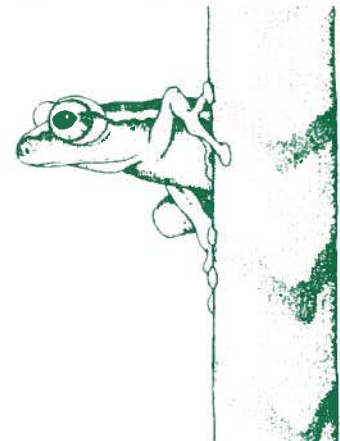
Ulrich Hofer studied the species composition and abundance of the

herpetofauna along an altitudinal gradient in the Bosque Protector Palo Seco, a protected area on the Atlantic slopes to the north and adjacent to the Reserva Forestal Fortuna, in April-June 1998. He noticed relatively few frogs along his transect.

Karen Lips, last June-August, visited several sites in the highlands of Panama and the Costa Rican border. She is doing censuses of amphibians in sites where massive die-offs occurred, as well as sites where these might be expected to happen in the future. She is also collecting tissue samples from amphibians for microbiological analysis. D. Earl Green (from the US National Institute of Health) is collaborating in this part of the study.

In the lowlands of central Panama, frog populations seem healthy. The abundance and diversity of frogs fluctuates, but a generalized declining trend has not been noticed. The "Proyecto de Monitoreo de la Cuenca del Canal de Panama" (USAID-STRI-ANAM) is utilizing three sites within the Panama Canal watershed, where frog monitoring was carried out in 1991-1995. This ecological monitoring project has included nine amphibian study sites as part of a long-term monitoring program of vertebrate populations in this region.

Contact: Roberto Ibañez D., Instituto Smithsonian de Investigaciones Tropicales, Apartado 2072, Balboa, REPUBLICA DE PANAMA.
ibanezr@tivoli.si.edu





UNEP
Ozone
Depletion
Report

A recent report from UNEP (United Nations Environment Programme) entitled *Environmental Effects of Ozone Depletion: 1998 Assessment* highlights the amphibian decline phenomenon in relation to the postulated effects of increased exposure to UV-B radiation on the development of amphibian embryos.

Chapter 4 of the report notes that a newly-developed chemiluminescent immunoblot assay has been developed which can measure thymine-thymine pyrimidine dimers in DNA, and that this has been used to investigate DNA damage and repair in pelagic fish eggs and larvae.

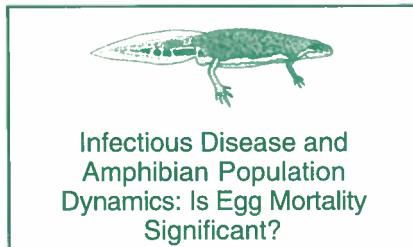
The typical method of thymine dimer repair is photoenzymatic repair. Therefore the observed amount of DNA damage at a given time of day is the net result of damage and repair rates. In other words, DNA damage increases as the sun rises, reaches a peak level of damage near solar noon, and is followed by a period of repair in the afternoon when UV-B decreases but the visible light which can be utilized for damage repair is still abundant. This work was carried out on the northern anchovy.

Many recent studies on the relationships between documented amphibian declines and increased levels of UV-B radiation have produced conflicting results, and the issue is a controversial one amongst scientists investigating the phenomenon. An understanding of the diel cycle of light damage and repair will assist field researchers in interpreting their results as regards the relationship between solar irradiance and DNA damage levels.

The full report is available on-line in pdf format at <http://www.gcrio.org/ozone/toc.html> or in html format at <http://www.gcrio.org/UNEP1998/>

Hardcopies can be obtained by completing a form at <http://www.gcrio.org/cgi-bin/OnLnDoc/ondocform.pl>

Many thanks to Bob Worrest <robert.worrest@ciesin.org> for drawing our attention to this report.



Infectious Disease and
Amphibian Population
Dynamics: Is Egg Mortality
Significant?

From Jim Robinson, Richard Griffiths and Peter Jeffries

Disease can play an important part in the regulation of wildlife populations. Indeed, die-offs of amphibian populations from several parts of the world have recently prompted a flurry of investigations into the culprits involved. Although infections of amphibian eggs have been regularly reported, there has been surprisingly little research on the identity of the microorganisms involved or the consequences for amphibian populations. In this project, we set out to determine the incidence of egg infections in British amphibians during a typical breeding season; identify more precisely the microorganisms responsible; and determine how amphibian breeding behaviour can affect disease outbreaks.

In 1998 the survival of eggs to hatching was remarkably high in frogs, toads and newts in southern England. We isolated a range of microorganisms from infected eggs, but it seemed that saprolegniaceous fungi were those most likely responsible for egg mortalities. Indeed, using electron microscopy, we were able to track the progressive invasion of amphibian eggs by fungal hyphae. DNA fingerprinting suggested that there were several different strains of fungus involved, and it is possible that different species of amphibian are vulnerable to different strains of *Saprolegnia*. Dead eggs were more readily infected than live eggs, but there were two mechanisms of infection. Some strains of *Saprolegnia* produce motile zoophores, which swim through water to find new eggs. Alternatively, eggs in close proximity to each other can be colonized by the growth of fungal hyphae from adjacent infected eggs. Developing eggs of the common frog are most vulnerable to infection soon after laying, and achieve some degree of resistance to infection during later development. Eggs of the great crested newt seem to get infected very soon after egg deposition, and may be more vulnerable to fungal attack than those of frogs and toads. Comparisons between wrapped and unwrapped newt eggs suggested that egg-wrapping provides little protection against infection.

The incidence of egg infections within amphibian populations can

clearly vary considerably between years, and this may be reflected by adult population sizes in later years. The results of the work suggest that conservation organizations interested in the amphibian mortality phenomenon may need to consider several strains of fungi as pathogens, and that different amphibian species breeding in the same pond may be affected in different ways.

Taken from the summary of a report to NERC (the Natural Environment Research Council). For further information, contact: Richard Griffiths, The Durrell Institute of Conservation and Ecology, University of Kent, Canterbury, Kent, CT2 7NS, United Kingdom.

r.a.griffiths@ukc.ac.uk



United
States
Working
Group
Report

From Mike Lannoo

For the U.S. Working Group, the year 1997-1998 was intense, marked by meetings and media attention focused on both amphibian decline and malformity issues, and capped by an NSF-sponsored meeting held late this spring in Washington, DC.

The problem of amphibian malformities has captured both local and national media attention, has raised renewed concerns about environmental and human health issues, and is contributing to amphibian declines in some regions of the U.S. Yet, outside of Minnesota and perhaps New England, neither mass die-offs nor slow extirpations of amphibians are typically preceded by reports of high rates of gross malformations. Because of the nature of the limb malformations and associated gut and cranial malformations, federal and state agencies working on the amphibian malformity problem in Minnesota and New England have narrowed their search to xenobiotic chemicals found in breeding wetlands.

The causes of U.S. amphibian declines continue to include the usual factors (habitat loss/alteration, xenobiotic chemicals [either chemicals different from those causing malformations or the same chemicals present in different concentrations], UV-B radiation, fungal infections) with different factors being more or less important based on region, season and year.

Several U.S. regional working groups held meetings over the past year, including Arizona-New Mexico, California-Nevada, the Southern

Plains, and a joint meeting of the Great Lakes and the Central Working Groups that received national media attention. The Central and Great Lakes Working Groups have just published their book on amphibian declines ("Status and Conservation of Midwestern Amphibians", Lannoo, M.J. ed., University of Iowa Press).

A new Amphibian Conservation Center is being established by the Detroit Zoo in conjunction with its new Amphibian and Reptile Building. The Center promises to be both a resource and a work station for investigators interested in problems of amphibian declines.

Midwestern researchers have established a one-week short course in Amphibian and Reptile Conservation Biology that will be held annually in August at the Iowa Lakeside Laboratory. The focus here is on field techniques (based on Heyer et al, 1994 and Olson et al., 1997) and regional, national, and international issues.

Nearly 100 herpetologists are working on assembling the new U.S. DAPTF book, "Status and Conservation of U.S. Amphibians". Species accounts are being assembled and conservation essays are being written. Proposals have been submitted to attract funding and a publisher.

The NSF meeting that was held last May in Washington may initiate a paradigm shift in the administration of amphibian decline issues in the U.S. In part as a result of publicized DAPTF activities, amphibian declines have attracted the attention of the Clinton administration. The goals of the NSF meeting were to summarize for administration officials the state of our knowledge and to discuss future research directions. The good news is that it appears that there will be an increased federal commitment to fund amphibian decline issues in the U.S. But federal commitment means federal involvement. I have fielded a surprising number of complaints from herpetologists who feel that their work is being superseded by less experienced, beltway-based, biologists. (Indeed, I know for a fact that at a recent malformity meeting a suddenly prominent D.C. amphibian conservation biologist did not know that pre-metamorphic leopard frogs have a full complement of limbs.) I maintain (in a currently outdated, old-fashioned, liberal sort of way) that we must be working together - matching people with experience to people with access and resources. And I remind everyone (a caution for novices, a pep talk for herpetologists) that peer review is a powerful scientific tool. Science by news conference is politics, not science, and when

"findings" are not backed by scientific publication they are soon forgotten. 1999 promises to be full of changes for U.S. amphibian conservation biologists and for the U.S. Working Group; I hope our collective accomplishments are commensurate.

Contact: Michael Lannoo, Muncie Ctr. for Med. Educ., Indiana School of Medicine, Ball State University, Muncie, IN 47306-0230, USA.
mlannoo@gw.bsu.edu



Listing
Recently
Extinct
Amphibians

During May, I attended a meeting of CREO (Committee on Recently Extinct Organisms) at the American Museum of Natural History in New York. CREO is organizing an international effort to develop a rigorous methodology for surveying and evaluating extinctions across taxonomic groups. It plans to produce as complete a list as possible in 2001. Together with a number of other members of the DAPTF, I am on the amphibian panel of CREO. I would like to hear from anyone who has information about any amphibian species which may have become extinct in the recent past.

For further information, check out the CREO website:
<http://www.creo.org/>

Tim Halliday, DAPTF International Director.

t.r.halliday@open.ac.uk



Lincoln Park
Zoo Grants
Available

The Lincoln Park Zoo Scott Neotropic and Africa/Asia Funds support field research in conservation biology around the world. The Scott Neotropic fund focuses on projects undertaken in Latin America and the Caribbean. The fund emphasizes the support of graduate students and other young researchers, particularly those from Latin America. Since 1986, the fund has awarded over 126 grants in 19 countries. The Africa/Asia fund, launched in 1997, focuses on projects throughout Africa, Asia, and the Pacific. Each fund supports projects of young conservation biologists and between five and 15 projects for each fund are supported each year. The fund awards are seldom greater than US\$7500, and most awards fall in the range of \$3000-\$6000. Initial support is for up to 12 months from the date of

award, and the maximum duration of support is two years. The current deadline for receipt of Scott Neotropic proposals is 1 September, and Africa/Asia proposals have no deadline for 1999. For additional information and application procedures go to www.lpzoo.com, e-mail steveed@ix.netcom.com, or write to: LINCOLN PARK ZOO SNF/AA FUNDS, c/o Director of Conservation and Science, Lincoln Park Zoo, Chicago, IL 60614.



Tennessee
Herpetology
Conference

CALL FOR PAPERS - 5th Annual Tennessee Herpetology Conference.

October 7-9, 1999, Hyder-Burks Agricultural Pavillion, Tennessee Technological University, Cookeville, TN. This conference will focus on the Tennessee Herpetofauna and Herpetological Research in the State, as well as long-term monitoring, land management for amphibians and reptiles, the status of the TN herpetofauna, conservation of amphibian and reptile resources, and herpetological education. If you wish to contribute a paper, please submit (by mail or fax) the title, authors and institutional affiliations by September 1, 1999. Provide also, under separate cover, an abstract (500 words or less) with the title, no later than September 15, 1999. Contributed papers will be limited to 20 minutes. A concurrent poster session is also planned. *Submit all information to:* Ray Jordan, Dept. of Biology, Tennessee Technological University, TTU Box 5063, Cookeville, TN 38505, USA.
 Fax: (931) 372-6257
 Tel: (931) 372-3137



Froglog Shorts

DONATIONS We gratefully acknowledge receipt of the following donations from 1 March through 15 May 1999. **Organizations:** Akron Zoological Park, The Columbus Zoo, Earth Images (Nancy Cannon), National Aquarium in Baltimore, The Phoenix Zoo, Portal Publications, Inc., Roger Williams Park Zoo. **Individuals:** Robert D. Bernstein, Andrew J. Crawford, Gregory Eaglin, Arthur Echternacht, John Ferner, Katherine V. Fite, Christy Flak, John Frazier, Susan Graf, Julian Harrison, Michael Lannoo (in honor of Dr. Dorothy Adailis), Roy McDiarmid, Matthew Mickiewicz, Stephane

Ostrowski, Brandi M. Samchisen, David Sever, Owen Sexton.

The International Salamander Year project, initiated by DAPTF Hungary and participated in by a number of other DAPTF groups, has been given the Hungarian National Award of Ford Europe's Conservation Awards. DAPTF Hungary has also been producing several excellent colour posters and postcards highlighting amphibian decline and conservation issues. *For more information on this achievement and the associated materials, please contact:* Miklós Puky, Hungarian Danube Research Station, 2131 Göd, Jávorka S. u. 14, HUNGARY. **h7949puk@ella.hu**

Amphibian Discoveries New species of amphibian are being discovered at a greater rate than are many other vertebrate taxa. The number of formally described species is expected to reach 5000 by the year 2000. It stood at 4003 in 1985. Part of this rapid increase can be accounted for by the application of molecular techniques to the separation of morphologically cryptic species. *Hanken, J. (1999) Trends in Ecology & Evolution 14(1): 7-8.*

A High School student from Waukesha, WI, in the United States has raised \$300 for the DAPTF as part of an English project. Christy Flak had to research a topic of her own choice and write a 10-15 page paper, plus the topic was to have application in the real world. She has always had an interest in frogs, and when she discovered the DAPTF website, she decided to make declining amphibians the subject of her paper. The money was raised by fundraising at a local elementary school, which Christie visited, discussing the declining amphibian problem. *Thanks, Christie, for your hard work!*



Publications of Interest

Alcala, A.C. & Brown, W.C. (1998) *Philippine Amphibians: An Illustrated Field Guide*. Bookmark Inc., Makarti City, Philippines. ISBN 971-569-314-8. *Contact the publishers (fax +63 - 2 - 879 - 0824, e-mail bookmark@info.com.ph) for availability outside the Philippines.*

Baker, J.M.R. & Halliday, T.R. (1999) Amphibian colonization of new ponds in an agricultural landscape. *Herpetological Journal 9(2): 55-63.*

Boothby, J. (Ed.) (1999) *Ponds and pond landscapes of Europe*. Proceedings, International Conference of the Pond Life Project,

Maastricht, The Netherlands. £0th August - 2nd September 1998. ISBN: 0-9531291-1-X. *Copies of these proceedings are available from The Pond Life Project, Liverpool John Moores University, 15-21 Webster Street, Liverpool L3 2ET, UK @ £15 (GBP) inc. postage. Discount for 2+ copies.*

Diaz, A., Pefaur, J.E. & Durant, P. (1997) Ecology of South American paramos with emphasis on the fauna of the Venezuelan paramos. In: Wielgolaski, F.E. (Ed.) *Ecosystems of the World 3. Polar and Alpine Tundra*. Elsevier. pp. 263-310.

Kuzmin, S.L. (1999) *The Amphibians of the Former Soviet Union*. Pensoft Series Faunistica, No. 12. Pensoft, Sofia-Moscow. ISBN 954-642-045-X. *This new work from the Chair of the DAPTF CIS Working Group contains much useful information on the amphibians of the region and will be an essential reference for anyone working on them.*

Leong, T.M., Lee, B.Y.H. & Chou, L.M. (1996) New record of the tree-frog, *Theloderma horridum* (Amphibia: Anura: Rhacophoridae) from Singapore. *The Raffles Bulletin of Zoology 44(2): 475-477.*

Leong, T.M. & Chou, L.M. (1997) New record of the narrow-mouthed frog, *Microhyla borneensis* Parker (Amphibia: Anura: Microhylidae) from Singapore, with taxonomic notes and larval description. *The Raffles Bulletin of Zoology 45(1): 97-103.*

Longcore, J.E., Pessier, A.P. & Nichols, D.K. (1999) *Batrachochytrium dendrobatidis* gen. et sp. nov., a chytrid pathogenic to amphibians. *Mycologia 91: 219-227.*

Kuzmin, S.L., Pavlov, D.S., Stepanyan, L.S., Rozhnov, V.V. & Mazin, L.N. (1998) The state of and perspectives for the IUCN red list of animals. *Russian Journal of Zoology 2(4): 539-546.*

Marshall, C.J. (1998) The reappearance of *Taudactylus* (Anura: Myobatrachidae) in north Queensland streams. *Pacific Conservation Biology 4: 39-41.*

Nichols, D.K., Pessier, A.P. & Longcore, J.E. (1998) *Cutaneous chytridiomycosis in amphibians: an emerging disease?* Abstract, Proc. Amer. Ass Zoo Veterinarians & Amer. Ass. Wildlife Veterinarians: 269-271.

Pessier, A.P., Nichols, D.K., Longcore, J.E. & Fuller, M.S. (1999) Cutaneous chytridiomycosis in poison dart frogs (*Dendrobates* spp.) and White's tree frogs (*Litoria caerulea*). *J. Veterinary Diagnostic Investigation 11: 194-199.*

Pickford, D.B. & Morris, I.D. (1999) Effects of endocrine-disrupting

contaminants on amphibian oogenesis: methoxychlor inhibits progesterone-induced maturation of *Xenopus laevis* oocytes in vitro. *Environmental Health Perspectives 107(4): 285-292.*

Saka, M. (1999) Acute toxicity tests on Japanese amphibian larvae using thiobencarb, a component of rice paddy herbicides. *Herpetological Journal 9(2): 73-81.*

Thurow, G.R. (1998) Effects of El Niño on frog activity in my neighbourhood in spring 1998. *Bull. Chicago Herp. Soc 33(7): 152.*

Thurow, G.R. (1998) Ecological lessons from two-lined salamander translocations. *Transactions of the Illinois State Academy of Science 90(1-2): 79-88.*



Available from the DAPTF

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 in British pounds or US dollars only please. All items feature the Neobatrachus logo, as above.

IF YOU HAVE RECENTLY CHANGED ADDRESS AND/OR YOUR COPY OF FROGLOG IS BEING FORWARDED FROM A PREVIOUS ADDRESS, PLEASE INFORM JOHN WILKINSON, AS BELOW.



FROGLOG is the bi-monthly newsletter of the Declining Amphibian Populations Task Force. Partial funding for FROGLOG is provided by donation from:

Conservation International, Washington, DC, USA and Frog's Leap Winery, Rutherford, CA, USA.

Edited by: John W. Wilkinson, Department of Biological Sciences, The Open University, Walton Hall, Milton Keynes, MK7 6AA, U.K.

Tel: +44 (0) 1908 - 652274.

Fax: +44 (0) 1908 - 654167

E-mail: daptf@open.ac.uk