



FROGLOG

Newsletter of the Declining Amphibian Populations Task Force
of the World Conservation Union's Species Survival Commission.

March 1997, Number 21.



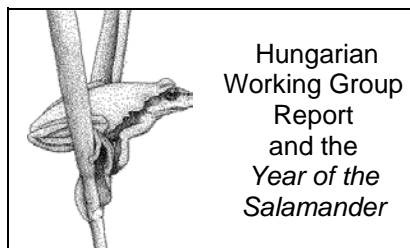
Anonymous Donation Boosts Seed Grant Funds!

An anonymous donor is generously making two contributions to our Seed Grant program. The first contribution is an outright gift of \$10,000 to support investigations of the role of climate change and UVB exposure in worldwide amphibian declines. The second contribution is a challenge grant, to be matched on a dollar-for-dollar basis, of up to \$10,000 (for a total of \$20,000). The pool of funds raised by the challenge grant will support investigations of the role of climate change and UVB exposure, chemical contaminants, or synergistic effects of these possible causes of global amphibian declines. Chemical contaminant studies, to be eligible for this pool of funds, must have regional or global implications. We encourage studies of environmental oestrogen mimics for these funds. At least half of the available funds will be dedicated to climate change and UVB exposure studies. The challenge period ends 31 July 1997.

Persons interested in applying for these funds should submit a Seed Grant proposal (see guidelines in FROGLOG 20 or contact John Wilkinson). We have set up a small committee to determine whether proposals received meet the guidelines established by the anonymous donor. If the guidelines are not met, then the proposals will be considered for our non-restricted seed grant funds.

Members of the DAPTF Board and I are embarking on activities to raise the \$10,000 to fully meet the challenge by the anonymous donor. However, as time is short, any suggestions of possible donors would be very much appreciated. Please

bring such potential sources to my attention at my new e-mail address: heyer.ron@nmnh.si.edu.
Ron Heyer, DAPTF Chair.



Hungarian Working Group Report and the Year of the Salamander

From Miklós Puky
DAPTF-Hungary

Last year's conservation meeting was very successful, with 58 participants from several nations including Croatia, Germany, Hungary, Poland and the United States. We measured more than 5,000 amphibians of 9 species during a week. A good piece of news is that we managed to get the floodplain area designated as a strictly protected part of a would-be national park together with an area including amphibian summer habitat and hibernacula.

As a consequence, this year we shall focus on management options and the revitalization of areas which have been destroyed. We are also running an educational campaign for local people on the advantage of living at the edge of a national park.

Another brand new project we are just about to launch is the **1997 - Year of the Salamander** programme. We aim to generate publicity towards amphibians with a focus on the fire salamander, involve the general public in collecting data, set up a salamander day directory for schools, study circles etc. where they can find a day-long activity for different ages (from kindergarten to secondary school), compile a detailed distribution map and include a detailed study of some populations.

A new element is to record the cultural associations of amphibians

(including tales, rhymes etc.) for educational purposes.



Conservation Meeting in Hungary

Location: Parassapuszta, 78 kms north of Budapest on the Hungarian/Slovakian border.

Duration: 29/3/1997 - 6/4/1997

Accommodation: in a local school

Meals: participants cook for themselves

Travel: by train and bus, or car

Goals: This time the focus will be on middle-mountain valleys in the Börzsöny Mountains, the investigation of an important amphibian breeding site, the floodplain of the River Ipoly and possible conservation measures in the would-be national park area.

The main target species are four protected amphibians (two listed under the Bern Convention as strictly protected), together with three other species not mentioned here but present in the area:

Salamandra salamandra (the ratio of red and orange, spotted and striped individuals, length and weight characteristics, habitat descriptions).

Pelobates fuscus, a disappearing species (sex ratio, the analysis of its disappearance, the investigation of its breeding sites).

Rana dalmatina, the species which survives drought most successfully, (length-weight characteristics, sex ratio, breeding sites).

Bufo bufo, once the commonest amphibian in the region (sex ratio, the

analysis of its disappearance, the investigation of its breeding sites).

The event is organized on the basis of active participation in all aspects of the meeting. For further information, contact:

Miklós Puky, 1013 Budapest Pauler u. 19. III. em. 2. Hungary. Tel/Fax: (Hungary) 36-1-1162181

Or: Szövényi Gergely
gegesz.@elte.ludens.hu



Amphibians
in Portugal

From Octávio Paulo DAPTF - Portugal

The overall situation of amphibian populations in Portugal is good, although the desertification process in the southern half of the country has a strong effect on populations, and probably contributes to their decline. Destruction or habitat fragmentation also has a considerable effect. Large hydroelectric projects like the Alqueva Dam have influences over a very large area. This is probably the biggest artificial lake in Europe. Other, smaller (but widespread) hydrological projects also result in the alteration of local species compositions. These effects are magnified by the introduction of exotic fish, which prey on amphibian larvae. Fortunately, no exotic amphibians have yet become established.

Discoglossus galganoi, *Pelodytes punctatus* and *Triturus helveticus* are species worthy of particular concern. There are very few observations of *T. helveticus* in this country. The other two species are not as rare as *T. helveticus* but have localized populations dependent on one kind of habitat. These local populations can contain a large number of animals, which sometimes gives the erroneous impression that the species is very common.

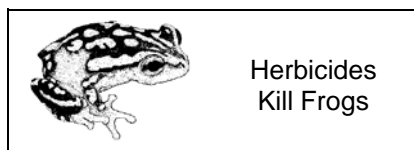
Recent work from Oporto University shows a very good situation for *Chioglossa lusitanica* and *Rana iberica*. Both species seem not to be in immediate danger, although *C. lusitanica* is vulnerable because of its highly specialized habitat requirements.

Our group, from Lisbon University, did a series of short term studies in Serra de S. Mamede Natural Park (1993-1994), Serra da Estrela Natural Park (1993 and 1995) and Sintra-Cascais Natural Park (1995). The main objectives of these studies were to establish a baseline for future comparisons and detection of declines, to test our field and

analytical methods and to choose priority areas for amphibian conservation. In one Natural Park, there have been no observations of *Alytes obstetricans* and *Pelobates cultripes* since 1979. These species are probably locally extinct.

Following these studies, we are attempting to begin a long term study on a mountainous area (1800-2000m) inside Serra da Estrela Natural Park. This area seems to be more adequate to study the effect of global factors without the confounding effects of habitat modification or fragmentation.

Contact: Octavio Paulo, Depto. Zoologia e Antropologia, Faculdade de Ciências da Universidade de Lisboa, P-1700 Lisboa, Portugal. Tel: 351 - 1 - 7573141 ext. 1514 Fax: 351 - 1 - 7500028



Herbicides
Kill Frogs

By Michael J. Tyler DAPTF - Australia

The Australian Government has taken unprecedented action and banned 84 herbicide products from use near water because of their impact upon frogs and tadpoles.

All of these products, of which Roundup (Monsanto) is the best known, contain glyphosate as the active ingredient. However, there is agreement that it is not the glyphosate that is the principal problem but a detergent additive termed a dispersant or wetting agent. The function of the dispersant is to break down the surface tension at the leaf surface, so that the individual spray droplets disperse to completely cover the leaf.

Unfortunately, all detergent compounds interfere with cutaneous respiration in frogs and particularly gill respiration in tadpoles. Impact may vary with water temperature because oxygen saturation decreases with temperature. To date there have been no tests at 40°C or above - conditions when oxygen availability is very low.

Although the herbicide is claimed to be "environmentally friendly", it is clear that users have been lulled into a false sense of security. The use of these herbicides near water is already banned in the UK and the USA. It is to be hoped other countries join Australia in following suit.

Contact: Michael J. Tyler, Department of Zoology, The University of Adelaide, GPO Box 498, Adelaide, South Australia 5005, AUSTRALIA.
mtyler@zoology.adelaide.edu.au

(Mike has also been generating some valuable income for the DAPTF by the sale of chocolate frogs!)



1996 IUCN
Red List.

The 1996 IUCN Red List of Threatened Animals, compiled and edited by J. Baillie and B. Groombridge, has recently been published by IUCN/SSC. A total of 156 amphibian species are listed, using IUCN's new system of categories and criteria (Extinct 5; Critical 18; Endangered 31; Vulnerable 75; Lower risk (conservation dependent) 2; Lower risk (near-threatened) 25). The editors make it very clear that amphibians (together with fishes and reptiles) have not been as comprehensively assessed as other taxa, notably birds and mammals, and that these figures are very likely to be an underestimate. Of the amphibian species that have been assessed, 25% of species are threatened with extinction, a higher proportion than that for birds and mammals. The inadequacy of the data for amphibians is perhaps illustrated by a geographical analysis that suggests that Australia and the USA have much greater numbers of threatened amphibian species than other countries. This surely reflects our greater knowledge of amphibians in these countries rather than the actual situation.

Tim Halliday, International Director.



Georgia Herp
Atlas

From Michael E. Dorcas DAPTF - Monitoring Protocols Working Group

The Georgia Herp Atlas (GHA) was initiated to learn more about the distribution of reptiles and amphibians in this understudied state. Because of the paucity of professional herpetologists in Georgia, we are depending on amateurs to help us more efficiently survey the infrequently visited parts of the state. The qualifications of GHA participants are quite modest: ownership of a camera, willingness to donate photos, and an interest in the well-being of all reptiles and amphibians. Participants are simply asked to photograph herps as they encounter them, either through active searches or opportunistically, and document locality, date, and observer's name on provided field

cards. Participants range from "hard-core" herpetologists to school children and are located throughout the state. Because of the photo-documentation requirement, participants need not know what species they observed, just who they themselves are, where they are, and what day it is.

Since the official GHA "kickoff" in August 1996, over 250 records have been submitted representing over sixty different species. Additionally, more than 30 of the records have been from counties not previously documented as harboring a particular species. Despite a few out of focus photos, most shots have been very revealing as to the identity of the particular herp in question. One shortfall of the use of photos as vouchers is the difficulty in accurately identifying some species from a photo alone (i.e. five-lined skinks, *Bufo*, *Desmognathus*). Professional biologists have been asked to sacrifice single voucher specimens of these cryptic species to supplement photographic vouchers. In addition to photographs, audio recordings of frog calls, videos, and road-killed specimens are also considered acceptable verification.

For more information please contact: John Jensen, Georgia Herp Atlas, Nongame Program, 116 Rum Creek Dr., Forsyth, GA 31029, USA. Phone: (912) 994-1438
land.forsyth_nongame@mail.dnr.state.ga.us



It is now possible for high school and college biology classes, as well as other interested environmental groups, to become more involved in the research into global amphibian declines. A professionally prepared, hands-on teaching unit entitled "Amphibians as Bio-Indicators" is now available.

The unit consists of a set of professional 35mm colour slides of each of the 206 species of amphibians of the United States. Each slide is numbered and a variety of information is available with regard to the animals and their lifestyles. Customized sets are available for each of the 36 state units completed to date. More customized sets are expected to be offered soon.

Information about this unique teaching unit may be obtained from: Suzanne L. Miller, Kansas Heritage

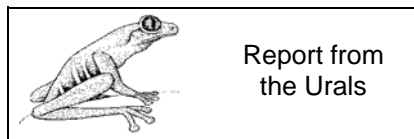
Photography, 840 S.W. 97th Street, Wakarusa, KS 66546.
 Tel: 1-913-836-2119
wakarusa@cjnetworks.com



A new committee has recently been formed to review the status of Taiwanese amphibians. A status category has been assigned to each species based on species distribution, population size and population growth trends.

Four species have been categorized as "endangered": *Rhacophorus arvalis*, *Rhacophorus aurantiventris*, *Rana psaltis* and *Rana taiwanian*. The species *Hynobius formosanus*, *Hynobius sonani*, *Microhyla butleri*, *Rhacophorus prasynotus* and *Rana taipehensis* are considered "vulnerable". A further three species are listed as "rare", and eighteen species are deemed as being currently under "no risk".

For further information contact: Kwang-Yang Lue, DAPTF - Taiwan, Department of Biology, National Taiwan Normal University, 88 Dingchou Road Sec. 4, Taipei 117, TAIWAN, REPUBLIC OF CHINA.
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From Vladimir L. Vershinin DAPTF - Urals (Urban Areas)

Research has been conducted on amphibian populations in areas with a high degree of urbanization. We have established that specific reproductive strategies have appeared, promoting the formation of new genotypes in city populations. This is manifested phenotypically and in features of these populations' physiological functions. A high mortality in the early stages of development is compensated for by a sharp decrease in mortality at the point of metamorphosis.

The high tolerance of the spawn of *R. arvalis* in an urban environment represents the consequence of adaptive changes which promote successful reproduction in city populations. Other population dynamics result in the formation of specific genetic characters in new generations, that are displayed in a series of changes in phenotypic features. Under the conditions in city

ponds, larger animals (with a higher volume: surface-area ratio) are found, and with high rates of exchange and low skin penetration. Steady reproduction at a low average fecundity and small egg size, as well as a series of adaptive features at embryo, larva and froglet stages testify to the difference between reproductive strategies in *R. arvalis* from urban and natural populations.

Populations of sympatric species of brown frog from the same urbanized landscape display a different adaptive reproductive strategy. In urban *R. temporaria* populations, animals with a high growth rate, early sexual maturity and short longevity predominate. The increase in frequency of abnormal spawn in urban populations reflects definite changes in the most important of their functions, reproduction. This represents the extreme expression of these processes and can facilitate their early diagnosis. These changes in reproductive strategy produce territorially limited, small, isolated populations in the city area.

Contact: Vladimir L. Vershinin, Institute of Plant & Animal Ecology, Uralian Branch - Russian Academy of Sciences, Ul.8 Marta, 202, Ekaterinburg 620008, RUSSIA.



Pedraza, E.M. and Lizana, M. (1996) Mortality of toad embryos because of UV-B radiation in high mountain areas of the Sierra de Gredos (Spanish Central System). *An abstract of a paper presented at the Spanish-Portuguese herpetological meeting in Porto, December 1996.*

During the breeding season of *Bufo bufo* and *Bufo calamita* in Prado de las Pozas, Sierra de Gredos, at 1920m, we collected 1800 eggs of both species from six different clutches (300/clutch). Eggs were distributed in 12 enclosures (150/enclosure) which permitted the circulation of water and air. Four enclosures were covered with Lumar filters which blocked UV-B radiation and four were covered with PVC filters which slightly impeded the passage of UV-B rays. The remaining four were covered with a 2cm-mesh plastic netting which permitted the passage of light and air and prevented possible predation. The enclosures were placed in the natural spawning sites of the two toads, a wide, quiet stream and a very shallow pond for *Bufo bufo* and *B. calamita* respectively.

Periodically (circa every 2 days), the remaining eggs were counted and, later, the tadpoles in each enclosure, taking note of the average Gosner stages and water temperature. The experiment was carried out during June 1996 and ended when the tadpoles were in Gosner stages 25-29: free-swimming tadpoles.

In *Bufo bufo*, significant differences in survival were observed: 78% in embryos covered with the UV-B filter; 50.83% in enclosures covered with the PVC filter and only 18% in the enclosures without filters. *Bufo calamita* embryos showed no significant differences in survival between the various enclosures. We discuss the possible adaptation of *B. calamita* to very shallow ponds in high mountain areas and the comparison with other geographic zones where the levels of photolyase enzyme of some amphibians are known.

Contact: Miguel Lizana, Departamento de Biología Animal, Universidad de Salamanca, 37071 Salamanca, Spain. lizana@gugu.usal.es



Frog populations nearly absent in 1988 have exploded on a West Michigan farm. The farm was originally in a conventional soy / corn rotation using traditional environmental biocides. When the site was converted to an organic farm and nursery, *Rana pipens*, the leopard frog became extremely abundant. Tea coloured water associated with increased compost use tints the temporary pond water. This organically charged water supports enormous populations of tadpoles. The diversity of amphibian species has also increased since the transition, and the species present now include: green frogs (*Rana clamitans*), pickerel frogs (*R. palustris*), wood frogs (*R. sylvatica*), western chorus frogs (*Pseudacris triseriata triseriata*), lesser gray tree frogs (*Hyla chrysoscelis*), spring peepers (*Hyla crucifer*) and American toads (*Bufo americanus*). Garter snakes and other predators have also returned to check the advancing amphibian populations.

For further information contact: Patrick D. McKown and Samuel M. DeFazio, Praxis, 2723 116th Ave., Allegan, MI 49010, USA. Tel/Fax: 616-673-2793

Robstein Chidavaenzi, Curator of Herpetology at the Natural History Museum of Zimbabwe has kindly agreed to be the DAPTF contact in Zimbabwe. He is currently engaged in

contacting our other members in that country with a view to establishing a Working Group.

Contact: Robstein L. Chidavaenzi, P.O. Box 3562, Bulawayo, ZIMBABWE.

Cynthia Carey is the new Chair of our Climate and Atmospheric Change Working Group.

Contact: Cynthia Carey, Department of EPO Biology, University of Colorado, N122 Ramaley, Campus Box 334, Boulder, CO 80309-0334, USA.

Cynthia.Carey@Colorado.edu

DONATIONS We gratefully acknowledge receipt of donations from the following between 1st December 1996 and 15th January 1997.

Organizations: Desert Fishes Council, Mid-Missouri Herpetological Society, National Aquarium in Baltimore, Oklahoma Herpetological Society, Zoologischer Garten, Köln.

Individual donors: Kraig Adler, Jim Andrews, Neil Armantrout, Jim Armelagos, Chris Banks, Breck Bartholomew, Bill Belzer, Robert Bernstein, Justin Bookey, Janalee Caldwell, Charles Carpenter, James Christiansen, Ted Davis, William Degenhardt, Michael Dloogatch, R. A. Early, Dinorah Echeverria, Arthur Echternacht, Karen Furnweger, Carl Gans, Merete Gerdel, George Gorman, Steve Gorzula, D. Earl Green, P. A. Greenberg, Gregory Gruener, Suzanne Gunderman, John Hall, Benjamin Hammett, Judy Hancock, James Hanken, James Harding, Julian Harrison, John Harshbarger, John Hays, Kurt Henkel, Stanley Hillman, Douglas Holmes, Eugene Holmes, Mrs. M. Hope & friends, Peter Hovingh, Roberto Ibáñez, Mark Jennings, Jett, Douglas Johnson, Gilbert Kaback, Sharon Kinsman, Charlotte LaTier, John Larsen Jr., Michael Lau, Greg Linder, Michael Lodato, Michael Long, Kuang-Yang Lue, Tom Mason, James Menzies, Matthew Mickiewicz, Joseph Mitchell, Edward and Judith Moll, John Murphy, Allan Muth, Kathy Nemec, John Netherton Jr., Hidetoshi Ota, William Parker, Debra Patla, Don Perschau, James Petranka, John E. Petzing, Belinda Porter, Harvey Pough, Andrew Price, Stanley Rand, Alan Resetar, Christina Richards, Dale Roberts, Douglas Rossman, David Saugey, Barbara and Alan Savitzky, John Serrao, Tibbar Sindt, Heather Skadsen, Hobart Smith, Betsy Spettigue, Glenn Stewart, Margaret Stewart, Mark Stromberg, K. and D. Trachsel, David Wake, Marvalee Wake, Robin Walsh, Peter Warny, Howard Youth, Richard Zweifel.



A draft document entitled Standardized Field Sampling Methods for Assessing Headwater Habitat Streams in Ohio is now available from its author: Robert Davic, Ohio Environmental Protection Agency, Division of Surface Water, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087, USA. Tel: (216) 963-1132

Robert.Davic@central.epa.ohio.gov

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