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# FROGLOG

Newsletter of the Declining Amphibian  
Populations Task Force

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Dead Newts  
in Peneda  
Gerês,  
Portugal

By Elsa Froufe, J.W. Arntzen  
and Armando Loureiro

Peneda Gerês is Portugal's only National Park. It is located in the north of the country and continues into Spain. In Carris, at 1500 m altitude and close to the Spanish border, a 1.5 ha man-made lake of several m depth was constructed some 60 years ago. This granite lake supports a large and well-studied population of the marbled newt, *Triturus marmoratus* (Caetano *et al* 1982; Caetano *et al* 1985). On May 22, 1998 we found several dead marbled newts, but no deaths were recorded among the other amphibian species (*T. boscai*, *Alytes obstetricans* and *Rana perezi*). Most of the live *T. marmoratus* showed one or more of the following features: opaque cornea, skin lesions spread all over the body and an unusually dark dorsal coloration. Their bodies were soft as if the muscular system was relaxed. Females especially appeared to be affected. These symptoms are clearly different from that produced by 'Molchpest', a disease of which outbreaks are regularly observed in natural and terrarium populations of newts, *T. helveticus* in particular (Jarofke & Herrmann 1997; J.W. Arntzen, *pers. obs.*). Though marbled newts were also observed on May 6, the described symptoms appeared not to have been present at that time. On August 16, 1998 tens of *T. marmoratus* larvae in various stages of development were found dead. No dead or sick individuals were observed among adults or larvae of other amphibians and apparently healthy, freshly metamorphosed marbled newts were found under stones on the shoreline. Dip-netting of the margins of the lake revealed the presence of hundreds of *T. marmoratus* larvae. About one in ten of these larvae possessed red-

coloured and strongly swollen upper hind legs, or a belly with a large red spot, symptoms that we assume to be caused by tissue haemorrhaging. We transported ten healthy-looking larvae to the laboratory where they developed the symptoms described above and died within a week. The study site is a remote place, with no regular access and no recent human interference from agriculture or otherwise. Our findings are puzzling and disturbing because no observations on diseased marbled newts have previously been made at Carris (M. H. Caetano *pers. comm.*).

Caetano, M.H. *et al* (1982) Les amphibiens et reptiles du Parc National de Peneda Gerês (Portugal). *Bull. Soc. Herp. Fr.* 23.

Caetano, M.H. *et al* (1985) Détermination de l'âge de *Triturus marmoratus marmoratus* (Latreille 1800) du Parc National de Peneda Gerês (Portugal) par squeletteochronologie. *Amphibia-Reptilia* 6: 117-132.

Jarofke, D. & Herrmann, H.J. (1997) *Amphibien. Biologie, Haltung, Krankheiten, Bioindikation*. Ferdinand Enke Verlag, Stuttgart.

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Amphibians  
in Michoacán,  
Mexico

By Javier Alvarado Díaz

The state of Michoacán comprises an area of about 60,000 square km lying between 17° 54' and 20° 13' north and 100° 02' and 103° 47' west, and borders the Pacific Ocean for a distance of about 200 km. There are different types of vegetation including fir, pine-oak, tropical scrub and tropical semi-deciduous forests. There are 40 species of amphibians

recorded for the state. Utilizing the criteria of distribution, abundance, human utilization, protection, endemism and habitat fragility, a preliminary assessment of the conservation status of these species was completed. Five species of salamanders (*Ambystoma*) are at great risk. *A. andersoni* and *A. dumerilii* are large, neotenic and endemic to one locality (lake Patzcuaro and lake Zacapu, respectively). Both species are utilized as food by local people. *A. tigrinum*, *A. amblycephalum* and *A. ordinarium* have a restricted distribution within the state, their populations are not abundant and their habitats are quickly being destroyed. *Rana dunni* is a large frog endemic to the Lake Patzcuaro area and Morelia. This species is commercially harvested and populations are declining. Other species of special concern are *Rana megapoda*, *R. montezumae*, *R. neovolcanica*, *Hyla smaragdina*, *H. bistincta*, *Eleutherodactylus angustidigitarium* and *E. rufescens*. Habitat loss and alteration are the main threats to Michoacán amphibians. Aquatic habitats are being altered at a fast rate, mainly by siltation, sewage contamination and a negative water budget. The forests are rapidly being converted to agricultural, cattle ranching and urban land uses. Michoacán is the state with the highest rate of deforestation in Mexico (50,000 hectares a year). The University of Michoacán is carrying out a research project to have a more complete knowledge of species distribution and status, to establish a baseline for future comparisons, to detect population tendencies in selected amphibian species and to promote and carry out activities for the conservation of the species and their habitats.

Contact:

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### Amphibians & *Crassula helmsii*

By Will Watson

The introduction of alien species of aquatic plants and their impact upon wetland ecology has largely been viewed in terms of aquatic macrophyte and macro-invertebrate declines. There are, however, wider consequences. Take, for example, the spread of Australian swamp stonecrop *Crassula helmsii* into small, semi-permanent ponds in the UK. A recent investigation at a well-monitored pond on Castlemorton Common Site of Special Scientific Interest, near Malvern in Worcestershire, England, found evidence that it was also affecting the breeding success of the specially protected great crested newt *Triturus cristatus*. The pond also supports breeding populations of smooth newt *Triturus vulgaris*, palmate newt *Triturus helveticus* and common frog *Rana temporaria*.

Whilst surveying the pond by dip net in July 1998, 331 smooth or palmate newt tadpoles were caught (it is not possible to differentiate between these 2 species at this early stage), as well as 4 adult smooth newts and 5 adult *T. cristatus*. Significantly, no *T. cristatus* tadpoles were caught.

It is not entirely clear what is causing the problem. The *C. helmsii*, which was introduced to the pond only 2 years ago, now covers its entire surface. Typically, in line with its colonization of other semi-permanent ponds, it is growing as a submerged, emerging and marginal aquatic plant and has largely replaced the native aquatic flora. On this site, 2 emergent species; float grass *Glyceria fluitans* and lesser spearwort *Ranunculus flammula* are now temporarily (if not permanently) absent from this pond. Both these species of plants are regularly selected by *T. cristatus* for oviposition. It may be that the *C. helmsii* is largely unsuitable for egg-laying as its leaves are rigid. My only other explanation is that there is very little open water left and this may cause problems for the larger *T. cristatus*' courtship display. The answer as to why smooth or palmate newt recruitment was so successful is less clear. They may, however, have selected the softer, dead and dying parts of this invasive plant for oviposition. Whatever the reason, *C. helmsii* will eventually also cause problems for these species too because of the rapid accumulation of silt and organic detritus leading to

pond desiccation.

So what of the rest of the UK? In 1996, there were 305 recorded locations for *C. helmsii* across the country (Preston & Croft 1997). In Worcestershire alone, the area of which represents less than 1% of the total area of the UK, at least 50 locations for this plant are now known. This is probably typical of other heavily-populated areas of central and south-eastern England. In the Republic of Ireland we received the first confirmed record of *C. helmsii* early in 1998. The reason for its widespread distribution in highly populated parts of the UK is due to its deliberate release into the wild and its continued legitimate supply by aquatic nurseries under the name of "*Tillea recurvata*".

This initial investigation indicates that *T. cristatus* breeding is being restricted by the spread of *C. helmsii* in the UK. It is clear that the situation requires urgent monitoring. If it does turn out to be a major threat for *T. cristatus* and other species of amphibian we will need to counteract the worst of its effects. The evidence suggests we need to act now before the situation gets totally out of control. Preventing its sale at source is a logical first step.

Preston, C.D. & Croft, J.M. (1997) *Aquatic Plants in Britain and Ireland*. Harley Books, Colchester.

*If you have experienced similar problems with this plant, please forward information to:* Will Watson, HGBI West Midland Representative, c/o 25 Pitmaston Road, St. John's, Worcester WR2 4HY, UNITED KINGDOM.

Tel: (UK) 01905-425644  
Fax: (UK) 01905-749269



### New Amphibian Parasites From Sri Lanka

During recent studies (Zoological Survey of Sri Lanka) in the unique cloud forest habitat at Horton Plains nature reserve in central Sri Lanka, a number of unknown cestode parasites were discovered inhabiting the subcutaneous tissue of Rhacophorid treefrogs. Many of these treefrogs are undescribed species restricted to small (sometimes as small as 1 ha or less), isolated patches of hilltop forest which are separated by tracts of grassland. The Sri Lankan amphibian fauna is now thought to comprise more than 250 species, following a five-year field study by Pethiyagoda and Manamendra-Arachchi (1998) and the majority of new species are members

of the Rhacophoridae. Studies are urgently required on the effects of the new parasites on speciation, morbidity, survival of, and conservation measures for this restricted amphibian fauna.

*If any DAPTF members with particular experience of similar parasites would like to contribute to future studies, please contact:* Ansem de Silva, Faculty of Medicine, Dept. of Community Medicine, University of Peradeniya, Peradeniya, SRI LANKA.

[ansiem@med.pdn.ac.lk](mailto:ansiem@med.pdn.ac.lk)

*Reference:* Pethiyagoda, R. & Manamendra-Arachchi, K. (1998) Evaluating Sri Lanka's amphibian diversity. *Occasional Papers of the Wildlife Heritage Trust of Sri Lanka*, No. 2.



### Education Working Group Report

From Karen S. Graham,  
Working Group Chair

I accepted the position of Chair of the Education Working Group in fall 1997. That year, I sent a survey to 200 accredited North American Zoos and 36 US nature centres with the intentions of (1) determining how many of these institutions teach (through graphics and classroom exercises) about amphibian declines, (2) attracting participants for curricula development, (3) obtaining curricula from those institutes already teaching about declines and (4) bringing the DAPTF and the significance of amphibian declines to the attention of zoo and nature centre educators. Fifty percent of zoos and 61% of nature centres responded. While 58% of zoos and 36% of nature centres who responded to the survey display graphics on amphibians, only 23% of zoos and 5% of nature centres display graphics on amphibian declines. Sixty-two percent of zoos and 91% of nature centres present programmes on amphibians, but only 26% of the zoos and 27% of the nature centres present programmes on amphibian declines. Almost all respondents were interested in receiving amphibian decline curricula and graphics ideas.

Unfortunately, I received no curricula materials that dealt specifically with declines from my survey request. I have since obtained materials from Tennessee Aquarium, The Smithsonian, Toronto Zoo, and from Texas Parks and Wildlife, from which ideas can be adapted. I recently developed two activities that are ready to be sent to a list of formal and informal educators for pilot

testing.

On behalf of the DAPTF, I participated in a two-day workshop ("Frogs as Bio-indicators National Education Summit") hosted by Hamline University's Center for Global Environment Education in St. Paul, MN. Goals for education were discussed and some age-appropriate activity ideas regarding amphibians, deformities and declines were introduced.

At the annual meeting of the American Zoo Association's Amphibian Taxon Advisory Group (AAG) I emphasized the need for decline-specific graphics and education materials in zoos. It is a goal of the AAG to develop and maintain an active education subgroup, through which I hope to gain assistance in developing amphibian decline materials. It is my goal for the future to continue to pilot more curriculum ideas and to recruit participants for a working group who can aid in development, promotion and distribution of materials.

Contact: Karen S. Graham, Curator of Herps. & Fishes, Sedgewick County Zoo, 5555 Zoo Blvd., Wichita, KS 67212, USA.

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Experts Seek  
Consensus  
on Causes of  
Amphibian  
Abnormalities

From Jamie K. Reaser,  
US Dept. of State, OES/ETC.

On 5-7 November 1998 the San Diego Zoological Society hosted an interdisciplinary team of researchers in a workshop examining the causes of amphibian abnormalities in the United States and abroad. This was the third in a series of meetings on amphibian declines and abnormalities sponsored by the National Science Foundation. Grossly abnormal amphibians have been reported in the literature since the early 1600s. However, following the highly publicized 1995 discovery of deformed leopard frogs (missing limbs, with extra limbs etc.) by middle school students in Minnesota, reports of abnormal amphibians have surged. Concern that such abnormalities might signal environmental deterioration and broader ecological threats has prompted ecologists, developmental biologists, toxicologists and immunologists to apply their expertise to the problem.

Participants agreed that reports of amphibian abnormalities have increased dramatically in recent years and that at some sites, for some species, the percentage of

abnormalities is higher than would be expected in a "healthy" population. Amphibians of several species with differing life histories and behaviour have been impacted in varying ways. The majority of limb abnormalities appear to occur during limb development in tadpoles and salamander larvae. However, traumatic events (e.g. injury and UV-B damage) can also result in the emergence of abnormalities in adult amphibians.

It is unlikely that there is any single common cause for the various types of abnormalities observed, and more than one factor may be operating at any given site. There is good evidence that parasites, chemical contaminants and ultraviolet light can all cause a high frequency of abnormalities in amphibian populations. The different causative factors may operate by similar mechanisms, impacting similar ecological and developmental pathways to cause abnormalities.

Participants concluded that all of the major hypotheses are in need of further investigation to understand which factors are affecting which species and by what means at any given site. Such information is necessary to inform management and policy decision making.

A formal consensus statement is being prepared by programme organizers and will be made available to all interested parties.

### DAPTF RAPID RESPONSE FUND



While our Seed Grant programme enables us to fund a limited number of new research projects, it does not help us to fund DAPTF members who are faced with an emergency, such as a mass mortality event. We have therefore set up a Rapid Response Fund for which applications may be submitted at any time.

Applications should be submitted to Tim Halliday, preferably by e-mail ([t.r.halliday@open.ac.uk](mailto:t.r.halliday@open.ac.uk)). They must be concise, providing a clear description of the emergency situation, explaining how an award from the DAPTF will either alleviate the situation or enhance our understanding of the declining amphibian phenomenon, and they must include a budget. Bids should not normally exceed US\$2,000.

Tim Halliday, DAPTF  
International Director.



### DAPTF BOARD MEETING 1999

The next DAPTF Board Meeting has been scheduled for 13-14 June 1999. The Board will make decisions on actions needed to complete our mandate by 2001.

The Board will be dealing with two broad issues. What scientific accomplishments and products do we need to complete the DAPTF mandate? What should become of the DAPTF organization relative to IUCN-Species Survival Commission specialist groups dealing with amphibian conservation? We request comments and suggestions from the DAPTF network as we prepare the background working papers for the Board Meeting. Please send your thoughts to me or any one of the Board members.

Ron Heyer, DAPTF Chair, Office of Biodiversity Programs, NHB Mail Stop 180, Smithsonian Institution, Washington, DC 20560-0180, USA.  
Heyer. [Ron@nmnh.si.edu](mailto:Ron@nmnh.si.edu)



### Froglog Shorts

**DONATIONS** We gratefully acknowledge receipt of the following donations from 16 October through 31 December 1998. **Organizations:** Earth Images (Nancy Cannon), Northern Ohio Association of Herpetologists, Portal Publications Ltd., San Francisco Zoological Gardens. Thanks also to Rod Hall and British Airways Assisting Nature Conservation, who kindly provided a flight which enabled John Wilkinson to attend a recent workshop on amphibian and reptile conservation in Sri Lanka. **Individuals:** Connie Duersch, Miriam Heyer, Fui Lian & Robert Inger, J. Eric Juterbock, Jaqueline Lakocy, Lauren Livo, George Rabb, Christine Szymanski, David & Marvalee Wake.

**The US-Southwestern Working Group** is holding a meeting at the Phoenix Zoo on April 9th 1999. For further details and to submit suggestions contact Michael J. Sredl on 789-3515 or e-mail: [msredl@gf.state.az.us](mailto:msredl@gf.state.az.us)

**Volunteers** Approximately 30 volunteer positions are open in 1999 at the American Museum of Natural History's Southwestern Research Station in the Chiricahua Mountains in Portal, Arizona. For details and an application form please write to: Dr. Wade Sherbrooke, Director, Southwestern Research Station, American Museum of Natural History,

PO Box 16553, Portal, AZ 85632, USA.

Tel/fax: 520-558-2396

E-mail: [swrs@amnh.org](mailto:swrs@amnh.org)

### Field Course in Amphibian and Reptile Conservation Biology

Offered by: Michael J. Lannoo, Ph.D., Coordinator, U.S. Declining Amphibian Populations Task Force [mlannoo@gw.bsu.edu](mailto:mlannoo@gw.bsu.edu)

When: August 8th - 13th, 1999

Where: Iowa Lakeside Laboratory, Okoboji, Iowa (NW Iowa)

<http://www.public.iastate.edu/~Lakeside>

Cost: about US \$130.00 tuition plus \$135.00 room and board

Text (supplemental): Lannoo, M.J.(ed.) 1998. Status and Conservation of Midwestern Amphibians, U. of Iowa Press, Iowa City, IA.

Topics covered: Status and trends of native species, introduced species and their impacts, threats, management, the local situation as compared to the situation nationally and internationally, amphibian malformities. Enrollment will be limited to 10 participants. To register or for more information contact Sue Sprong at: [lakeside@iastate.edu](mailto:lakeside@iastate.edu)

This course will be preceded by an optional 3 week (July 18- August 6) course in Conservation Biology, Instructor: M.J. Lannoo, Text: Principles of Conservation Biology, G.K. Meffe and C.R. Carroll, 2nd ed.

**The Third International Symposium** on Genetics, Systematics and Ecology of Western Palearctic Waterfrogs website is at: <http://perdix.biologie.uni-mainz.de/sympwf/sympwf.htm>

An article on a positive association between pesticides and frog deformities can be found at: <http://www.abcnews.com/sections/science/DailyNews/frogs981106.html>

**US Working Group** Coordinator Michael Lannoo is pleased to announce that Gary Casper of the US Great Lakes Working Group will be taking over as Assistant Coordinator of the US Working Group. Gary's specific responsibilities will be to serve as US DAPTF liaison to the US Federal Task Force on Amphibian Declines and Deformities (TADD), and to expand the Great Lakes Working Group's website to encompass US DAPTF activities. Gary will remain as Chair of the Great Lakes Working Group.

**Small Grants** from the World Nature Association. The World Nature Association provides small grants for either conservation related field research or conservation and education projects. You need not be

affiliated with an institution or organization to apply. No award will exceed US\$2000 and we are interested in applications for smaller amounts. General criteria for funding are the following:

(1) The project location should be outside of the USA; (2) There should be involvement of local people; (3) Conservation education, sustainable development (if applicable) and conservation research should be stressed; (4) Preference will be given to "start-up" projects rather than those already receiving funds from larger organizations; (5) Applied research projects are preferred to basic research projects; (6) Grants cannot cover education costs (tuition, books) nor proposals that request only travel money. Deadlines for proposals are March 1 and October 1 of each year.

To obtain application forms and further information on projects funded by the WNA contact: World Nature Association, PO Box 673, Silver Spring, MD 20918-0673, USA. Fax: (301) 593-2522.



### Publications of Interest

Barnes, N.J. (1998) Chronic pollution in freshwaters, evaluation of ecological impacts and implications for water resource management. *Environmental Management & Health* **9**: 49-53.

Burbrink, F.T., Phillips, C.A. & Heske, E.J. (1998) A riparian zone in southern Illinois as a potential dispersal corridor for reptiles and amphibians. *Biol. Conservation* **86**: 107-115.

Driscoll, D.A. (1998) Counts of calling males as estimates of population size in the endangered frogs *Geocrinia alba* and *G. vitellina*. *J. Herpetol.* **32**: 475-481.

Driscoll, D.A. (1998) Genetic structure of the frogs *Geocrinia lutea* and *Geocrinia rosea* reflects extreme population divergence and range changes, not dispersal barriers. *Evolution* **52**: 1147-1157.

Driscoll, D.A. (1998) Genetic structure, metapopulation processes and evolution influence the conservation strategies for two endangered frog species. *Biol. Conservation* **83**: 43-54.

Ehmann, H. (Ed.) (1997) *Threatened Frogs of New South Wales: Habitats, Conservation and Status*. Frog & Tadpole Study Group of New South Wales, Sydney.

Estrado-Acosta, A.R. (1998) Sistemática de las ranas ribereñas de

Cuba (Leptodactylidae: *Eleutherodactylus*) con la descripción de una especie nueva. *Caribbean Journal of Science* **34(3-4)**: 218-230.

Gent, T. & Gibson, S. (Eds.) (1998) *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee, Peterborough, UK.

Carpenter, J. (1998) Of Frogs and Toads: poems and short prose featuring amphibians. Lone Press. ISBN 0-9666674-0-9, 131 pp. Copies are available from the Lone Press, PO Box 3271, Sewanee, TN 37375, USA and cost \$10.95 each plus \$3.50 shipping for the first copy then \$1.00 shipping for each additional copy.

Munger, J.C., Gerber, M., Madrid, K., Carroll, M.-A., Petersen, W. & Heberger, L. (1998) US National Wetland inventory classifications as predictors of the occurrence of Columbia spotted frogs (*Rana luteiventris*) and Pacific treefrogs (*Hyla regilla*). *Conservation Biol.* **12**: 320-330.

Semlitsch, R.D. & Bodie, J.R. (1998) Are small, isolated wetlands expendable? *Conservation Biol.* **12**: 1129-1133.

Semlitsch, R.D. (1998) Biological determination of terrestrial buffer zones for pond-breeding salamanders. *Conservation Biol.* **12**: 1113-1119. (Reprints of the above two papers are available from: Reprint Dept., Savannah River Ecology Lab., PO Drawer E, Aiken, South Carolina 29802, USA.)

Sinsch, U. (1998) Biologie und Ökologie der Kreuzkröte. Laurenti Verlag, Bochum. ISBN 3 933066 01 8, 222 pp. (*Biology and ecology of the natterjack toad, in German.*)

Welsh, H.H. Jr & Ollivier, L.M. (1998) Stream amphibians as indicators of ecosystem stress: a case study from California's redwoods. *Ecological applications* **8(4)**: 1118-1132.



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