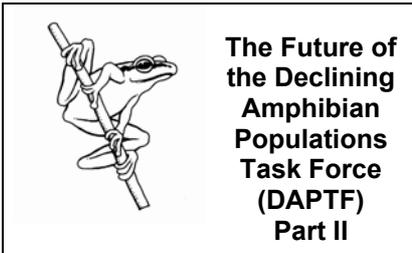


# FROGLOG

Newsletter of the Declining Amphibian  
Populations Task Force

August 2005, Number 70



**The Future of  
the Declining  
Amphibian  
Populations  
Task Force  
(DAPTF)  
Part II**

**DAPTF at the 5<sup>th</sup> World Congress of  
Herpetology (WCH5), Stellenbosch,  
S. Africa**

The development of the DAPTF has been closely linked with that of the WCH; it was at WCH1 in 1987 that the amphibian community first became aware that amphibian declines are a global phenomenon. WCH5 in Stellenbosch, maintained the tradition of well-organised conferences against a background of splendid social events, for which we thank Ernst Beard and his team.

The conference opened with a plenary talk by Simon Stuart of the World Conservation Union (IUCN), who reviewed the results of the Global Amphibian Assessment (GAA) and set out how it will continue to operate between now and 2010. This was followed by a day-long symposium on amphibian declines, organised by the DAPTF, in which speakers addressed a number of aspects of amphibian declines such as pesticides and other chemical stressors, diseases, parasites and the role of captive breeding in amphibian conservation. (Abstracts from this symposium can be obtained from the DAPTF office. Please contact Tim Halliday at [t.r.halliday@open.ac.uk](mailto:t.r.halliday@open.ac.uk)).

WCH5 provided us with a vital opportunity to discuss the future objectives and continuing role of the DAPTF in investigating the causes of global amphibian decline. We were very heartened by the many people who expressed the wish that the DAPTF should continue its current work, especially its Seed Grant programme and *Froglog*. Therefore,

we intend to continue our current operations until June 2006. Looking beyond that date, we are discussing a partnership with two initiatives that are focused on updating the GAA and implementing conservation actions. The nature and objectives of this partnership are currently being explored and we are hoping to announce the details after a 'summit meeting' on amphibian conservation and policy issues to be held in Washington DC in September.

The purpose of this meeting is to create a strategic action plan known as the ACAP – the Amphibian Conservation Action Plan. This Action Plan will be used to prioritize amphibian research and conservation priorities and develop a budget and fund-raising strategy for their immediate implementation. At present, we envisage that the DAPTF will continue to provide the scientific expertise that will inform conservation action. We also hope to continue and expand our Working Group network, Seed Grant and Rapid Response programmes and the production of *Froglog*, to represent the entire partnership. For further information please contact Jeanne McKay at [dapftf@open.ac.uk](mailto:dapftf@open.ac.uk) or Don Church at [don.church@conservation.org](mailto:don.church@conservation.org)

**Tim Halliday and Jeanne McKay**



**Harlequin frogs  
back? Some  
thoughts and  
speculations**

**By Stefan Lötters, Enrique La  
Marca, Ronald W. Gagliardo, Celsa  
J. Señaris and Michael Veith**

Amphibian extinction is a global phenomenon (cf. Stuart *et al.* 2004). The Neotropical harlequin frogs, genus *Atelopus* (Bufonidae), have suffered from such drastic extinction trends probably more seriously than any other large amphibian genus (Lötters *et al.* 2004; La Marca *et al.* 2005). According

to the 2002-2004 Global Amphibian Assessment by IUCN, Conservation International and NatureServe, 84% of the 77 described *Atelopus* are at risk of extinction with three species already extinct

(<http://www.globalamphibians.org>). In addition, most of the more than 35 undescribed species have undergone a comparable trend (La Marca *et al.* 2005). Extinction trends occur in the core area of the genus' distribution (Central America and northern Andes of South America plus adjacent areas), whereas the few taxa (<10) in the Guianas, the Amazon Basin and southern Peru plus adjacent Bolivia seem to be ok.

This severe extinction trend of an entire vertebrate genus (Lötters *et al.* 2004) has been linked to the life history of *Atelopus* species (i.e. occurrence in humid montane forest, affinity to stream habitats, small geographic ranges etc.; cf. Lips *et al.* 2003), and to mortality due to presence of the epizootic fungus *Batrachochytrium dendrobatidis* (Bd) in combination with climatic change (e.g. Pounds & Puschendorf, 2004). The data above support our concern that the entire genus will become extinct in the near future (Lötters *et al.* 2004). This notion was recently revised when four reproducing harlequin frog species from the core of the genus' distribution, all except one yet undescribed taxon ranked in the IUCN Red List category "Critically Endangered"

(<http://www.globalamphibians.org>), were unexpectedly rediscovered: (1) *A. cruciger* from coastal Venezuela, last seen in 1986 (Manzanilla & La Marca 2004), was rediscovered at a previously unknown locality within the known geographical range: three individuals in January 2003 and > 20 specimens including juveniles in June and July 2004 (Manzanilla & La Marca 2004; *unpubl. data*). (2) *A. mucubajiensis* from Andean Venezuela, last seen in March 1994 (Lötters, 1996), was rediscovered

within its known range: one adult female with eggs in September 2004 (Barrio 2004). (3) *Atelopus* sp. "32" (cf. La Marca *et al.* 2005) from Andean Venezuela, last seen in October 1995 (García-Pérez, 2005), was rediscovered at one of its two known localities: in total 20 tadpoles in February and December 2004 (García-Pérez 2005). (4) *A. varius* from Central America, in Costa Rica last seen in 1996 and still present in Panama (<http://www.globalamphibians.org>), was rediscovered at a previously unknown Costa Rican locality within the known geographical range: three specimens including one subadult in December 2003 (*unpubl. data*).

Known sites for all four species have been constantly monitored with different intensities and methods (La Marca & Lötters 1997; Barrio 2004; Manzanilla & La Marca 2004; García-Pérez 2005; *unpubl. data*) and without success until recently. The question is how to interpret the recent findings of apparently reproducing populations of species against the background of amphibian extinction?

Due to the limited number of data and the different quality of monitoring efforts, detailed analyses cannot be performed. Therefore we here discuss some hypothetical considerations.

**A. Intensified searching:** Harlequin frogs are famous because of the bright colors of many of the species, slow clown-like movement and diurnal activity (see Lötters 1996). The sad situation of many harlequin frogs from Costa Rica south to Peru (e.g. La Marca & Reinthaler 1991; Pounds & Crump 1994; La Marca & Lötters 1997; Lips 1999; Ron *et al.* 2003; Manzanilla & La Marca 2004; Rueda-Almonacid *et al.* 2004; La Marca *et al.* 2005; Lötters *et al.* 2005) certainly has increased people's attention. Taking Andean Venezuela as an example, in the early 1990's populations of all taxa were sporadically monitored (La Marca & Lötters 1997). We are currently aware of recent additional monitoring efforts including public local manpower by different parties (e.g. Barrio 2004; García-Pérez 2005; *unpubl. data*).

Also the fact that *A. cruciger* and *A. varius* were rediscovered at new sites within their known ranges may suggest that we are now looking harder for harlequin frogs and discover surviving populations in remote places, previously overlooked.

The attraction of *Atelopus* (as a possible "flagship" for amphibian protection) is also reflected by general conservation measures, as for example the "Iniciativa Atelopus" by

Conservation International with the goal to protect Andean amphibians including harlequin frogs (<http://www.andescbc.org/atelopus/>).

**B. Species survival:** *Bd* is one of the most important causes to be responsible for, or at least involved in extinction trends in harlequin frogs (La Marca *et al.* 2005). Of the populations of the four species rediscovered, only *A. varius* was positively tested for *Bd* (two of three specimens; *unpubl. data*). There are no data showing the presence or absence of *Bd* in the other three species, although specimens of *A. cruciger* and *Atelopus* sp. "32" are suspected to be free of *Bd* (*unpubl. data*). We will not rule out that the newly found population of *A. cruciger* and *A. sp.* "32" have never been infected with *Bd*—but at least we are aware of the presence of *Bd* in other populations of *A. cruciger* (Bonaccorso *et al.* 2003; *unpubl. data*). The single recently caught specimen of *A. mucubajensis* died in captivity shortly after it was found, although this was probably not due to *Bd* (C.L. Barrio A., *pers. comm.*). Nevertheless, conspecific individuals collected several years ago in the same general area were *Bd*-infected (*unpubl. data*).

Recently, Retallick *et al.* (2004) reported that remnant populations of the Australian *Taudactylus eungellensis* (Myobatrachidae) that suffered drastic declines perhaps due to *Bd*, now persist in the wild with stable, endemic *Bd*-infections.

All of this information leads up to several questions. Do the *Atelopus* specimens found maybe represent survivors? Can some harlequin frogs exist with *Bd* or clear the infection? Has *Bd* evolved less deadly strains?

**C. Population response to favourable environmental conditions:** Although scientists and conservationists may have searched harder for *Atelopus*, they have done so for years before the rediscoveries. So the question arises why four species were more or less synchronously rediscovered and only now, although they must have persisted all the time? An explanation could be that they had experienced an almost synchronous population boost after a long period of persistence in low numbers. In searching for plausible null-models for long-term development of amphibian populations, Alford & Richards (1999) demonstrated that, on average, amphibian populations tend to steadily decrease. However, one or two years of successful reproduction that only occasionally lead to a strong increase

in population size are sufficient for long-term persistence.

Thus, presumably favourable environmental conditions (maybe climate) prior to our recent findings could have synchronously and positively affected *Atelopus* populations in a way that they have become "more visible" now.

On the other hand, *Atelopus* species lay hundreds of eggs (Lötters, 1996). How to explain the few specimens found only in each of the four species (except in *A. cruciger*)? Does this mean that these (and probably other) species in the past were weakened so heavily that they cannot recover properly?

Despite the speculative character of these scenarios and considerations, the recent findings of four live and reproducing *Atelopus* species, along with two previously unknown species in Colombia and Ecuador (J.V. Rueda and L.A. Coloma, *pers. comm.*), demonstrate that, although this genus is no longer a significant component of the Neotropical amphibian fauna, it is not too late to save at least some harlequin frogs from extinction. Urgent and effective conservation programs are needed to help the rediscovered and newly discovered species to survive. While population monitoring will be important, in some cases such as with *A. varius* in Costa Rica, certain species may be at such risk that during the time a conventional monitoring study is being done, we may see the species cross the line to extinction (*unpubl. data*). For this reason, we should consider emergency extractions of small groups of specimens for the purpose of forming captive assurance colonies (i.e. *ex situ* conservation). More effort should also be made in the investigation of the biology and pathogenicity of *Bd* itself. In addition, these findings should motivate scientists and conservationists to continue and intensify their search efforts (also involving local people) for other harlequin frogs and to include them in conservation and rescue programs.

#### Acknowledgements

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Science Foundation under grant DEB-0130273 to Bruce E. Young (under the project R.A.N.A.; <http://rana.biologia.ucr.ac.cr>).

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#### An unexpected honour

By Jeanne McKay

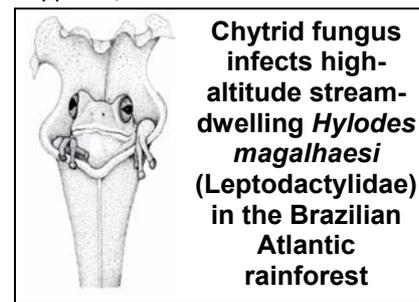
A newly-described Sri Lankan frog has been named after Tim Halliday and is called *Philautus hallidayi* (pictured above and on the cover page). The species description includes the following:

"The species name, in the Latin genitive singular, is a patronym honouring Timothy Richard Halliday (b. England, 1945), since 1994 International Director of the IUCN / SSC Task Force on Declining Amphibian Populations (DAPTF), recognizing also his three decades of research on amphibians and his exceptional commitment to advancing our understanding of the global amphibian decline crisis."

Upon receiving the news, Tim replied; "This is a great honour for me and a nice way to acknowledge the DAPTF."

Meegaskumbura, M. & Manamendra-Arachchi, K. (2005) Description of eight new species of shrub frogs (Ranidae: Rhacophorinae: *Philautus*

from Sri Lanka. *Raffles Bull. Zool: Suppl.* **12**; 305-338.



#### Chytrid fungus infects high-altitude stream-dwelling *Hyloides magalhaesi* (Leptodactylidae) in the Brazilian Atlantic rainforest

By Ana Carolina O. Q. Carnaval, Luís Felipe Toledo, Célio. F. B. Haddad, and Fábio B. Britto

Infections by the chytrid fungus *Batrachochytrium dendrobatidis* have been associated with well-documented instances of amphibian population declines in several regions of the world (Berger et al., 1998, 1999). In South America, the disease has been diagnosed in Ecuador, Venezuela, Uruguay, Peru, and Argentina (see Herrera et al., 2005 for a review). Based on morphological, histological, and molecular data, we found evidence of infection in *Hyloides magalhaesi*, a high-altitude stream-dwelling leptodactylid endemic to the Brazilian Atlantic rainforest. In 2004, we collected five tadpoles with abnormal mouthparts, which showed total or partial loss of teeth, in the Municipality of Camanducaia, State of Minas Gerais (22°45'19" S, 46°08'41" W, ca. 1500 m above sea level). Infection by the chytrid fungus was confirmed through Haematoxylin and Eosin and Periodic Acid Schiff histological preparations (Junqueira and Junqueira, 1983), as well as Annis *et al.*'s (2004) specific DNA-based assay for *B. dendrobatidis* identification. This represents the first record of *B. dendrobatidis* in Brazil

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## Art Exhibition

### Two Cultures: Collection

On October 1st 2005, an Art/Science exhibition examining amphibian declines will open at the Hall Center for the Humanities in Lawrence, Kansas. This exhibition was conceived by John Simmons, the Herpetology Collections Manager at the Kansas Museum of Natural History and Dr. Marjorie Swann. In this exhibition, artist Tracy Hicks will focus on how scientific specimens are collected and preserved in the field and the museum, emphasizing how scientific specimens become objects of cultural heritage when they are collected and preserved.

*From the proposal:*

"...we now understand that the practice of science is never purely objective. Both the questions scientists ask and the ways in which they try to answer them are always culturally determined; thus natural

history collections necessarily embody the beliefs and ideals of the cultures which create and preserve such groups of physical objects. When it is collected in the wild, a living organism is removed from its original environment and re-contextualized within a cultural realm where its treatment and interpretation are shaped by ever-changing concepts of humanity's relationship to nature, the social and political dynamics of scientific inquiry, and the ethics of collecting. The places chosen for expeditions, the organisms collected, the way fieldwork is conducted, the preservation technology employed, and the use of specimens in research are thus all shaped by cultural forces. This project will allow audiences to gain a better understanding of how science and culture interact in these processes of collecting."

To accomplish these goals, the most significant collection of Asian amphibians from the Field Museum in Chicago were mined and forty-one specimens were selected to be cast and correlated with New World specimens from the Kansas Collection. This project can be viewed online at: <http://www.tracyhicks.com/Art/weblog.php>. A catalogue will be produced incorporating comments collected from the blog site. To add your comments to this project please sign-up to the blog and post comments.

The forty plus year history of Tracy Hicks' art work has continually examined correlations between what we both collectively and individually find precious enough to preserve.

For further details please contact Tracy Hicks at: [tracy@tracyhicks.com](mailto:tracy@tracyhicks.com) or at: [www.TracyHicks.com](http://www.TracyHicks.com).

## Books received

• Sydney Ross Singer & Soma Grismaijer. (2005) *Panic in Paradise. Invasive Species Hysteria and the Hawaiian Coqui Frog War*. ISCD Press, Hawaii Press. (112 pp.)

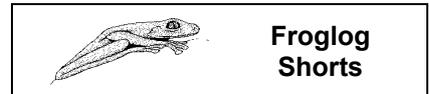
When populations of the Puerto Rican frog *Eleutherodactylus coqui* became established on Hawaii it caused panic and hysteria among some sections of the public. This book gives a full account of this story, exposing the folly behind the hysterical response of the media and officialdom in Hawaii.

• William E. Duellman. (2005) *Cusco Amazónico. The Lives of Amphibians and Reptiles in an Amazonian Rainforest*. Comstock Publishing, Ithaca, NY. (433 pp.)

Sure to become a classic in herpetological natural history, this

book describes in detail the 151 species of amphibians and reptiles of a small region of the Amazon basin in south-eastern Peru which Bill Duellman has been studying for more than 30 years.

Tim Halliday



## Froglog Shorts

### New Regional Working Group Chairs:

A warm welcome to our new Working Group Chairs for:

**Israel:** Eldad Elron

**Mexico:** Luis Zambrano

**Australia:** Stephen Richards

**Peru:** Victor Morales

We would also like to thank the following retiring Chairs for their hard work and continued support: Joy Hoffman (Israel), Michael J. Tyler (Australia) and Antonio Salas (Peru).

### DONATIONS:

The DAPTF would like to thank Dr. Mike Lannoo for his generous donation of half of the royalties obtained from the sale of his new volume:

*Status and Conservation of U.S. Amphibians*. (2005) M. J. Lannoo (Ed.), University of California Press, Berkeley, California.

We also gratefully acknowledge receipt of the following donations received prior to July 25, 2005: Minnesota Herpetological Society and International Amphibian Day.

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