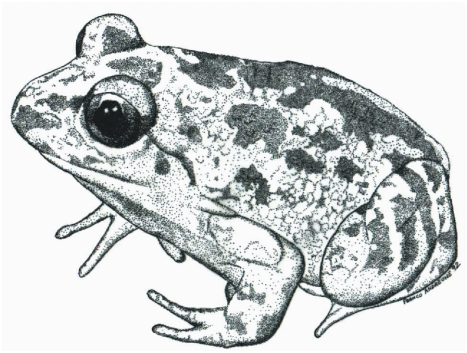
ISSN 1026-0269

Pelobates fuscus insubricus by Franco Andreone



FROGLOG

Newsletter of the Declining Amphibian Populations Task Force

February 2004, Number 61.

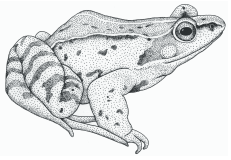
A Workshop on the Amphibians of Madagascar at Gland

From Franco Andreone

A workshop on the Global Amphibian Assessment (GAA) for the Madagascan species was held at IUCN headquarters in Gland (Switzerland) on 22 to 25 September 2003. Six among the most prominent herpetologists working on the Madagascan amphibians (F. Andreone, J.E. Cadle, F. Glaw, C.J. Raxworthy, D. Vallan, and M. Vences) evaluated the status of the 215 endemic species of amphibians of the Grand' Ile, under the co-ordination of S.N. Stuart and N.A. Cox (of the Center of Applied Biodiversity Science at Conservation International and the IUCN Species Survival Commission). The workshop was the occasion of analyzing a huge draft report prepared by R.A. Nussbaum (who was unable to attend the meeting due to other commitments).

From this work, it emerged that the endemic amphibians of Madagascar are facing a critical point, with the incipient deforestation of the residual rain and deciduous forests. For many species, the distribution area is very small or the data are still deficient. For almost all the species it was possible to draw an updated and realistic distribution map and assign consistent IUCN Red List Categories. Of the 215 species evaluated, 7 are Critically Endangered, 20 are Endangered and 25 are Vulnerable. This gives a total of 52 threatened species (24% of the total). The real situation may turn out to be worse than this, however, because many of the 44 species that were listed as Data Deficient might eventually prove to be threatened. The distribution maps will soon become the basis for an in-depth GIS evaluation and, eventually, for the definition of Madagascar's amphibian diversity hotspots. This will therefore be the occasion for proposing new protected areas with a high amphibian biodiversity or the presence of rare species. The data will become public (as for the other GAA regions) next year. In the meantime, they will be used as a tool to propose possible CITES listing changes, or banning of the trade of some species (e.g. some mantellas).

The Global Amphibian Assessment – Working Group on Madagascar [F. Andreone, J.E. Cadle, N.A. Cox, F. Glaw, R.A. Nussbaum, C.J. Raxworthy, S.N. Stuart, D. Vallan, and M. Vences]. For further information, contact: Simon Stuart
s.stuart@conservation.org



Amphibian Colonization of Mitigation Wetlands in Nebraska

By Mark M. Peyton

Bob Brodman reported in the October 2003 *Froglog* on the colonization of restored wetland areas on the Kankakee Sands property by amphibians. We have had similar results in Nebraska.

The Central Nebraska Public Power and Irrigation District along with the Nebraska Public Power District, as mitigation for their five hydroelectric power plants, have purchased two properties along the Platte River in Nebraska totalling over 3,000 hectares. In the past two years the Districts have developed over eight kilometres of linear sloughs, potholes, and a large 15 hectare pond/wetland.

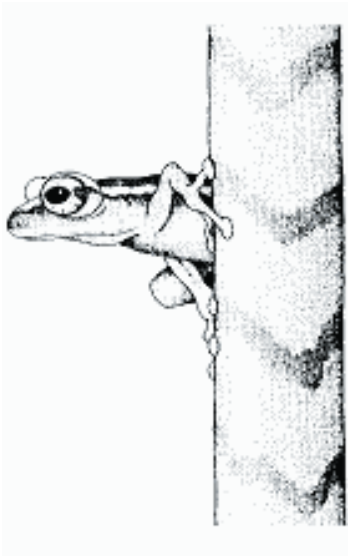
The purpose of these floodplain wetlands is to improve migratory habitat for whooping cranes, sandhill cranes, ducks and geese. To date there has been extensive duck and geese activity on these wetlands with limited crane use. Amphibians however, have colonized the shallow, fishless waters in amazing numbers.

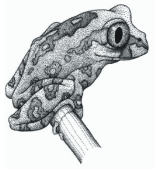
Night-time calling and day-time search surveys as well as drift fences and pitfall traps have identified seven amphibian species in and near the wetlands, with five documented as reproducing. Most numerous in the survey to date are southern leopard frogs (*Rana blairi*). Also common are northern chorus frogs (*Pseudacris triseriata*), bull frogs (*Rana catesbiana*), Woohouse toads (*Bufo woodhousei*) and plains spadefoot toads (*Scaphiopus bombifrons*).

Identified at the areas, but not yet documented as reproducing in the reconstructed wetlands were grey tree frogs (*Hyla chrysoscelis*) and barred salamanders (*Ambystoma tigrinum*).

Additional wetlands construction is planned for each property and annual monitoring of amphibian populations will continue.

For more information contact: Mark M. Peyton, Senior District Biologist, Central Nebraska Public Power and Irrigation District, 320 Ave. D, Gothenburg, NE 69138, USA.
mpeyton@cnppid.com





Annual Meeting Report from Canada

From David Galbraith

The Declining Amphibian Population Task Force for Canada, or DAPCAN, was founded in 1991 and completed its primary task, the publication of *Amphibians in Decline. Canadian Studies of a Global Problem* (Herpetological Conservation Vol.1), under the editorship of DAPCAN National Coordinator Dr. David Green in 1997. Participants in DAPCAN desired to continue and extend their work to include reptiles, and so organized the Canadian Amphibian and Reptile Conservation Network / Reseau Canadien de Conservation des Amphibiens et des Reptiles (CARCNET/RÉCCAR). In September of 2003, Dr. David Galbraith was appointed Chairperson of the Board of Directors of CARCNET/RÉCCAR for a four-year term. As such, he will serve as the Canadian coordinator for DAPTF until 2007.

The 13th annual meeting, and the 8th under the banner of CARCNET/RÉCCAR, took place 11-14 September 2003 on Pelee Island in Lake Erie, the southern-most point in Canada. The island itself has been designated as an Important Area for Reptiles and Amphibians (IMPARA) by CARCNET/RÉCCAR.

Approximately 100 people attended the meeting from across Canada and also from the northern United States, the largest attendance at any CARCNET/RÉCCAR meeting to date. Of 45 oral presentations, 18 focused on status and recovery of amphibians. These included a keynote by Dr. James Bogart of University of Guelph, on the origins of the *Ambystoma laterale-texanum* complex on Pelee Island, in which polyploid hybrid individuals all bear a similar mitochondria haplotype not derived from either obvious parent, a possible marker of a Pleistocene hybrid origin.

Oral and poster presentations on amphibians were interspersed throughout the meeting, and included several studies on immune system effects of handling and exposure to pesticides in ranids, effects of road mortality, ecological risk assessments, effects to salamander populations of various forestry regimes in pine forests, gene flow among semi-isolated frog populations, and effectiveness of interventions such as captive breeding. Of 16 posters scheduled for presentation at the meeting, nine concentrated on amphibians. Several speakers emphasized the importance of habitat loss and road mortality to amphibian populations. This theme was extended by keynote speaker Dr. Ronald J. Brooks from University of Guelph. Dr. Brooks is well known for both long-term studies of amphibian and reptile populations and also for commentaries on the relationship between human society, development and survival of ecosystems and species at risk.

The meeting was sponsored by the Pelee Island Winery and the TD Friends of the Environment Foundation, and in addition to being the 8th meeting of CARCNET/RÉCCAR it was also the 3rd annual Pelee Island Winery Endangered Species Festival.

Contact: Dr. David A. Galbraith, Chairperson, CARCNET/RÉCCAR, Manager of Biodiversity Projects, Royal Botanical Gardens, P.O. Box 399, Hamilton, Ontario L8N 3H8, Canada.
Tel: +1 905 527-1158 ext. 309
Fax: +1 905 577-0375
dgalbraith@rbg.ca

A Study of the Plethodontid Salamander Populations at Raccoon Creek State Park, Pennsylvania.

By Jennifer D. Haney & Dr. Mary S. Kostalos

Plethodontid salamanders are lungless. They rely entirely on cutaneous respiration (Bruce *et al.,* 2000) for all gaseous exchanges i.e. they breathe through their skin; allowing passage of many environmental contaminates (Feder and Burggren, 1985). The plethodontid salamanders are found exclusively in the Americas with the exception of some members of the genus *Hydromantes*, which are restricted to Italy and part of southern France (Arnold *et al.,* 2000). These New World plethodontid salamanders face tremendous challenges to survive in the wake of global amphibian declines (Stebbins and Cohen, 1995; Vial and Saylor, 1993). A major obstacle in determining decline of salamander populations is the lack of baseline data on current population status and basic biological information such as reproductive schedule, environmental stresses and life expectancy of these organisms (**www.mp2-pwrc.usgs.gov/naamp/**). An intensive study was therefore conducted on the salamander population at Raccoon Creek State Park, Pennsylvania.

Two separate springs, approximately one mile apart, were compared. Frankfort Mineral Springs (located near the park office) and Beach Spring (located near the public swimming area). The Frankfort Mineral spring is natural (once a nineteenth century health spa) with a high concentration of calcium and magnesium. Despite the elevated mineral concentrations, environmentally sensitive liverworts are abundant. The Beach spring is a natural spring with anthropogenic modification (a cement watering trough was erected) and is regularly visited by locals for drinking water.

To monitor terrestrial populations, cover boards of green cherry wood (2"X10"X1") were placed in pairs, within six feet from both springs and flush with the forest floor. The pairs were arrayed 6 metres apart. This procedure followed the USGS standard method of terrestrial salamander monitoring (**www.mp2-pwrc.usgs.gov**). Once a week from May, 2002 to March, 2003 terrestrial counts of salamanders were performed as well as chemical analysis of the spring water and observational counts of salamanders in the water within the cave and on the cave walls. An invertebrate analysis was also completed to determine the health of each stream.

Upon completion of the study, a total of 55 adult salamanders had been found at the Frankfort Mineral Spring, 44 of which were northern dusky (*Desmognathus fuscus*) (35 in the water, 9 under cover boards). Other adult salamanders found were 2 mountain dusky (*D. ochrophaeus*) and 6 northern slimy (*Plethodon glutinosus*) within the mineral water and 3 northern two-lined salamanders (*Eurycea bislineata)* under cover boards. Of the 55 adult plethodontid salamanders, 43 were found in the mineral water and completely covered with orange iron hydroxide precipitate. In March and April of 2003, eggs and numerous juvenile northern dusky salamanders were also found within the mineral water. No evidence was found of dead, deformed or unhealthy individuals. The Beach spring had a total count upon completion of 18 individuals, 10 northern dusky, 4 mountain dusky, 1 northern slimy and 3 northern two-lined salamanders. All the Beach salamanders were found under boards. A treated board next to

the modified watering trough (placed there by others for people to stand on while collecting water) had the highest observational counts (5 northern dusky and all 4 of the mountain dusky). No evidence was found of dead, deformed or unhealthy individuals. Many more salamanders were found at Frankfort spring than Beach spring over the period of study (55 vs. 18). At both springs the most common salamander was the northern dusky with four times the number being recorded at Frankfort (44 vs. 10).

Water analysis indicated that the Frankfort spring had much higher levels of iron, magnesium and calcium (Ca mg/L mean of 163, Mg mg/L mean of 76) than the Beach spring (Ca mean of 113 mg/L, Mg mean of 46 mg/L). Typical freshwater calcium levels range from 4-100 mg/L. Typical freshwater magnesium levels range from 5-50 mg/L. Levels of magnesium and calcium are elevated enough to cause an orange precipitate to form on the wall of the Frankfort spring and to approximately 10 meters downstream, resembling acid mine drainage (AMD). The pH of both springs remained steady throughout the study with a mean of 7.02 at Frankfort and a mean of 7.36 at Beach. The temperatures at each spring were a mean of 12° C.

The invertebrate and organism survey showed that there were no invertebrates in the portion of the Frankfort spring containing significant amounts of iron precipitate, only salamanders. Many invertebrates were found, however, further downstream where the iron precipitate becomes diluted by the Traverse Creek, where juvenile northern dusky salamanders were also recorded. Few invertebrates or other organisms were found at the Beach spring with the exception of numerous amphipods (scud).

At Frankfort Mineral Spring, northern dusky salamanders are abundant despite the iron precipitate and the salamanders' environmental sensitivity. Many healthy adults, as well as eggs and numerous juveniles, were observed. Further monitoring will be necessary to confirm the status of this population. The continuous flow of water and the rocky habitat (both terrestrial and aquatic) make this spring a suitable habitat. Although the area is protected from development because it is within a state park, further steps should be taken to protect this area and the salamander population. Some such steps would be the erection of a small natural rock wall, with signs educating the public of the salamanders' sensitivity and the importance of their protection, as well as stream restoration to ensure continued habitat for these populations.

The Beach Spring supports a much smaller population of salamanders. The anthropogenic modifications there apparently affect these salamanders much more than the high mineral concentrations of the Frankfort Mineral Spring. A cement watering trough erected at the site collects the water, minimizing runoff. This causes sediment to build up and occasional drying up of the entire stream, thus limiting the habitat for amphibious species. This could be alleviated through restoration of the stream and elimination of the cement trough. In addition many of the salamanders at Beach Spring were found under a board (as mentioned earlier) next to the trough. This board is intended for people to stand on while collecting water, thus placing the salamanders in a precarious position!

Disturbances of these spring areas are common due to the frequency of park visitors at the sites. As a result of these disturbances and the endemic sensitivities of these salamanders, protection of these springs and surrounding habitats is vital for the continued existence of plethodontid salamanders in the Raccoon State Park.

References

Arnold, E.N, Burton, J.A. and Ovenden, D.W. (2000) *Reptiles and Amphibians of Britain and Europe.* Collins.

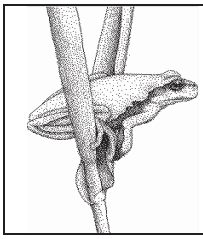
Bruce, R.C.,Jaeger, R.G. and Houck, L.D. (2000) *The Biology of Plethodontid Salamanders.* Kluwer Academic Publishers.

Feder, M.E. and Burggren, W.W. (1985) Skin breathing in Vertebrates. *Scientific American* **253:** 126-142.

Stebbins, R and Cohen, N. (1995) *A Natural History of Amphibians.* Princeton University Press.

Vial, J.L. and Saylor, L. (1993) The Status of Amphibian Populations: a Compilation and Analysis. *IUCN/SSC DAPTF Working Document No.1.*

Contact: Jennifer Haney, 107 Platt Rd., Clinton, PA 15026, USA.
JHaney@Chatham.edu

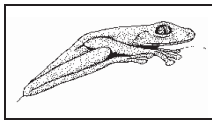


Reports on DAPTF Seed Grants

Recipients of DAPTF Seed Grants are generally expected to publish the results of their projects in refereed journals, or as articles in *Froglog.* They are also required to send us reports, so that their results can be made available to DAPTF members. Below is a list of reports that we have received recently. Anyone wanting a copy of a report should contact the author in the first instance; we can supply copies if you cannot reach the author.

Savitha Krishna (2001) Establishing baseline data of anuran populations to monitor their fluctuations in the in the Western Ghats of Karnataka (South India).
savithkn@hotmail.com

Daniel Ariano Sánchez (2003) Monitoreo y Evaluación Preliminar de las Poblaciones de Anfibios de las familias Hylidae y Plethodontidae presentes en el Bosque Húmedo Montano Bajo del Parque Ecológico Florencia, Sacatepequez, Guatemala. (We are preparing a translation of this report.)
proyectos@parqueecologicoflorencia.com



Froglog Shorts

DONATIONS **We gratefully acknowledge receipt of these donations**, received prior to January 27, 2004. **Individuals:** Albert W. Spencer**,** Stephane Ostrowski**,** J. Eric Juterbock**,** Angela Sondenaa**,** Edwin E. Leuck, II, Kraig Adler, Erik Kiviat, John C. Harshbarger, Jr., Elliott J. Tramer, Robert D. Bernstein, Edward W. Styskel, Erick Blackwell, Carlos Davidson, Peter Hovingh, Robert W. Hansen, Harold Laughlin, Stephen Crossthwaite. **Institutions:** Desert Fishes Council, Tucson Herpetological Society, Zoological Society of Philadelphia, California Academy of Sciences, Melbourne Zoo, Jumping Frog Research Institute, Rosamond Gifford Zoo, Audubon Commission, Minnesota Herpetological Society, Pacific Rivers Council, Inc.

SIMPOSIUM SOBRE EL DECLIVI DE LES POBLACIONS D'AMFIBIS / *Simposium Sobre el Declive de las Poblaciones de Anfibios* /

Symposium on Declining Amphibian Populations To be held from the **5 to the 7 of March 2004** in the city of Lleida, under the auspices of the Escola Tècnica Superior of Enginyeria Agrària i Forestal (ETSEA) of the University of Lleida, Catalonia, Spain. *For further information, please contact Delfí Sanuy of the organising committee:* **dsanuy@prodan.udl.es**

CNAH PDF Library: The Center for North American Herpetology, recognizing that the future of our profession is dependent on a blending of old technologies with new, is pleased to announce the creation of the CNAH PDF Library. Our foundation has gathered available herpetological pdf titles sent to us by various authors. The list is searchable by author, year date, and subject. Users can read a title using Adobe Acrobat Reader or download it for printing using Adobe Acrobat. This permits herpetologists to download and print only those titles of specific interest to them. Titles added to this list will generally be those that deal with the North American (north of Mexico) herpetofauna; however, appropriate titles dealing with higher level taxonomy will be listed regardless of geographic coverage. CNAH is pleased to make available this academic service to herpetologists for the first time in the history of our profession. The CNAH PDF Library can be accessed at: **www.cnah.org**

New Book on Amphibian Declines

Amphibian Decline: An Integrated Analysis of Multiple Stressor Effects (2003) edited by Greg Linder, Sherry K. Krest, Donald W. Sparling. Published by SETAC Press, Pensacola, FL (ISBN 1-880611-55-4, Hardcover, 368p), $98 for non-SETAC members, $60 for members.

Although the effects of environmental stressors on amphibians have recently received increased attention from environmental scientists and natural resource managers, relatively little is known about the effects of these stressors on amphibian populations, especially when compared to the literature focused on mammals and birds. Our understanding of the effects that environmental stressors have on amphibians, however, has advanced, particularly in our appreciation of the complexities linked to declining amphibian populations. Yet, many questions remain unanswered. Those answers would directly benefit amphibians and adaptive management plans ministering to them. In an effort to address those unanswered questions and focus on ecological risk assessment of amphibians, scientists, researchers, and resource management professionals from diverse fields participated in a Society of Environmental Toxicology and Chemistry (SETAC) - Johnson Foundation Wingspread workshop convened at The Johnson Foundation's Wingspread Conference Center in Racine, WI 18-23 August 2001. **Amphibian Decline: An Integrated Analysis of Multiple Stressor Effects** represents the edited proceedings of that workshop.

Chapters include: **1)** Multiple Stressors and Declining Amphibian Populations: An Integrated Analysis of Cause-Effect to Adaptive Resource Management (Donald W. Sparling, Sherry K. Krest, Greg Linder); **2A)** Physiological Ecology of Amphibians in relation to Susceptibility to Natural and Anthropogenic Factors (Christopher L. Rose, William A. Hopkins, Christine M. Bridges); **2B)** Amphibian Conservation Genetics (Christine M. Bridges, Christopher L. Rowe, William A. Hopkins); **3)** Linking Stressors with Potential Effects on Amphibian Populations (Albert G. Westerman, William van der Schalie, Steven L. Levine, Brent Palmer, Dale Shank, Ralph G. Stahl); **4)** Chemical Stressors (James G. Burkhart, Joseph R. Bidwell, Douglas J. Fort, Steven R. Sheffield); **5)** Physical Stressors (Michelle D. Boone, Paul S. Corn, Maureen A. Donnelly, Edward E. Little, Peter H. Niewiarowski); **6)** Biotic Factors in Amphibian Population Declines (Cynthia Carey, David F. Bradford, Jesse L. Brunner, James P. Collins, Allan P. Pessier, Danna M. Schock); **7)** Physical Habitat and Its Alteration: A Common Ground for Exposure of Amphibians to Environmental Stressors (Christine A Bishop, David C. Cunnington, Gary M. Fellers, James P. Gibbs, Bruce D. Pauli, Betsie B. Rothermel); **8A)** Causal Analysis and the Evaluation of Declining Amphibian Populations: Illustrative Case Studies (Greg Linder); **8B)** Deteriorating Status of Western Amphibians: Can We Generalize about Causes? (Paul Stephen Corn); **8C)** Amphibians and Pesticides in Pristine Areas (Donald W. Sparling and Deborah Cowman); **8D)** A Hierarchical Approach in Studying the Effects of an Insecticide on Amphibians (Michelle D. Boone and Christine M. Bridges); **8E)** Anthropogenic Activities Producing Sink Habitats for Amphibians in the Local Landscape: A Case Study of Lethal and Sublethal Effects of Coal Combustion Residues in the Aquatic Environment (Christopher L. Rose and William A Hopkins); **9)** Integrating Amphibians into Ecological Risk Assessment Strategies (Albert G. Westerman, Andrew J. Wigginton, David J. Price, Greg Linder, Wesley J. Birge); **10)** SETAC Wingspread Workshop: Summary, Recommendations, and Habitat Restoration (Sherry K. Krest, Dale Shank, Greg Linder, Donald W. Sparling).

The book can be ordered from SETAC at **888-899-2088** *and, once the SETAC website is updated, the book will be available online at the SETAC website:*
http://www.setac.org/pubs.html

Next *Froglog* deadline: The deadline for receipt of short and/or news items for the next issue of *Froglog* is Friday, March 26th. Please send (preferably by e-mail) to John Wilkinson at the address below, following the style of articles in this issue where possible. Longer items may be submitted at any time.

RANA and the US National Science Foundation grant DEB-0130273 helped support the publication of this issue.

FROGLOG is the bi-monthly newsletter of the Declining Amphibian Populations Task Force. *Articles on any subject relevant to the understanding of amphibian declines should be sent to:*
John W. Wilkinson, Editor, 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**

Funding for FROGLOG is underwritten by the Detroit Zoological Institute, P.O. Box 39, RoyalOak, MI 48068-0039, USA.