Fish introductions affect amphibian populations by making historical amphibian breeding sites, such as permanent wetlands, uninhabitable. These impacts may be direct (predation by salmonids, centrarchids, and esocids) or indirect (through competition by cyprinids and catastomids, through habitat disturbance, and by isolating remaining populations making them less able to recover from stochastic extirpations or droughts). Aquacultural practices adversely affect amphibian populations. For example, rotenone kills amphibian larvae at concentrations of 1:500,000. Weirs allow fishes direct access to fringing wetlands. Introduced bullfrogs affect populations of smaller vertebrates, including other amphibians. Dredging and aeration of basins facilitate colonization of wetlands by fishes, over and above direct introductions. Applications of the herbicide aquazine favor algal-dominated ecosystems and affect the community structure of both the algal and the invertebrate prey base. Finally, predatory amphibians (salamanders) tend to feed nocturnally, while fishes feed during daylight and choose prey based on visual conspicuousness. This distinction has ecological consequences. In response to hypoxic conditions invertebrates such as zooplankton metabolize hemoglobin pigment (and hence become red). Fishes prey preferentially on red zooplankton and therefore contribute to a decrease in zooplankton abundance, invertebrate species diversity, and overall wetland productivity. Michael Lannoo, DAPTF US Coordinator, Muncie Center for Medical Education, Indiana Univ School of Medicine, Ball State Univ, Indiana, email: 00mlannoo@bsu.edu Abstract from First Great Lakes Declining Amphibians Conference (see page 2).

Declines in Great Central Valley, California

Declines in pond breeding amphibians in the Great Central Valley are unequivocal, although they vary in intensity within this region and between the species involved (Fisher & Shaffer 1996). Combining extensive monitoring and analysis of museum records, Fisher and Shaffer detected a decline in seven species (Ambystoma californiense, Taricha species [Taricha granulosa and T. torosa torosa] Rana aurora, Bufo boreas, Pseudacris regilla, Scaphiopus hammondii). Declines were most evident in the Sacramento and San Joaquin Valleys, whereas the Coast Range showed little or no sign of declines. Declines also tended to occur at lower, rather than at high altitude. Rana aurora and Bufo boreas were the most severely in decline, whilst Pseudacris regilla was the least affected. Introduced predators, such as fish, including the biological control agent, Gambusia affinis, and bullfrogs are regarded as the principal causal agents of decline. The authors believe that the relatively coarse scale at which they carried out their analysis (the county level) negates the potential error that local population fluctuations may have on amphibian population status assessment.


Rana muscosa Declines in Nevada

Howard Panik has surveyed 54 sites (including eight historical locations) in the Carson range in Nevada and in neighbouring southern California, from 1994 to 1995 (Panik, 1995). Rana muscosa was not found at any of the sites and Panik considers that this frog is now extinct, or near to extinction in Nevada. Panik proposes that introduced fish are a likely causal agent. There are established populations of salmonid fish at six of the eight sites where Rana muscosa was historically recorded.


Fish and Crayfish - a Threat to Amphibian Populations?

During the last decade or so, introduction of crayfish to both old and newly created ponds has been common in the south of Sweden. Introduction of both crayfish and fish requires permission from the regional environmental or fisheries authorities.
This used to be a straightforward procedure. However, more recently, the authorities have begun to consider the possible consequences for amphibians, and the Regional Authorities Department of Fisheries commissioned a literature review on the effects of fish and crayfish on amphibian populations.

The review is written in Swedish, but the list of references should be of use to those not familiar with the language. It deals with direct and indirect effects of crayfish, effects of fish, defences in eggs and tadpoles (jelly coat, toxicity, behaviour) and considers habitat complexity, adult choice of breeding pond and source-sink aspects.

The literature cited shows that fish introductions often wipe out amphibian populations, but that the effects of crayfish are less certain. Although crayfish can, and in the laboratory do, eat amphibian eggs and tadpoles, their effect on habitat complexity (and the ‘restoration’ of ponds prior to crayfish introduction) may also be of significance. A reduction in the amount of vegetation may reduce the availability of amphibian refuges from predation.

The review, *Utsättning av kräftor och fisk - ett hot mot amfibie-populationer? (Introductions of crayfish and fish - a threat to amphibian populations?)* has been deposited in the DAPTF office and can be e-mailed on request from Björn Lardner (Department of Animal Ecology, Ecology Building, S-223 62 Lund, Sweden).

Email: bjorn.lardner@zoekol.lu.se.

Björn Lardner & Johan Sidenmark

**DAPCAN VI**

and

**The Boreal Dip Net**

The first meeting of the Working Group on Amphibian and Reptile Conservation in Canada, and the sixth meeting of the IUCN/SSC Task Force on Declining Amphibian Populations in Canada (DAPCAN), will be held on the campus of the University of Calgary, in Calgary, Alberta from Saturday, October 5 to Monday, October 7, 1996. People should contact the National Coordinator for more details. Thanks are due to host and Local Organizer Tony Russell and Working Group/DAPCAN Provincial Coordinator for Alberta, Larry Powell, both of the Department of Biological Sciences, University of Calgary.

**CALL FOR PAPERS**

Presentations for Working Group sessions must relate to the conservation of amphibians and/or reptiles. DAPCAN sessions are focused on the questions surrounding declining amphibian populations in Canada. A formal Call for Papers will be sent out in May with the official registration forms.

**WORKSHOP**

A workshop on herpetological atlasing is being organized. For more information please contact: Andrew Didiuk, Regional Coordinator for Western Canada, Saskatchewan Amphibian Monitoring Project and Saskatchewan Herpetology Atlas Project, 314 Egbert Avenue, Saskatoon, Saskatchewan, Canada, S7N 1X1. Phone: 306-975-4087 Fax: 306-975-4089. Email: didiukadesoto.wxe.sk.do.ca

To receive registration forms please contact: Stan Orchard, DAPCAN National Coordinator, 1745 Bank Street, Victoria, British Columbia, Canada, V8R 4V7. Phone/Fax: 604-595-7556. Email: orchard@islandnet.com

The Working Group on Amphibian and Reptile Conservation in Canada has launched its own newsletter, *The Boreal Dip Net*. It will be distributed twice a year to DAPCAN participants and will include announcements, press releases, conference summaries, and reports on the on-going projects of DAPCAN.

**US Great Lakes Declining Amphibians Conference**

The first Great Lakes Declining Amphibians Conference was held on March 30, 1996, at the Milwaukee Public Museum, and was a great success. Over 150 people attended, from 5 states and Ontario. Local television, radio and newspaper coverage was extensive. Frogs appear to be loved by the media. In attendance was a mix of scientists, educators, students, and the general public. Groups also met to discuss the NAAMP proposed standard methods for surveying amphibians, and how they might apply in the Great Lakes region.

The abstracts from this meeting, listed below, can be viewed on the Great Lakes Working Group Web site: http://www.mei.com/other/mmpm/collect/dapt/html

Minnesota County Biological Survey: Summary of amphibian surveys, 1988 - 1995; Minnesota frog & toad survey: changes for 1996; Beyond plants and ducks - monitoring amphibians in created and restored wetlands; Habitat fragmentation and the distribution of spring peepers (*Pseudacris crucifer*) in South-Central Wisconsin; State Project Salamander in central Wisconsin; Marsh Monitoring Program; A short-term species inventory in Forest County, Wisconsin: methods comparison; Population trends from the Wisconsin Frog & Toad Survey: 1984-1995; A 1965 analysis of the amphibians of the Upper Peninsula of Michigan and Isle Royale National Park; Establishing a long-term amphibian survey at a Michigan Nature Conservancy Preserve;

Fish introductions and aquacultural practices are the most serious threat to upper midwestern amphibian populations; Amphibian ecotoxicology in Green Bay, Wisconsin: are toxicants influencing amphibian distributions?; Natural history and breeding biology of *Ambystoma laterale*; Investigation of deformed frogs in Minnesota; Decreased adult size and reduced reproductive competence in the northern leopard frog, *Rana pipiens*; Burns and kandyohi morphs of the northern leopard frog (*Rana pipiens*); revised distribution with observations on relative prevalence; The woodland vernal pond: an oasis of diversity.

Gary S. Casper, Vertebrate Zoology Section, Milwaukee Public Museum 800 W. Wells St., Milwaukee, WI 53233, fax (414)278-6100. email: gsc@csd.uwm.edu

**Southwestern US Working Group**

The Southwestern United States Working Group of the DAPTF met in Tucson, Arizona, USA, Jan. 4-5. The abstracts listed below are available from Michael J. Sredl, Arizona Game & Fish Dep't., 2221 W. Greenway Road, Phoenix, AZ 85023-4312, USA, email: msredl@gf.state.az.us. or at the US South West Working Group Web site: http://leopold.nmsu.edu/kbojkin/swwg.htm

Ageing two species of Arizona leopard frogs using skeletochronology; Variation in breeding activity and preliminary analysis of age-structure of a community of desert toads in north-central Maricopa County, Arizona; Preliminary evaluation of lowland leopard frog visual encounter surveys; Exotic species and the distribution of native amphibians in the San Rafael Valley, AZ; Native and introduced ranid frogs on the San Pedro River, Arizona; *Rana berlandieri*: new localities in Yuma and Maricopa counties, Arizona, and Imperial County, California; A pH/UV-B synergism decreases *Rana pipiens* embryo survival; Effects of water chemistry on red-spotted toad populations; Conservation and management of *Arizona* ranid frogs.

**NAAMP Documents and Web Meeting**

The North American Amphibian Monitoring Program (NAAMP) - a consortium of amphibian conservationists and researchers which
The US Department of the Interior publishes the Endangered Species Bulletin which frequently features items on amphibians.

The November/December 1995 issue (Vol. 20, No. 6) contains an article by Linda LaClaire on the Red Hills salamander (Pheognathus hubrichti). This threatened species is confined to a small area of Alabama, where its survival is threatened by intensive logging and changes in forestry practice. It is now subject to a Habitat Conservation Plan, developed by the International Paper Timberlands Operating Company, that conserves 2590 hectares of habitat for this elusive, burrowing species.

The same issue reports that the rock frog Eleutherodactylus cooki, endemic to Puerto Rico, has been proposed for listing as a threatened species.

Tim Halliday

Endangered
Species
Bulletin

Donations are indicated in parentheses. Aquarium, business, society, and zoo donations are those received since publication of FROLOG 15. If any donation recognitions have been inadvertently missed, please bring them to the attention of the Chair, Ron Heyer.


Meetings

Ponds, Partnership and Practice
17 June, 1996, at John Moores University, Liverpool. A one-day conference, organised as part of the Pond Life Project (1995-1999), funded under the European Union Life Programme. The meeting will bring together practitioners from planning, land management and nature conservation to hear from partners involved in the £1 million project, including representatives from Belgium, Denmark and the Netherlands.

Conference fee is £40.00. Contact: Andrew Hull, John Moores University, Liverpool, 15-51 Webster St., Liverpool L3 2ET. Phone: +44(0)151 231 4044, fax: +44(0)151 258 1224.

The Biology of South Asian Amphibians and Reptiles
An International conference on the biology of South Asian amphibians and reptiles will be held August 1-5, 1996, at the University of Peradeniya, Peradeniya, Sri Lanka. Contact: A. de Silva, Faculty of Medicine, University of Peradeniya, Sri Lanka. Phone: 08-88130, fax: 94-8-32572, email: anselem@med.pdn.ac.lk

IV Congress of Latin American Herpetology
This meeting will be held in Santiago, Chile, 14-19 October 1996. A workshop is planned to discuss conservation problems affecting neotropical amphibians, especially those in decline or threatened with extinction.

For further information contact: Jaime F. Péfaur, Departamento de Biología, Facultad de Ciencias, Universidad de los Andes, Merida 5101, Venezuela, fax: 00-58-74-401286, email: pefaur@ciens ula.ve, or Alberto Veloso, Departamento de Ciencias Ecologicas, Universidad de Chile, Casilla 653, Santiago, Chile. Email: aveloso@abello.dic.uchile.cl, or Rafael de Sá, Email: DESA@urvax.urich.edu

Vietnam to Host Conference
Interest has been expressed in an international conference, 'Conservation and Biodiversity of Amphibians and Reptiles of Tropical Rain Forests'. The proposed venue is Hanoi, Vietnam, sometime in 1998. Comments or expressions of interest and/or intent to attend are welcome. Those responding should comment on interest in presenting a paper or poster, the best time of year, specific topics to be covered, and any potential funding sources. Contact one of the following: Dr. Harold Heatwole, Dept. Zoology, Box 7617, North Carolina State University, Raleigh NC 27695 USA, Tel: (919) 515-2741; FAX: (919) 515-5327; Dr. Natalia Ananyeva, Dept. Herpetology, Zoological Institute, St. Petersburg 199034, Russia, email: anv@zisp.spb.su.; Dr. Cao Van Sung, Institute of Ecology and Biological Resources, Nghia Do, Tu Liem, Hanoi, Vietnam. Tel: 361 440, fax: (844) 361 196, email: sung@iebr.ac.vn

Publications of Interest


New DAPTF Working Group Chair

South Asia Sushil K. Dutta, Chair of the South Asia Regional Working Group (Department of Zoology, IITKgal University, Vani Vihar, Bhubaneswar 751004, Orissa, India) has appointed Sanjay Molur to co-chair the South Asia Working Group: Sanjay Molur, Programme Officer, Zoo Outreach Organisation, Box 1683, 65 Bharati Colony, Peelamedu, Coimbatore, T.N. 641004, India, fax: 0422-573-269.

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