FROGLOG

IUCN/SSC Declining Amphibian Populations Task Force

March, 1992, No. 1

Coordinator's Column

The DAPTF has been established by the International Union for the Conservation of Nature (IUCN), Species Survival Commission (SSC) to organize a global monitoring program for (1) determining the status of amphibian populations (2) assessing the implications of any declines (3) studying potential causative factors and (4) making appropriate policy recommendations based upon these findings. The Coordinating Council, administered by the Coordinator, includes researchers, liaison officers of societies and agencies as well as other interested parties, all of whom serve as communicators.

As of the last week in January, the Task Force became equipped and manned at the projected level when it occupied its present facilities at the Environmental Research Laboratory in Corvallis, Oregon. In addition to the recent acquisition of computer hardware, we now have a full time information systems manager in the person of Tony Clem. Once our system is interfaced we shall initiate an electronic database and other activities designed to serve as a viable communications network.

We are still in need of Regional Working Group Chairperson for the U.S. Great Lakes area (WI, MIN, MI).

Priority has been given to organization of a Working Group to assist in compilation of a comprehensive bibliography of reports relating to amphibian populations that will be generated and maintained at the Coordinator's office. We wish to include titles of primary and secondary literature, thesis and dissertations, as well as names of earlier investigators who have archived their field notes at a repository. This resource will be freely available to those wishing to make comparisons with contemporary studies.

Anyone interested in these or related studies are invited to join the DAPTF. Please send your name, address and telecommunications number(s), indicating your interest or participation, to the Coordinator's address.

Canada Launches Major Initiative

(*The following is edited and condensed from a report by* Hinrich Kaiser, *Redpath Museum, McGill University, on the workshop "Declines in Canadian amphibian populations: designing a national monitoring strategy" held at the Canada Centre for Inland Waters in Burlington, Ontario, on October 5 and 6, 1991.* Bull. CAH/ACH 5(2):1-4.)

The workshop in Burlington, organized by Christine Bishop (Canadian Wildlife Service) and Bob Johnson (Metro Toronto Zoo), constituted the first comprehensive attempt to address the declining amphibian phenomenon from a Canadian viewpoint. The problem of amphibian declines has become an urgent concern among Canadian herpetologists. Participation of researchers in universities, governments and private organizations was truly exceptional. This meeting was the largest gathering of Canadian herpetologists in memory.

In her opening remarks, Bishop stated that the aim of the meeting was to create a framework to monitor Canadian amphibian declines and the factors causing them. Johnson, a DAPTF Board of Directors member, highlighted the problem. Speakers representing the various provinces gave depressing status reports on amphibian populations throughout Canada. In many cases, these were anecdotal accounts, although causal relationships between declines and anthropogenic events can be confirmed in all too many cases. Invariably, each speaker referred to the basic lack of knowledge about the amphibians in question: distributions are insufficiently known, causes behind disappearances are uncertain, and habitat surveys are insufficiently detailed.

The introduction of non-native amphibian species and sports fish, mismanagement of wetlands, human intrusion, and logging, have all been identified as damaging to amphibian populations in more than one province. All were cited as being at least partly responsible for population declines in British Columbia. In Nova Scotia fragmented habitats and the resulting inbreeding within many species have produced increased frequencies of albinism and extra-limbed individuals. A well-documented problem is shown by *Rana pipiens*, stemming from the sale of over a million frogs to biological supply companies in the U.S. until die-offs began in 1975. In the middle 1970s, the famous Manitoba frog holes were empty, and despite an eight-year ban on picking frogs their numbers have not much increased.

Natural events, such as droughts, may be in part responsible for declines observed in populations in Saskatchewan. An outbreak of red leg disease in 1976 resulted in many deaths of *Rana pipiens* in Alberta. Recent observations on *Rana catesbeiana* in the Algonquin area showed that the average weight of calling bullfrogs at two separate sites differed significantly. It is unknown whether life history, social structure or harvesting contributed to this phenomenon.

In Ontario and Quebec, amphibian monitoring has been going on for some time. Since 1984, Ontario has received a total of 52,000 records from 2,700 volunteers and has also compiled a bibliography of herpetology including ca. 1,400 references. In Quebec, 5,400 records are reported.

However, it is puzzling that some species seem entirely unaffected. It has been suggested that certain ones may be rebounding from natural, cyclical events and that there may be positive changes observed in many areas within the next few years.

The afternoon talks centered on the monitoring of amphibian populations, including reports of projects that have produced quantitative data. Data show the best estimate is gained by intensive study. This method has actually been employed in a four-year study of Fowler's toads at Long Point . These toads have dramatically increased in numbers since the study began, likely an effect of the water level rise in Lake Erie.

Among other concerns presented was the importance of: experimental design, timing and length of study; preservations of natural conditions of the habitat; measuring both natural and anthropogenic environmental factors; generating a genetic database during monitoring; larval stages in relation to reproductive success and gene flow; pathological conditions present in the populations; and determining the effects of contaminants upon entire populations.

Open discussions began on the second day. It was first determined that the Working Group will be a research coordinating body for investigating the hypothesis that amphibian populations are in decline. If this hypothesis is supported, the group should then seek ways to reverse the declines. It was agreed that

this goal is best served by separately considering historical data, intensive monitoring studies, and extensive monitoring projects.

The intensive monitoring group discussed how to approach the monitoring process. Life history research must be concurrent with the monitoring process. The group decided a number of indicator species for intensive monitoring, chosen to include as many families as reasonably possible, in a variety of habitats and ecosystems, and with a range of genetic and morphological variation.

The Canadian working group will be most active at the provincial level, with Regional Coordinators. Details for each study population and site will be communicated to Eastern and Western Coordinators and the Coordinator for Canada, who will communicate with the IUCN Task Force. this hierarchical setup should keep Coordinators in touch and allow the regions to act both individually and in cooperation with each other and with comparable regional groups in the United States. To facilitate communication to all participants, the CAH/ACH Bulletin was chosen as the official news medium.

The complete final report is to be published in March of 1992 as a Canadian Wildlife Service Technical Report. For further information contact Christine Bishop, Canadian Wildlife Service, Box 5050, Burlington, Ontario L7R 4AG, Canada.

CANADIAN WORKING GROUP

National Co-ordinator — David M. Green (McGill University)

Regional Co-ordinators — Don McAlpine (New Brunswick Museum), for Eastern Canada. Stan Orchard (Royal B.C. Museum) for Western Canada.

Provincial Co-ordinators (to be confirmed) — John Gilhen (Nova Scotia Museum), Nova Scotia; Don McAlpine, New Brunswick and P.E.I; Joel Bonin and Roger Bider (MacDonald College, McGill University), Quebec; Wayne Weller and Mike Oldham (Ontario Ministry of Natural Resources), Ontario; Bill Koonz (Manitoba Department of Natural Resources), Manitoba; Wayne Roberts (University of Alberta), Alberta; Stan Orchard, British Columbia.

Historical Population Trends — Martyn Obbard, Fred Schueller, Wayne Weller, Mike Oldham.

Intensive Monitoring — Mike Berrill, Jim Bogart, Ron Brooks, Francis Cook.

Extensive Monitoring — Bill Freedman

Environmental Contaminants — Christine Bishop

Diseases — Graham Crawshaw

Netherlands Conference

Annie Zuiderwijk, Chair of the Western European Working Group, represented the DAPTF at the International Symposium on the "Impact of Climate Change on Ecosystems and Species", convened in Amersfoort, The Netherlands in December. Experts, invited from different parts of the world, prepared evaluations of regionally important ecosystems. Workshop sessions focused on identifying key factors affecting selected ecosystems, identifying the main responses and determining various rates of change. Publication of reports from the symposium, expected soon, are intended to provide assessments applicable to issues in conservation, species diversity and management of ecosystems.

In the United Kingdom

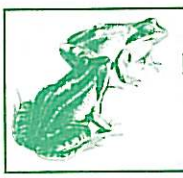
Tim Halliday, chair of the UK Working Group (and a Task Force Director), reports that action is being taken to establish liaison and collaborative activities with the Western European group. UK sites of amphibian populations known to be "healthy" 10-15 years ago are being identified so that they can again be surveyed during the coming breeding season. A grant proposal for DAP related research has been submitted. Halliday is also arranging an October/November planning meeting.

Australians Take Action

A $47,000 grant from the Australian government was awarded to Michael J. Tyler, a Director of the Task Force, to organize a meeting of amphibian scientists and produce an Action Plan for Australia as a framework for new legislation, and for developing conservation and management goals for the next five years. To obtain an information base for this endeavor, a "Frogwatch" survey is being conducted in which 150 conservation organizations are participating in distribution of 600,000 (sic) questionnaires.

An organizational workshop convened by Tyler met in Canberra, ACT, last July. This initial meeting was attended by a nucleus of 16 representatives from the several States and Territories. The first half of the program addressed broad overviews and individual species case histories, the status of distribution maps, current legislation and the character of native population cycles. The subsequent general discussions dealt with causal agents, the use of museum records, sampling strategies, pathological studies, etc.

As of the present date, the Action Plan has been partly completed. Formal establishment of the Australian Working Group and its participating members is underway.



Reports from U.S. Working Groups

CAL/NEVA

The California/Nevada Working Group met for the first time at Point Reyes National Seashore on February 4, 1992. The group, chaired by Gary Fellers, included 14 representatives from the U.S. National Park Service, U.S. Forest Service, University of Nevada - LasVegas, St. Mary's College, University of California - Davis, California Academy of Sciences, University of California - Los Angeles, California Department of Fish and Game, and U.S. Fish and Wildlife Service.

Each member of the Working Group provided a short summary of their research relating to amphibians. Most of these reports provided compelling evidence for dramatic declines in amphibian populations throughout all or part of a species' range. Though some of the losses resulted from obvious factors (e.g., habitat loss), numerous cases were noted in which declines occurred with no identifiable reason. There appears to be strong evidence that acid precipitation is not the cause of the declines, though it might be acting in concert with other environmental stressors.

The status of the U.S. National Museum of Natural History handbook on monitoring protocols was addressed at some length. Further discussions centered on the need to gather data that are compatible among studies of different species and/or habitats. A form designed for use by the U.S. Fish and Wildlife Service (see report from Rocky Mountains Working Group) was examined in detail with the goal of determining the minimum data that should be collected as part of any amphibian field study.

ROCKY MOUNTAINS

Stephen Corn and Bruce Bury, co-chairs of the Rocky Mountains Working Group, are compiling a database of research activity on amphibians throughout the region. The Working Group is being organized in two tiers: those with current or recently completed research or monitoring programs, and those with more general interests regarding conservation activities. No formal meeting has yet been scheduled; however, the co-chairs participated in the Cal/Neva meetings at Point Reyes, California in early February to coordinate activities of the contiguous regional groups.

Data forms from their recent publication (Bury, R.B. and P.S. Corn. 1991. *Sampling Methods for Amphibians in Streams in the Pacific Northwest.* U.S. Forest Service, Pacific Northwest Re-

search Station. Gen. Tech. Rpt. PNW-GTR-275.) were evaluated during the joint meetings for potential application to all monitoring procedures. The recommended changes will be incorporated in a revised form for further review and consideration of adoption by other Working Groups.

NORTHEAST

The first meeting of the Northeastern Working Group, chaired by Richard Wyman, was held at the Pennsylvania State University on August 9, 1991.

Following a brief introduction regarding the objectives of the DAPTF, the group discussion focused upon the regional organization and development of an action plan. Priorities to be addressed include a survey of all active herpetologists in the region; assembly of all available regional data relating to the status of amphibian populations, identification of particular characteristics of species that would make data as to their presence or absence environmentally significant, and establishing a mechanism for maintaining a long-term monitoring network in the NE region.

The group is also initiating a search for thesis and dissertations that may contain usable density data, and for relevant records that may have been maintained at biological field stations.

Wyman has also generated a questionnaire for a mail survey as to the status of amphibian populations in the region. Copies of this form, which may be applicable for use by other Working Groups, may be obtained by contacting him (see address and telecommunications number, on page 4).

SOUTHEAST

A network of 40 cooperators in Florida, Alabama, Georgia and South Carolina will serve as the communication resource for data on SE US amphibians. Lists of currently recognized taxa are being generated for a status review by the Working Group. Ken Dodd, chair of the Working Group, has assumed the presidency of the SE section of the ASIH and plans to enlarge attention of the herpetological community upon the Task Force activities.

Carolyn Sekerak (M.S. student, Univ. Florida) is finishing her thesis work on the structure of amphibian temporary pond breeding sites. She has taken a position with the U.S. Fish and Wildlife Service in Jackson, MS. Her responsibilities include monitoring the status of amphibians and preparing federal listing proposals for the dusky gopher frog and other amphibian species.

A habitat conservation plan is being developed for the Red Hills salamander. The plan will involve the U.S. Fish and Wildlife Service, The Alabama Natural Heritage Program) is conducting a survey of the Sipsey Fork waterdog (*Necturus* sp.) in Alabama.

Pablo Delis and Henry Mushinsky (Univ. South Florida) are analyzing data on amphibian population fluctuations in Florida sandhill habitats based on 6 years' data.

Carlos Camp (Piedmont College) reports declines in relict populations of *Rana sylvatica* and *Ambystoma maculatum* in northeast Georgia. Wetland habitat alteration is suspected as the cause.

Dodd's paper on the biotic diversity of amphibians and reptiles in a Florida sandhills temporary pond has been accepted in the new journal Biodiversity and Conservation. Population declines due to drought (best guess) are noted, but long-term effects cannot yet be demonstrated.

Amphibian Bioassay as Assessment Tool for Superfund Sites

The U.S. Department of Defense has initiated an interagency agreement (IAG) with the Environmental Research Laboratory - Corvallis and several others to evaluate test procedures involving the effects of several classes of chemicals on amphibians. Initial studies will employ the Frog Embryos Teratogenesis Assay: *Xenopus* (FETAX). The utility of this test in ecological site assessment has been demonstrated at some Superfund sites using in situ exposures of mature amphibian species. Applications of the test procedures may provide information as to possible factors involved in declines of indigenous amphibian species and the use of mature amphibians as bioindicators of the health of wetland ecosystems.

Recent Reports of Declines

The Estonian herpetofauna consists of ten species of amphibians and five species of reptiles, apparently the result of post-glacial immigration from southeast (*Bufo viridis*), south (majority of species) and south-west (*Bufo calamita*). Earlier recorded *Rana ridibunda* and *Emys orbicularis* have become extinct.

From the perspective of distribution and degree of commonness, three groups of herptiles can be identified: rare and vulnerable species (*Triturus cristatus, Bufo calamita, B. viridis, Pelobates fuscus, Lacerta agilis*), less common species with sporadic distribution (*Rana arvalis, R. lessonae, R. esculenta, Anguis fragilis, Natrix natrix*), and common, widely distributed species (*Triturus vulgaris, Rana temporaria, Bufo bufo, Lacerta vivipara, Vipera berus*).

The distributions of *Triturus cristatus*, *Rana esculenta* (complex), *Pelobates fuscus* and *Lacerta agilis* seem to be relict in nature; some Estonian amphibians represent the northernmost distribution limits of the species (*Bufo calamita, B. viridis, Pelobates fuscus*). Many local populations of herptiles are reported as declining during the past ten to twenty years. (Talvi, T. 1991. *Amphibians and Reptiles of Estonia: list, geographic relationships and current situation.* Abst. 6th Ord. Gen. Mtg. Soc. European Herp., Budapest)

W.S. Osborne, in a recent status report (in litt.) on frog populations in the Australian Capital Territory documents the decline of *Pseudophryne corroboree* and *P. bibroni*, although both species are relatively common in other parts of their ranges. In contrast, there has been a complete disappearance of *Litoria aurea* and *L. raniformis* in the region, while *L. verreauxii* has become rare. Prolonged dry seasons are believed to be a contributing factor; however, the magnitudes of declines are such that other, yet unknown, factors are possibly involved.

In their recent report (Herp. Rev. 22(4):125-128, 1991) E. La Marca ano H.P. Reinthaler have noted "drastically diminished" populations among five species of *Atelopus* in the Venezuelan Andes. Deforestation and expanding agrofarming appear to be the dominant factors impacting upon *A. carbonerensis, A. mucubajiensis, A. oxyrhynchus, A. pinangoi* and *A. sorianoi*. Flooding has scoured the montane streamside vegetation, and a high percentage of road kills in other areas are reported. The extent to which collecting may have reduced endemic *Atelopus* is also discussed. This report states (as with many others) that climatic change, pollution, as well as introduced species of plants and fish, are potentially significant factors in these declines and recommends action for both research and conservation.

RIBBIT Croaks

An earlier newsletter, *Ribbit*, was pioneered in the late 1980's by Bruce Bury and Stephen Corn to report on the decline of amphibian populations in the western U.S. Because of administrative constraints but a single issue was released (January, 1989). It will be superseded by FROGLOG beginning with this number.

Donor Support for DAPTF

Operations of the DAPTF would not be possible without the generous sponsorship of numerous organizations and individuals.

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