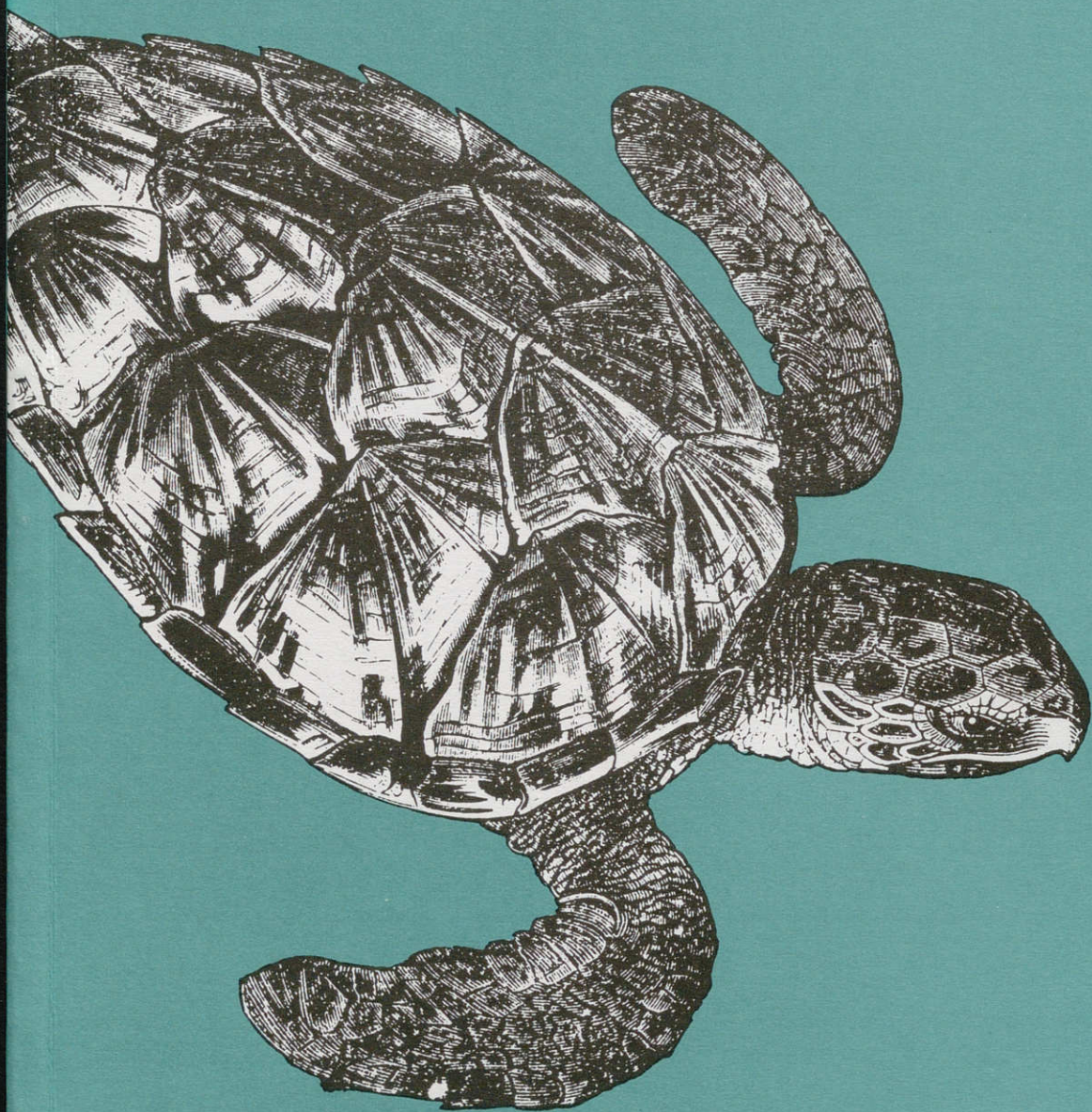
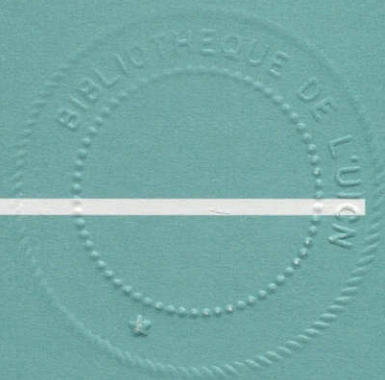


Species

Newsletter of the Species Survival Commission
IUCN—The World Conservation Union
Number 21-22, December 1993-June 1994



Species is the newsletter of the Species Survival Commission of IUCN—The World Conservation Union. Commission members, in addition to providing leadership for conservation efforts for specific plant and animal groups, contribute technical and scientific counsel to biodiversity conservation projects throughout the world. Commission members also serve as resources to governments, international conventions, and conservation organizations.

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SPECIES SURVIVAL COMMISSION

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The SSC—Operations and Plans

From the Chairman

Conservation Strategies for Sustainability

Sustainability covers all concepts of sustainable relationships in the global environment. As a species, we have particular requirements of the environment for our self-maintenance and for reproduction of our kind. Over much of the earth our relationships with other species and nature in general extend far beyond our requirements at this basic existence level. In respect to other species we must realize that we play the role of a super alien species. We operate at the highest trophic level in terms of conversion of energy and consumption of other living things, outcompeting all other species at this level. And, by our unique environmental modification activities, we are changing the environmental playing field for the game of life for species at all levels. To maintain the benefits people derive from the diversity and productivity of other species, we must manage our relationships with other species and the environment for long term sustainability. This note concerns some of the strategic approaches to employ, starting from the premise that unless values can be attached to living things, people will not modify their behavior in appropriate ways to live sustainably with the natural world.

Ecological Value Strategy

In natural situations each species produces more individuals than survive to reproductive status. Species do not exist in vacuums, but live in interdependent biological communities or ecosystems where the abundance or productivity of each species is generally limited to what is termed the environmental carrying capacity. The overall productivity of such systems depends on the chemophysical environment and on the relationships among species in the system, and in particular reflects the balances within and between species in their birth, life, and death parameters. In turn, these systems and their dynamics are linked as the

biosphere, where we can consider at the global level energy inputs and energy and chemical transfers that drive all systems.

In ecologically sustainable use, the productivity in natural systems and individual species is affected by or diverted in part to the interests of people—either by consumption or other utilization. To be sustainable, a consumptive use must provide for regeneration of the resources as well as the consumptive needs of users. In non-consumptive sustainable use, usually the natural resources are impacted by the presence of people or their products in the ecosystem or in the environment of a species. Whatever benefits accrue to people in the relationship, to be sustainable a non-consumptive use should provide for maintaining the integrity of the ecosystem or viability of species.

From an ecological perspective, the rule governing sustainable use is straightforward—a use must not impair the long-term viability of species or the integrity of ecosystems. It is recognized that proportional relations among species may change as the system or particular species is used.

Economic Value Strategy

The preceding concept has been labeled as an idealistic approach. Some colleagues point out that even as we seek to improve and thence communicate and apply our understanding of ecologically sustainable relationships with other species and with the environment in general, unsustainable use proceeds at a staggering rate. Among other things, our conversion of more of the terrestrial environment to closely managed agricultural systems for efficient harvesting of their productivity means less diversity and less overall productivity of natural systems. The conservation strategy of ecologically sustainable use may simply not be applicable widely enough and soon enough because of human socioeconomic factors, and a suggested more immediate conservation strategy is to employ market economics. By better managing the economic valuing process and

the availability of exploitable living natural resources, we may be able to slow the loss of diversity and productivity of natural systems. If the values adduced are high enough, we may even be able to restore systems to a more natural situation. As in the previous strategy, this more pragmatic approach calls for actions to improve, communicate, and apply our understandings of sustainable use to achieve conservation of living natural resources. Among other tasks involved in this approach are developing more complete ways of economic valuing of natural resources and ecological processes, adapting marketing tactics to promote more sustainable usages, and arranging ownership and tenure systems to promote sustainability.

Ethical Value Approaches

All human societies operate with rules for conduct, spoken, written or not, which govern relationships of people to one another. These ethical principles may be grounded in a moral philosophy or be codified in religious dogma. For geopolitical groupings of people, basic ethical behavior is usually formally spelled out in laws. Among nearly universal ethical precepts is that there is an obligation to the welfare of one's offspring, expressed finally as inheritance of property, status, or rights. To a lesser degree this obligation is recognized as applying to parents, other family members, then members of a local community, and to larger groupings including fellow members of a religion and citizens of a common political unit. At the most general level this obligation is extended to our species—present and future generations. Living natural resources provide for our current and, prospectively, future welfare. The manner in which we of the current generation conduct ourselves in our relationship with these resources obviously impacts other people now, but also future people. If we are true to our species, we should act so as not to impair the future use potential of any living natural resource.

Another ethical consideration concerns extension of our responsibility for fellow people to all kinds of living things and their "communities." As good citizens in these communities

and, indeed, in the biosphere, we have an obligation to maintain the integrity of the ecosystems involved, including the viable existence of the diversity of life forms. This conception does not prohibit sustainable use, and cannot overrule ecological and evolutionary processes such as seral succession and natural extinction. It does imply that we must employ our best faculties to maintain as much of the biosphere as we can in conditions promoting survival of species in nature. Our modification of life forms as well as environments comes into question under this consideration because we now have the capacity to alter irrevocably the integrity of genomes and natural ecosystems, as opposed to the effects of domestication of plants and animals that are expressed in environments separately altered for agriculture. If other forms of life are considered to have rights, then we have obligations to assure those rights. Bringing these ethical values forward from the international level (e.g., the Charter for Nature) to local community applications is a major opportunity for conservation action.

Cultural Value Approach

For their livelihood many indigenous cultures depend directly and sometimes exclusively on living natural resources. Often their perspective, and one reflected also in various religious tenets of people less dependent on nature, is that we are inextricably part of nature. This, of course, is also a biological fact, one reflected in our emotional identification with other kinds of life. Lest we disrespect ourselves, we must act respectfully with regard to the integrity of nature and the pressures we put on natural systems and other species. This moral imperative informs harvesting practices and population control perspectives of some indigenous peoples, but generally has not informed the same activities of people in so-called developed countries. To promote this perspective will take much more effort by educators, communicators, religious people, and political leaders.

Synopsis and Directions

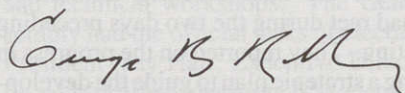
The above reflections on strategic value approaches to sustainability can be summarized as follows:

- the ecological approach depends on our understanding of how to act in congruence with natural processes so as to take appropriate advantage of the bounty of nature.
- the economic approach treats living natural resources as commodities subject to market forces of supply and demand, which we can manage to satisfy human wants without destroying the natural resource asset base.
- the ethical approach identifies our responsibilities to share resources in undiminished form across generations and cultures; some extend the obligation to recognizing and enforcing existence rights of all life. Developing these values in the context of local communities, and codifying them wherever practicable are clear targets.
- the cultural value approach recognizes our common heritage with other species; it promotes biophilia and spiritual relationships of respect for ourselves and all of nature. Potentially, it is the most compelling value system, but it will require much greater advocacy than other approaches to achieve wide prevalence.

How can we best go about attaining the ideals of providing fully for future human welfare and the integrity of nature, given our ecological ignorance and the imperfections of our societies, including our economic, ethical and cultural value systems? There is no simple answer, of course, and it is prudent to develop and apply all approaches to valuing living natural resources in our conservation strategy for sustainability. The IUCN and the SSC are committed to pursue this course. Preliminary explorations of the issues have been made by the IUCN Ethics Working Group, by the Specialist Group on Sustainable Use of Wild Species, and by the Sustainable Utilization of Wildlife Programme. We need to do much, much more, and the recent assembly of an IUCN Task Force on Sustainable Use to develop a unitary program is a new start to this

end. It is evident from the recapitulation above that we shall be looking to employ tools from a variety of disciplines: law, finance, marketing, philosophy, education, communications, religious teaching, anthropology, and ecology. This means in turn enrolling diverse talents in our organization of the conservation effort for sustainability. Because of the expectations raised in the United Nations Conference on Environment and Development in Rio in 1992 and because of the rate of negative change in the status of the biota, it is imperative that the SSC and all the member organizations of IUCN give the development of this unitary program top priority.

I wish to thank Alistair Gammell, Marshall Murphree, and John Robinson for their careful reading of and valuable comments on an earlier draft of this essay on sustainability.



George B. Rabb

Special Issue: Triennial Reports from Specialist Groups

This is a special issue of Species containing reports of activities during the past triennium from most of the SSC Specialist Groups. Due to the amount of material, we have made this a double issue and have curtailed normal features such as the News section and the Features section. This issue is in many ways a bridge from the past triennium to the next, and the essay above is indicative of the issues we must face. As we go to press, the appointment process for membership in the SSC for the next three years is underway. I want to take this opportunity to thank all the members of the SSC for their hard work on behalf of conservation in the past and to express my hopes for even greater accomplishments in the future.

SSC Office Report

Report from the SSC Meeting and IUCN General Assembly

SSC Meeting

In January 1994, immediately prior to the IUCN General Assembly, the SSC held its 67th full meeting in Buenos Aires, Argentina. Over 165 people attended the two and a half day meeting. In addition to the scheduled presentations, this was a good opportunity for SSC members from around the world to get to know one another better and to discuss opportunities for collaboration in the future.

The meeting opened with remarks from SSC Chair George Rabb and a report from members of the SSC Steering Committee, which had met during the two days preceding the meeting. They reported on the progress in preparing a strategic plan to guide the development of the SSC through the year 2000. The plan is in the process of being finalized and details should be included in the next issue of *Species*. Some important strategic directions emerging from the plan were presented to the meeting. Perhaps the most significant of these relates to the ways SSC can better affect the development and implementation of biodiversity conservation strategies at the national level.

In the Strategic Plan, the SSC Steering Committee recognized the continuing importance of focusing attention on conservation at the species level. During the SSC meeting presentation, Steering Committee members described the increasing priority assigned to biodiversity, as opposed to species conservation, by the international conservation community, particularly with the ratification of the Convention on Biological Diversity. To adapt to these changing conditions, the SSC is looking to develop its network along geographic lines to complement its existing taxonomic and disciplinary strengths. The SSC meeting discussed a proposal to develop national biodiversity groups, along with the IUCN Commission on National Parks and Protected Areas, building on the existing memberships of the two Com-

missions. The national groups would contribute to the development of national biodiversity strategies and Action Plans by providing independent, technical advice.

The proposal for national biodiversity groups was debated at the meeting with some participants concerned that the focus should be at the regional, not national level. All agreed that the SSC must maintain its existing strengths if it is to be able to contribute to the implementation of the Biodiversity Convention. The Steering Committee members agreed to take the comments into account as it continues to develop the idea of national groups.

Another session of the SSC meeting was devoted to exploration of some tools for species conservation as practiced in the SSC. This included a presentation by Georgina Mace on the development of the new IUCN Categories of Threat (see article this issue of *Species*) and a discussion of the process to date. Ulie Seal and Sue Ellis of the Captive Breeding Specialist Group discussed using small population biology tools in Population and Habitat Viability Analysis and Conservation and Management Plan (CAMP) workshops. Keith Brown, Deputy Chair of the Lepidoptera Specialist Group, described approaches for identifying areas of high priority for species conservation based on his work in Brazil. John Williams, Senior Demographer with the IUCN Social Policy Service, gave a presentation about the potential of bringing the tools of human demography to bear on species conservation planning efforts. He discussed a project using these techniques to prepare a conservation strategy for Indian rhino in Jaldapara Wildlife Sanctuary in India.

The afternoon of the first day included reports on important new initiatives within and around the SSC. The co-chairs of the Plant Conservation Task Force, Clive Jermy and Judy West, reported on their progress to date (see their report later in this issue). The recently released Global Marine Biological Diversity strategy was presented and plans for an

active network to implement the strategy were discussed.

Robert Prescott-Allen, co-chair of the Specialist Group on Sustainable Use of Wild Species, gave a report on the first full meeting of the Specialist Group which was held during the week prior to the SSC meeting. The main purpose of this three-day meeting was to develop an initial procedure for assessing the sustainability of uses of wild species. The meeting was organized around an examination of eleven case studies of sustainable use which served as a basis for developing a draft procedure for assessing sustainability.

The meeting also considered the draft guidelines for sustainability of use prepared by the Specialist Group that were to be presented to the General Assembly for consideration. The case studies considered by the Specialist Group meeting found that the draft guidelines are often difficult to apply. The criteria in the guidelines needed clarification and it was felt that the guidelines would not increase sustainability in all cases. The Specialist Group meeting recommended that the General Assembly not adopt the draft guidelines. Instead the Group recommended that the General Assembly request the SSC to test the guidelines and revise them accordingly for consideration at the next General Assembly (subsequently the General Assembly did pass a resolution calling for further testing and revision of the draft guidelines).

Additional presentations at the SSC meeting focused on Action Plans and their implementation, progress on the South American Biodiversity Assessment, and an overview of SSC Programme and Activities for the 1994-96 triennium. A special joint evening session with CNPPA provided an opportunity for Bernardo Ortiz von Halle, new SSC/CNPPA program officer in the IUCN office in Ecuador, to discuss his work plan with SSC members from Latin America.

A regular feature of SSC meetings is a presentation by members from the host region about significant conservation problems and projects. This meeting featured reports on: "Wildlife Programs of INTA (Instituto Nacional de Tecnologia Agropecuaria)," by Julieta von Thüngen; "Conservation projects

in the Chacó," by Enrique Bucher; "TRAFFIC South America," by Juan Villalba Macias, and "Wetlands for the Americas in South America," by Pablo Canevari. Cecilia de Blohm, a member of the SSC Steering Committee, also gave a special presentation on the development of a biodiversity conservation strategy in Venezuela.

The final day and a half of the meeting was dedicated to presentations from Specialist Groups about their activities during the past triennium. Thirty-eight Specialist Groups were represented at the meeting. These reports, along with triennial reports from most SSC Specialist Groups are reprinted in this special issue of *Species*.

The General Assembly

The 19th General Assembly of IUCN was the largest ever, with some 1300 participants gathering in Buenos Aires in January 1994 for 10 days of official ceremonies, plenary sessions, and technical workshops. The General Assembly had the official tasks of electing a new President (Jay Hair, Executive Director, National Wildlife Federation, US), electing a new Council, re-establishing the Commissions and selecting Chairs (George Rabb was re-elected for a second term as Chair of the SSC), approving a Strategic Plan and a new mission statement for IUCN, approving the budget, debating and adopting 98 Resolutions and Recommendations, and welcoming a new Director General (David McDowell from New Zealand). The new mission statement for IUCN is "To influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable."

A continuing theme throughout the General Assembly was the importance of the Commissions to the members of IUCN. A review of the work of the Commissions by Gabor Bruszt and David Munro was presented to the Assembly. This report held up the SSC as an example of the value of Commissions to IUCN. A Resolution of the Assembly endorsed the recommendations of the Commission review and called for the strengthening of the Commissions as important agents in the pursuit of IUCN's mission.

Several other matters of specific interest to the SSC were addressed during the debates over resolutions and recommendations. The following species-related recommendations were adopted: IUCN Red List — Categories of Threat; International Trade in Wild Birds; Conservation of Country-Endemic Species; Introduction, Translocation, and Reintroduction of Species; Protection of *Swietenia macrophylla* under CITES; Management and Protection of Mountain Ungulates belonging to the Sub-Family Caprinae. In addition, the General Assembly approved resolutions on the draft guidelines for sustainable use as discussed above and on the work of the SSC in general. Copies of any of these recommendations and resolutions are available from the SSC office in Gland.

The SSC, in conjunction with the Commission on National Parks and Protected Areas, co-sponsored a technical workshop entitled "Conserving Species and Ecosystems." The objectives of the workshop were: to explore options for integrating the expertise of managers and scientists to achieve sustainable conservation; and to identify how IUCN members and relevant Commissions (particularly SSC and CNPPA) can work together to integrate research and management perspectives. Through formal presentations and discussion groups, the workshop developed a series of recommendations for ways in which scientists and managers can work together. These include striving for opportunities for partnership, recognizing the limits of both

our biological and social knowledge, improving systems to identify priorities, and drawing in the human dimension to the work of conservation.

Several other workshops at the General Assembly had themes of interest to the SSC. A workshop on the Biodiversity Strategy and Convention informed participants about the Convention and other activities to conserve biodiversity being pursued at global and national levels by IUCN and its members. A workshop on Sustainable Use of Living Natural Resources reviewed the applicability of the draft IUCN guidelines on the subject, and suggested that they needed further validation and revision before the next General Assembly. The reports from these and all other workshops during the General assembly will be published by IUCN.

With the General Assembly, the new triennium for IUCN begins. The triennium will last until late 1996 when the next General Assembly is scheduled to be held in Montreal, Canada. As in the past, the entire SSC membership must be reconstituted with the advent of the new triennium. Membership information packets have been sent to all Specialist Groups. For information on this process, please contact Doreen Zivkovic in the SSC office in Gland.

Timothy A. Sullivan
Assistant to the SSC Chair

Donations to the SSC

The last issue of *Species* (Number 20) contained the first in a series of articles recognizing donors to SSC Specialist Groups and programs. This is the second in the series. Donors of \$2,500 or more to the African Rhino Specialist Group, Cat Specialist Group, and Crocodile Specialist Group are listed.

Our sincere thanks go to all the governments, government agencies, organizations, and companies that have given so generously, with special thanks to the World Wide Fund for Nature, which grants operating support on an annual basis. Also of particular note is the Peter Scott IUCN/SSC Action Plan Fund, established by the Sultanate of Oman in 1990. The Fund continues to provide invaluable support to SSC Specialist Groups in the Action Planning process.

African Rhino Specialist Group:

- Commission of the European Union
- Peter Scott IUCN/SSC Action Plan Fund
- Rhino and Elephant Foundation
- Southern African Nature Foundation
- United Kingdom Department of the Environment
- World Wide Fund for Nature—Africa and Madagascar

Cat Specialist Group:

- Friends of the Cat Group
- International Fur Trader Federation
- Peter Scott IUCN/SSC Action Plan Fund
- United States Government, Department of State
- World Wide Fund for Nature—International
- World Wide Fund for Nature—United Kingdom

Crocodile Specialist Group:

- Asociación Colombiana de Zoocriaderos
- Dr. I. Lehr Brisbin, Savannah River Ecology Laboratory, U.S.A.
- Crocodile Farmers Association of Zimbabwe
- A. Handoko, Salim Group, Indonesia
- Heng Long Leather Company, Pte. Ltd., Singapore
- Walter Herd, Germany
- JLIA—Japan Leather & Leather Goods Industries Association, CITES Promotion Committee & All Japan Reptile Skin and Leather Association
- F. Wayne King, U.S.A.
- Mainland Holdings, Ltd., Papua New Guinea
- Professor Harry Messel, Australia
- Kurt Preiss, Reptilia Inc., U.S.A.
- Reptilartenschutz, Germany
- Philippe Roggwiller, Tanneries des Cuirs d'Indochine et de Madagascar, France
- Singapore Reptile Skin Trade Association
- Utai Youngprapakorn, Samutprakan Crocodile Farm, Thailand

The large number of donors to the SSC and its Specialist Groups prohibits full listing in one issue of *Species*; please watch for additional acknowledgements in future issues.

Susan Tressler

SSC Financial Development Officer

1994 Peter Scott Awards for Conservation Merit



The Species Survival Commission's Peter Scott Awards for Conservation Merit recognize highly significant achievements in conservation. Accomplishments may involve one or more specific events, or they may reflect sustained activity over time. The recipient may be one or more individuals, an organization, or an institution. Achievements are recognizable as particularly significant and noteworthy contributions to the conservation of wild fauna and flora, especially (but not limited to) endangered and threatened taxa and those subject to exploitation by man. Nominations for the Peter Scott Award are approved by the SSC Steering Committee.

At the IUCN General Assembly in Buenos Aires, Peter Scott Awards were presented posthumously to Ingeniero Eduardo Aspiazu, Alwyn H. Gentry, and Theodore A. Parker, III. All three were killed in a plane crash in Ecuador in August 1993. Their contributions to conservation were extolled at a special ceremony during the General Assembly. Russ Mittermeier, Enrique Forrero, and Lourdes L. de Jaramillo told the gathering of the professional and personal accomplishments of the three awardees. A formal citation and a bronze medal designed by Peter Scott will be pre-

sented to the family or friends of each of the honorees. Their formal citations read:

Ingeniero Eduardo Aspiazu

For his tireless dedication as a conservationist and in special recognition of his role in helping to make the dream of an Andean protected area network come true.

Alwyn H. Gentry, Ph.D.

For pioneering the rapid assessment technique, an approach to evaluating the biotic wealth of ecosystems, that significantly advanced conservation knowledge and alerted governments to the precarious state of some of their richest ecological treasures, and in recognition of a lifetime of unmatched conservation achievement in the field of botany.

Theodore A. Parker III, Ph.D.

For pioneering the rapid assessment technique, an approach to evaluating the biotic wealth of ecosystems, that significantly advanced conservation knowledge and alerted governments to the precarious state of some of their richest ecological treasures, and in recognition of a lifetime of unmatched conservation achievement in the field of ornithology.

Award for Graeme Caughley

Following the General Assembly, the SSC Steering Committee approved a Peter Scott Award for Graeme Caughley. Dr. Caughley passed away before the award could be presented to him; it has instead been presented to his family. The following remembrance of Dr. Caughley's life and work was prepared for the SSC by Anne Gunn.

Graeme J. Caughley 1937-1994

Graeme J. Caughley died in February 1994. This New Zealand-born Australian left his own unmistakable influence on ecology, wildlife management, and most recently, conservation biology. He led in his field by setting high standards of experimental design, analyses and integrity. Throughout his career, ecological acumen and clarity of expression tempered by a quick wit and telling phrase were the hallmarks of his contributions.

Graeme was best known for his practical and theoretical research on population dynamics, where much of his work pivoted on the ecological relationships between herbivores and their forage. The application of that research led to frequent involvement in the management of large herbivores in national parks and sustained yield harvesting of different species. Graeme's expertise in ecology in many areas of the world led to his serving since 1976 on SSC Specialist Groups for Caprinae, Crocodiles, and Marsupials, and more recently as a Regional Member. He made important

contributions to the development of the new draft IUCN Red List Categories.

A delight in ecological relationships and a strong belief in scientific experimentation are pervasive themes throughout Graeme's publications which include two sole-authored books. His 1977 *Analysis of Vertebrate Populations* has never been surpassed as a text in wildlife management courses, and *The Deer Wars: the Story of Deer in New Zealand* (1983) attracted praise for the scope of its approach and the vigor of the writing. His most recent publication (*Journal of Animal Ecology* 63: 215-244) is a characteristically trenchant review of conservation biology where he unerringly identified an imbalance. A focus on the demographic and genetic consequences of small populations has been at the expense of efforts to rigorously determine what drove the populations to a small size. During his long illness, Graeme was spurred on with research into extinctions of a common species under experimental conditions and writing a book on the theory and practice of conservation biology.

Metamorphosis: Evolution of the SSC Trade Specialist Group

Amie Bräutigam

SSC members should be aware of recent developments in IUCN/SSC with respect to program activities on wildlife trade. First, the SSC Steering Committee, at its January 1994 meeting in Buenos Aires, agreed to dissolve the SSC Trade Specialist Group and recognize formally the Group's coordinating office in Cambridge, U.K. and its functions as an integral part of the SSC Secretariat. This decision follows related decisions by the Steering Committee and the TRAFFIC Committee to recognize each others program as the source of expertise (wildlife trade vs. species conservation) for our collaborative work on wildlife trade issues.

A Bit of History

Many SSC members are aware that SSC reconstituted the Trade Specialist Group in 1986 as one of its disciplinary specialist groups. Its mandate was to coordinate the input and expertise of the SSC network for IUCN's contribution to CITES, as well as to catalyze and assist the network in addressing trade as a species conservation problem. Since that time, there has been considerable evolution in the activities and role of the Trade Specialist Group: in addition to becoming the locus for IUCN's technical support to CITES, the Group's coordinating office, with the assistance of many SSC groups, has been supporting CITES' efforts to identify Appendix II species subject to detrimental levels of trade in the context of the CITES Significant Trade project. The coordinating office has worked with a number of taxonomic specialist groups to identify species subject to overexploitation for trade and, in some instances, initiate field assessments to document the impact of trade. The office has also worked with disciplinary groups on complex policy issues related to trade. The activities and responsibilities of the Group's

coordinating office have, in effect, increased and expanded to the extent that the office is undertaking functions that are clearly those of the IUCN Secretariat rather than those normally assigned to our voluntary network.

Other relevant developments leading to the recent Steering Committee decisions relate to the institutional arrangements for the Group (the coordinating office was integrated into the IUCN Species Survival Program in 1991) and the closer working relationship with the TRAFFIC Network, initially another SSC creation and now a joint program of IUCN and WWF, which has resulted primarily from the collocation of the office with TRAFFIC International in Cambridge.

Towards the Future

Although the former Trade Specialist Group coordinating office in Cambridge will now be an IUCN Species Survival Program office, the activities and responsibilities of the office are expected to change little in the short term in terms of coordinating IUCN's technical input on CITES and wildlife trade issues. Through the Cambridge office, we will be actively exploring ways in which we can develop more collaboration with the TRAFFIC Network, in terms of information management and dissemination as well as program development and implementation. We are also exploring ways in which the office can develop to serve some of the broader program needs of the Commission in meeting our strategic objectives.

In the Meantime

Many specialist group members will be fully aware that the feverish pace of work on wildlife trade activities continues, as the SSC Trade Office in Cambridge has commenced the fourth

Features

biennial review of CITES Appendix amendment proposals. Coordinated by John Howes from the Cambridge office, with assistance from Nina Marshall, SSC Plant Trade consultant in Nairobi, the review will draw on the expertise of many of the plant and animal specialist groups as well as the trade expertise of the TRAFFIC Network. The SSC and TRAFFIC reviews will be compiled into *IUCN Analyses of the CITES Appendix amendment proposals*, which will be published in English, French, and Spanish and distributed to all CITES Parties for reference in their assessment of the CITES proposals. These proposals—and many other issues—will be considered at the ninth biennial CITES meeting, scheduled for 7 to 18 November in Fort Lauderdale, Florida.

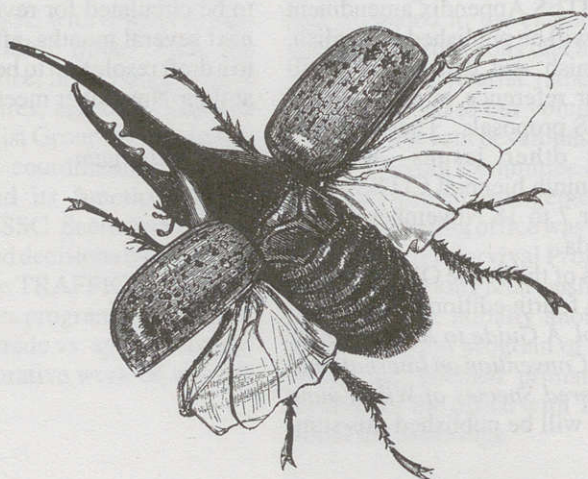
Other activities of the Trade Office include completion of the fourth edition of *CITES: A Conservation Tool. A Guide to Amending the Appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora*, which will be published this sum-

mer in English, French, and Spanish. Project reports on giant clams and Fischer's lovebird (*Agapornis fischeri*) in Tanzania are in various stages of review and are expected to be completed in the autumn. A second draft of proposed IUCN Guidelines for the Disposition of Confiscated Animals, the elaboration of which has been coordinated by Josh Ginsberg of the Reintroductions Specialist Group, is expected to be circulated for review by the SSC in the next several months, after having contributed to a draft resolution to be considered by CITES at their November meeting.

Amie Bräutigam

Preparations for CITES

Joanna Boddans Hosang



As many members of SSC undoubtedly know, the ninth Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) will be held later this year (November 7-18, 1994, Fort Lauderdale, U.S.A.).

Preparations by IUCN/SSC for the Conference are well underway and include producing such recurrent documents as the booklet *CITES—A Conservation Tool* (a guide to amending the CITES Appendices), prepared once again by the SSC office in Cambridge, and the IUCN Analyses of the Proposals to Amend the CITES Appendices.

As is usual for each Conference of the Parties, IUCN will prepare an overall policy statement on the implementation of CITES. This policy statement will be drafted in consultation with the IUCN membership and cover such broad issues as ensuring that trade is beneficial to species conservation, the need for monitoring and regulation by importing nations, etc.

Specific issues which IUCN will prepare position statements on were identified at the recent SSC Steering Committee meeting. These include: the Disposition of Confiscated Specimens; the CITES Listing Criteria; the African Elephant; Crocodilian Ranching; and Timber Trade.

Some of these topics are being considered as the basis for well-explained, thought-provoking articles in key scientific journals, focusing on objectivity and on a realistic approach to sustainable utilization of wild species.

SSC members interested in obtaining further information on IUCN/SSC's preparations for the ninth Conference of the Parties to CITES, please contact Simon Stuart in the SSC Office in Gland.

Joanna Boddans Hosang
Communications Division
IUCN

Features

Draft IUCN Red List Categories, Version 2.2

Georgina Mace and Simon Stuart

I. Introduction

The threatened species categories now used in Red Data Books and Red Lists have been in place, with some modification, for almost 30 years. Since their inception they have become widely recognized internationally, and they are now used in a whole range of publications and listings produced by IUCN as well as by numerous governmental and non-governmental organizations. The Red Data Book categories provide an easily and widely understood method for highlighting those species under higher extinction risk, so as to focus attention on conservation measures designed to protect them. The system has worked well under the existing definitions, and underlies many valuable conservation assessments and management plans. However, with the increasing recognition that the resources available for conservation are very limited and need to be allocated rationally among many different demands, the categories have been used more frequently for setting priorities for conservation action. It is this change in emphasis that has provoked recent moves to revise the category definitions.

The need to revise the categories has been recognized for some time. In 1984, the SSC held a symposium, "The Road to Extinction" (Fitter & Fitter 1987) which examined the issues in some detail, and at which a number of options were considered for the revised system. However, no single proposal resulted. The current phase of development began in 1987 with a request from the SSC Steering Committee to develop a new approach that would provide the conservation community with useful information for action planning.

The revision has several aims: to provide an explicit system that can be applied consistently by different people; to improve the objectivity by providing those using the criteria with clear guidance on how to evaluate differ-

ent factors that affect risk of extinction; to provide a system which will facilitate comparisons across widely different taxa; and to give people using threatened species lists a better understanding of how individual species were classified. In this document, proposals for new definitions for Red List categories are presented. The general aim of the new system is to provide an objective framework for the classification of species according to their extinction risk. This is intended to be equally applicable across taxa, and to be useful in the planning of conservation actions.

The proposals presented in this document result from a continuing process of drafting, consultation and validation exercises, and re-drafting. It is clear that the production of a large number of draft proposals has led to some confusion, especially as each draft has been used for classifying some set of species for conservation purposes. To clarify matters, and to open the way for future modifications as and when they become necessary, a system for version numbering is now being introduced as follows:

Version 1.0: Mace & Lande (1991)

The first paper discussing a new basis for the categories, and presenting numerical criteria especially relevant for large vertebrates.

Version 2.0: Mace et al. (1992)

A major revision of Version 1.0, including numerical criteria appropriate to all organisms and introducing the non-threatened categories.

Version 2.1: IUCN (1993)

Following an extensive consultation process within SSC, a number of changes were made to the details of the criteria, and fuller explanation of basic principles was included. A more explicit structure clarified the significance of the non-threatened categories.

Version 2.2: 1994 (this paper)

Following further comments received and additional validation exercises, some minor changes to the criteria have been made. In addition, the Susceptible category present in Versions 2.0 and 2.1 has been subsumed into the Vulnerable category. A precautionary application of the system is emphasized.

In future, any application of the criteria should include the appropriate version number as given above.

In the rest of this document, the proposed system is outlined in several sections. The Preamble presents some basic information about the context and structure of the proposal, and the procedures that are to be followed in applying the definitions to species. This is followed by a section giving definitions for terms used in a specific fashion within the definitions. Finally the definitions are presented, followed by the quantitative criteria used for classification within the threatened categories. It is important for the effective functioning of the new system that all sections are read and understood, and the guidelines followed.

II. Preamble

The following points present important information on the use and interpretation of the categories (=Critically Endangered, Endangered, etc.), criteria (= A to E), and sub-criteria (=a, b, etc., i, ii, etc.):

1. Taxonomic Level and Scope of the Categorization Process

The criteria can be applied to any taxonomic unit at or below the species level. The term "taxon" in the following notes, definitions, and criteria is used for convenience, and may represent species or lower taxonomic levels, including forms that are not yet formally described. There is a sufficient range among the different criteria to enable the appropriate listing of taxa from the complete taxonomic spectrum, with the exception of microorganisms. The criteria may also be applied within any specified geographical or political area al-

though special notice should be taken of point 11 below. In presenting the results of applying the criteria, the unit and area under consideration should be made explicit. The categorization process should only be applied to wild populations reproducing naturally inside their natural range, and to populations resulting from benign introductions (defined in the draft IUCN Guidelines for Reintroductions as "...an attempt to establish a species, for the purpose of conservation, outside its recorded distribution, but within an appropriate habitat and ecological area").

2. Nature of the Categories

All taxa listed as Critically Endangered qualify for Vulnerable and Endangered, and all listed as Endangered qualify for Vulnerable. Together these categories are described as "threatened." The threatened species categories form a part of the overall scheme. It will be possible to place all taxa into at least one of the categories (see Fig. 1).

3. Role of the Different Criteria

For listing as Critically Endangered, Endangered, or Vulnerable, there are five quantitative criteria; meeting any one of these criteria qualifies a taxon for listing at that level of threat. The different criteria (A-E) are derived from a wide review aimed at detecting risk factors across the broad range of organisms and the diverse life histories they exhibit. Even though some criteria will be inappropriate for particular taxa and some taxa will never qualify under particular criteria however close to extinction they come, there should be criteria appropriate for assessing threat levels for any taxon (other than microorganisms). The relevant factor is whether any one criterion is met, not whether all are appropriate or all are met.

4. Derivation of Quantitative Criteria

The quantitative values in the criteria associated with threatened categories were developed through wide consultation, and are set at what are generally judged to be appropriate levels, even if no formal justification for these values exists. The levels for different criteria within categories were set independently but

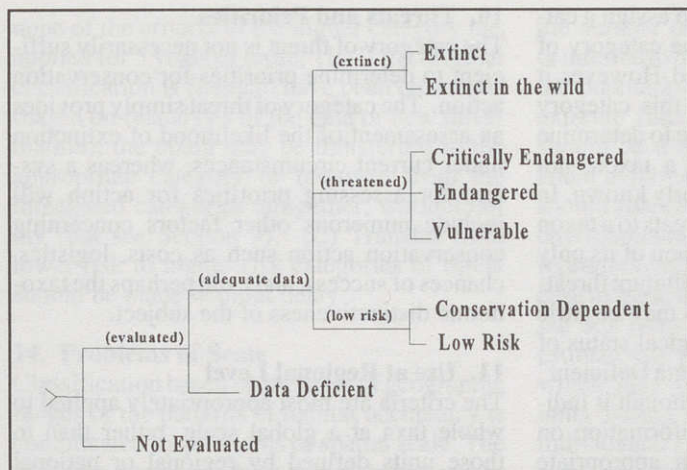


Figure 1. Structure of the Categories.

against a common standard. Some broad consistency between them was sought. However, a given taxon should not be expected to meet all (A-E) criteria in a category; meeting any one criterion is sufficient.

5. Implications of Listing

Listing in the categories of Not Evaluated and Data Deficient indicates that no assessment of extinction risk has been made, though for different reasons. Until such time as an assessment is made, species listed in these categories should not be treated as if they were non-threatened, and it will be appropriate (especially for Data Deficient forms) to give them the same degree of protection as threatened taxa, at least until their status can be evaluated.

Extinction is seen as a probabilistic or chance process. Thus, a listing in a higher extinction risk category implies a higher expectation of extinction, and over the time-frames under consideration more taxa listed here are expected to go extinct (without effective conservation action) than taxa listed in the lower risk categories. However, the fact that some taxa listed at high risk persist, does not necessarily mean their initial assessment was inaccurate.

6. Data Quality and the Importance of Inference and Projection

The criteria are clearly quantitative in nature. However, the absence of high-quality data

should not deter attempts to apply the criteria, as methods involving estimation, inference, and projection are emphasized to be sufficient throughout. Inference and projection may be based on extrapolation of current or potential threats into the future and their rate of change, or on extrapolation of factors related to population abundance or distribution (including dependence on other taxa), so long as these can reasonably be supported. Suspected or inferred patterns in either the recent past, present, or near future can be based on any of a series of related factors, and these factors should be specified.

Taxa at risk from threats posed by future events of low probability but with severe consequences (catastrophes) should be identified by the criteria (e.g. small distributions, few locations). Some threats need to be identified particularly early, and appropriate actions taken, because their effects are irreversible, or nearly so (pathogens, invasive organisms, hybridization).

7. Uncertainty

The criteria should be applied on the basis of the available evidence on taxon numbers, trend and distribution, making due allowance for statistical and other uncertainties. In cases where a wide variation in estimates is found, it is legitimate to apply the precautionary principle and use the lowest *credible* estimate.

Where data are insufficient to assign a category (including Low Risk), the category of "Data Deficient" may be assigned. However, it is important to recognize that this category indicates that data are inadequate to determine the degree of threat faced by a taxon, not necessarily that the taxon is poorly known. In cases where there are evident threats to a taxon through, for example, deterioration of its only known habitat, it is important to attempt threatened listing, even though there may be little direct information on the biological status of the taxon itself. The category "Data Deficient" is not a threatened category, although it indicates a need to obtain more information on such species to determine their appropriate listing.

8. Conservation Actions in the Listing Process

The criteria for the threatened categories are to be applied to a taxon irrespective of whether conservation action is taking place. In cases where it is only conservation action that prevents the taxon from meeting the threatened criteria, the designation of "Conservation Dependent" is appropriate. It is important to emphasize here that a taxon requires conservation action even if it is not listed as threatened.

9. Documentation

All taxon lists including categorization resulting from these criteria should state the version number of the category definitions as well as the criteria and sub-criteria that were met. No listing can be accepted as valid unless at least one criterion is given. If more than one criterion or sub-criterion was met, then each should be listed. However, failure to mention a criterion should not necessarily imply that it was not met. Therefore, if a re-evaluation indicates that the documented criterion is no longer met, this should not result in automatic down-listing. Instead, the taxon should be re-evaluated with respect to all criteria to indicate its status. The factors responsible for triggering the criteria, especially where inference and projection are used, should at least be logged by the evaluator, even if they cannot be included in published lists.

10. Threats and Priorities

The category of threat is not necessarily sufficient to determine priorities for conservation action. The category of threat simply provides an assessment of the likelihood of extinction under current circumstances, whereas a system for assessing priorities for action will include numerous other factors concerning conservation action such as costs, logistics, chances of success, and even perhaps the taxonomic distinctiveness of the subject.

11. Use at Regional Level

The criteria are most appropriately applied to whole taxa at a global scale, rather than to those units defined by regional or national boundaries. Regionally or nationally based threat categories are best used with two key pieces of information: the global status category for the taxon, and the proportion of the global population or range that occurs within the region or nation. However, if applied at regional or national level it must be recognized that a global category of threat may not be the same as a regional or national category for a particular taxon. For example, taxa that were classified as Vulnerable on the basis of their global declines in numbers or range might be Low Risk within a particular region where the populations were stable. Conversely, taxa classified as Low Risk globally might be Critically Endangered within a particular region where numbers were very small or declining, perhaps only because they were at the margins of their global range.

12. Re-evaluation

As circumstances change, re-evaluation of taxa against the criteria will be necessary, and listings should indicate explicitly the taxa for which re-evaluation should occur within a short time-frame (typically within 5 years), or under some specified circumstance. This is especially important for taxa listed under Low Risk, but which are close to qualifying as Vulnerable or Conservation Dependent.

13. Transfer Between Categories

There are rules to govern the movement of taxa between categories. These are as follows: (A) A taxon may be moved from a category of higher threat to a category of lower threat if

none of the criteria of the higher category has applied for 5 years or more. (B) If the original classification is found to have been erroneous (based on reanalysis of the data or new information), the taxon may be transferred to the appropriate category or removed from the threatened categories altogether, without delay (but see Section 9). (C) Transfer from lower risk to higher risk categories of threat should be made without delay.

14. Problems of Scale

Classification based on the sizes of geographic ranges or the patterns of habitat occupancy is complicated by problems of spatial scale. The finer the scale at which the distributions or habitats of taxa are mapped, the smaller will be the area that they are found to occupy. Mapping at finer scales reveals more areas in which the taxon is unrecorded. It is impossible to provide any strict rules for mapping taxa or habitats; the most appropriate scale will depend on the taxa in question, and the origin and comprehensiveness of the distributional data. However, the thresholds for some criteria (e.g. Critically Endangered) necessitate mapping at a fine scale (in units of one square kilometer or finer).

III. Definitions

Population

Population is defined as the total number of individuals of the taxon. For functional reasons, primarily owing to differences between life forms, population numbers are expressed as numbers of mature individuals only. In the case of taxa biologically dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used.

Subpopulations

Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little exchange (typically one successful migrant individual or gamete per year or less).

Mature Individuals

The number of mature individuals is defined as

the number of individuals known, estimated, or inferred to be capable of reproduction. Where the population is characterized by normal or extreme fluctuations, the minimum number should be used. This measure is intended to count individuals capable of reproduction and should therefore exclude individuals that are environmentally, behaviorally, or otherwise reproductively suppressed in the wild. In the case of populations with biased adult or breeding sex ratios it is appropriate to use lower estimates for the number of mature individuals which take this into account. Reproducing units within a clone should be counted as individuals, except where such units are unable to survive alone (e.g. corals). In the case of taxa that naturally lose all or a subset of mature individuals at some point in their life cycle, the estimate should be made at the appropriate time, when mature individuals are available for breeding.

Generation

Generation may be measured as the average age of parents in the population.

Continuing Decline

A continuing decline is a recent, current, or projected future decline whose causes are not known or not adequately controlled and so is liable to continue unless remedial measures are taken. Natural fluctuations will not normally count as a continuing decline, but an observed decline should not be considered to be part of a natural fluctuation unless there is evidence for this.

Severe Decline

A severe decline (criterion A) is a reduction in the number of mature individuals of at least the amount (%) stated over the time period (years) specified, although the decline need not still be continuing. A severe decline should not be interpreted as part of a natural fluctuation unless there is good evidence for this. Downward trends that are part of natural fluctuations will not normally count as a severe decline.

Extreme Fluctuations

Extreme fluctuations occur in a number of taxa where population size or distribution area var-

ies widely, rapidly, and frequently, with a variation greater than one order of magnitude.

Severely Fragmented

Severely fragmented is defined as the case where increased extinction risks result from the fact that most individuals within a taxon are found in small and relatively isolated subpopulations. These small subpopulations may go extinct, with a reduced probability of recolonization.

Extent of Occurrence

Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary that can be drawn to encompass all the known, inferred, or projected sites of present occurrence of a taxon, excluding cases of vagrancy. This measure does not take account of discontinuities or disjunctions in the spatial distributions of taxa (but see "Area of Occupancy"). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

Area of Occupancy

Area of occupancy is defined as the area within the "extent of occurrence" (see definition) which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may, for example, contain unsuitable habitats. The area of occupancy is the smallest area essential at any stage to the survival of a taxon (e.g. colonial nesting sites, feeding sites for migratory taxa). The size of the area of occupancy will be a function of the scale at which it is measured, and should be at a scale appropriate to relevant biological aspects of the taxon. The criteria include values in km^2 , and thus to avoid errors in classification, the area of occupancy should be measured on grid squares (or equivalents) which are sufficiently small (see Figure 2).

Quantitative Analysis

A quantitative analysis is defined here as the technique of population viability analysis (PVA), or any other quantitative form of analy-

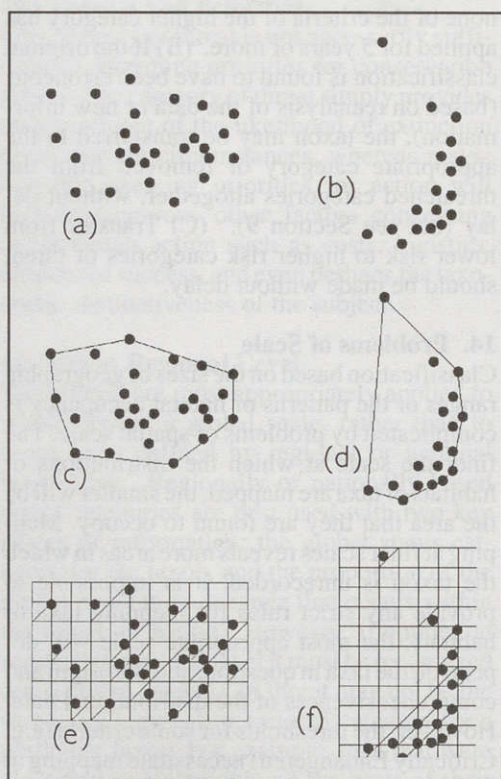


Figure 2. Two examples of the distinction between extent of occurrence and area of occupancy. (a) and (b) are the spatial distribution of known, inferred, or projected sites of occurrence. (c) and (d) show one possible boundary to the extent of occurrence, which is the measured area within this boundary. (e) and (f) show one measure of area of occupancy which can be measured by the sum of the occupied grid squares.

sis, which estimates the extinction probability of a taxon or population based on the known life history and specified management or non-management options. In presenting the results of quantitative analyses, the structural equations and the data should be explicit.

IV. The Categories

Extinct (EX)

A taxon is **Extinct** when there is no reasonable doubt that its last individual has died.

Extinct in the Wild (EW)

A taxon is **Extinct in the Wild** when it is known only to survive in cultivation, in captivity, or as a naturalized population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Critically Endangered (CR)

A taxon is **Critically Endangered** when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by *any of the criteria (A to E)* on page 20.

Endangered (EN)

A taxon is **Endangered** when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by *any of the criteria (A to E)* on pages 20-21.

Vulnerable (VU)

A taxon is **Vulnerable** when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by *any of the criteria (A to E)* on pages 21-22.

Conservation Dependent (CD)

Taxa that do not currently qualify as Critically Endangered, Endangered, or Vulnerable, may be classified as Conservation Dependent. To be considered **Conservation Dependent**, a taxon must be the focus of a continuing taxon-specific or habitat-specific conservation program which directly affects the taxon in question. The cessation of this conservation program would result in the taxon qualifying for one of the threatened categories above.

Low Risk (LR)

A taxon is **Low Risk** when it has been evaluated and does not qualify for any of the categories Critically Endangered, Endangered, Vulnerable, Conservation Dependent, or Data Deficient. It is clear that a range of forms will

be included in this category including: (i) those that are close to qualifying for the threatened categories (ii) those that are of less concern and (iii) those that are presently abundant and unlikely to face extinction in the foreseeable future. It may be appropriate to indicate into which of these three classes taxa in Low Risk seem to fall. It is especially recommended to indicate an appropriate interval, or circumstance, before re-evaluation is necessary for taxa in the Low Risk class, especially for those indicated in (i) above.

Data Deficient (DD)

A taxon is **Data Deficient** when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution is lacking. DD is therefore not a category of threat or Low Risk. Listing of taxa in this category indicates that more information is required. Listing a taxon as DD acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of the taxon, or if there are reasonable chances of unreported surveys in which the taxon has not been found, or that habitat loss has had an unfavorable impact, threatened status may well be justified.

Not Evaluated (NE)

A taxon is **Not Evaluated** when it has not yet assessed against the criteria.

V. The Criteria for Critically Endangered, Endangered, and Vulnerable

Critically Endangered (CR)

A taxon is **Critically Endangered** when it is facing an extremely high risk of extinction in

the wild in the immediate future, as defined by any of the following criteria (A to E):

A. Population reduction in the form of *either* of the following:

1. An observed, estimated, inferred, or suspected severe decline of at least 80% during the last 10 years or 3 generations for which data are available, based on (and specifying) **any** of the following: (a) direct observation; (b) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (c) actual or potential levels of exploitation; (d) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors, or parasites.
2. A severe decline of at least the rate specified in A1 that is projected, observed, inferred, or suspected to be likely to occur in the near future, based on (and specifying) any of (b), (c), or (d) above.

B. Extent of occurrence estimated to be less than 100 km² or area of occupancy estimated to be less than 10 km², *and* estimates indicating *any two* of the following:

1. Severely fragmented *or* found only at a single location.
2. Continuing decline, observed, inferred, or projected, in *any* of the following: (a) extent of occurrence; (b) area of occupancy; (c) area, extent, and/or quality of habitat; (d) number of locations or subpopulations; (e) number of mature individuals.
3. Extreme fluctuations in *any* of the following: (a) extent of occurrence; (b) area of occupancy; (c) number of locations or subpopulations

C. Population estimated to number less than 250 mature individuals *and either*:

1. An estimated continuing decline of at least 25% within 3 years or one generation, whichever is longer *or*
2. A continuing decline, observed, projected, or inferred, in numbers of mature

individuals *and* population structure in the form of *either* (a) severely fragmented (i.e. no population estimated to contain more than 50 mature individuals); (b) all individuals are in a single subpopulation.

D. Population estimated to number less than 50 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 5 years or 2 generations, whichever is the longer.

Endangered (EN)

A taxon is **Endangered** when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by *any* of the following criteria (A to E):

A. Population reduction in the form of *either* of the following:

1. An observed, estimated, inferred, or suspected severe decline of at least 50% during the last 10 years or three generations for which data are available, based on (and specifying) *any* of the following: (a) direct observation; (b) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (c) actual or potential levels of exploitation; (d) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
2. A severe decline of at least the rate specified in A1 that is projected, observed, inferred, or suspected to be likely to occur in the near future, based on (and specifying) any of (b), (c), or (d) above.

B. Extent of occurrence estimated to be less than 5,000 km² *or* area of occupancy estimated to be less than 500 km², *and* estimates indicating *any two* of the following:

1. Severely fragmented *or* found only at no more than five locations.
2. Continuing decline, inferred, observed or projected, in *any* of the following: (a) extent of occurrence; (b) area of occu-

pancy; (c) area, extent and/or quality of habitat; (d) number of locations or subpopulations; (e) number of mature individuals.

3. Extreme fluctuations in *any of* the following: (a) extent of occurrence; (b) area of occupancy; (c) number of locations or subpopulations

C. Population estimated to number less than 2,500 mature individuals and *either*:

1. An estimated continuing decline of at least 20% within 5 years or 2 generations, whichever is longer, *or*
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals *and* population structure in the form of *either* (a) severely fragmented (i.e. no population estimated to contain more than 250 mature individuals); (b) all individuals are in a single subpopulation.

D. Population estimated to number less than 250 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or 5 generations, whichever is the longer.

Vulnerable (VU)

A taxon is **Vulnerable** when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by *any of* the following criteria (A to E):

A. Population reduction in the form of *either of* the following:

1. An observed, estimated, inferred, or suspected severe decline of at least 50% during the last 20 years or 5 generations for which data are available, based on (and specifying) *any of* the following: (a) direct observation; (b) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (c) actual or potential levels of exploitation; (d) the effects of introduced taxa, hybridiza-

tion, pathogens, pollutants, competitors, or parasites.

2. A severe decline of at least the rate specified in A1 that is projected, observed, inferred, or suspected to be likely to occur in the near future, based on (and specifying) any of (b), (c), or (d) above.

B. Extent of occurrence estimated to be less than 20,000 km² or area of occupancy estimated to be less than 2,000 km², and estimates indicating *any two of* the following:

1. Severely fragmented *or* found at no more than ten locations.
2. Continuing decline, inferred, observed, or projected, in *any of* the following: (a) extent of occurrence; (b) area of occupancy; (c) area, extent, and/or quality of habitat; (d) number of locations or subpopulations; (e) number of mature individuals.

3. Extreme fluctuations in *any of* the following: (a) extent of occurrence; (b) area of occupancy; (c) number of locations or subpopulations

C. Population estimated to number less than 10,000 mature individuals and *either*:

1. An estimated continuing decline of at least 20% within 10 years or 3 generations, whichever is longer, *or*
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals *and* population structure in the form of *either* (a) severely fragmented (i.e. no population estimated to contain more than 1,000 mature individuals); (b) all individuals are in a single subpopulation.

D. Population very small or restricted in the form of *either of* the following:

1. Population estimated to number less than 1000 mature individuals.
2. Population is characterized by an acute restriction in its area of occupancy (typically less than 100 km²) or in the number of locations (typically less than 5). Such a taxon would thus be prone to the ef-

fects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

- E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

VI. Some Examples of the Application of the Criteria

During the process of developing the new draft Red List categories and criteria, it has become clear that it is very hard to understand how the proposed new system actually works without seeing some worked examples of particular species. To assist in understanding the process, eight species have been chosen as examples. Most of these species are not particularly well-known, thus demonstrating that the criteria do not require large amounts of quantitative data to be available before they can be applied.

Ceratotherium simum

The white rhinoceros *Ceratotherium simum* is the least threatened of the world's five species of rhinoceros. The northern subspecies is Critically Endangered and is restricted to Garamba National Park in Zaire, where only 33 animals survive. The southern subspecies is largely confined to South Africa, where it has been increasing for many years under strict protection, and now numbers more than 6,000 individuals.

Criterion A. The species does not qualify as Threatened, since it is not in decline, nor is there any sign of breakdown in the protection system in South Africa that would result in a high level of poaching.

Criterion B. The species does not qualify as Threatened, since its area of occupancy is greater than 2,000 km².

Criterion C. The species does not qualify as Threatened, since although it has a population of less than 10,000 mature individuals, it is not in decline.

Criterion D. The species does not qualify as Threatened, since its population is greater than 1,000 mature individuals.

Conservation Dependent. The species certainly qualifies, since the cessation of the conservation programme in South Africa would result in the species qualifying as Threatened very rapidly.

Conclusion. List as Conservation Dependent.

Columba mayeri

The pink pigeon *Columba mayeri* is endemic to Mauritius, where it has declined to a tiny population of around 20 birds. A newly reintroduced population at a different site might offer the only hope for the species in the wild. Since the species obviously satisfies criterion D for Critically Endangered, it is not essential to test it against the other criteria. However, a Population Viability Analysis has been carried out on this species, which indicates a probability of extinction in the wild of 50% in two generations, hence qualifying as Critically Endangered.

Conclusion. List as Critically Endangered under Criteria D and E.

Eos cyanogenia

The black-winged lory *Eos cyanogenia* is a parrot that is restricted to the small Indonesian islands of Biak, Manim, Meos Num, Numfor, and Supiori. The species has almost certainly declined as a result of loss of forest habitat, though it is still reported to be relatively common on forested areas of Biak. International trade has accelerated since 1987, giving cause for concern for this species, especially in view of its very restricted distribution.

Criterion A. Given the number of birds reported in international trade, and the small wild population, a postulated decline of 50% in

the last ten years, or a projected decline of 50% in the next ten years, is supportable. The species can therefore be listed as Endangered under criterion A.

Criterion B. The species is likely to have a distribution of less than 20,000 km², and is in decline, and since its distribution is severely fragmented, it satisfies this criterion at the Vulnerable level.

Criterion C. The species almost certainly satisfies this criterion at the Vulnerable level, since its population is believed to be less than 10,000 mature individuals, and its rate of decline is probably at least 20% during the last 10 years.

Conclusion. Since the species qualifies as Endangered under criterion A1c and Vulnerable under criteria B1 & B2e and C1, the former takes precedence, and it is listed as Endangered.

Eretmochelys imbricata

The hawksbill turtle *Eretmochelys imbricata* is a very widespread species, known to nest in at least 60 countries in the tropics and subtropics, but suspected to nest in more. Compared with some other marine turtle species, the total numbers appear to be quite small (a minimum of 15,000 - 25,000 females nest annually). It can be inferred that the relative rarity of the hawksbill is largely the result of prolonged over-exploitation for eggs and the international tortoiseshell trade.

Criterion A. Assuming the generation length to be 40 years, it is a supportable hypothesis that the species has declined by 50% over the last three generations (120 years), thus qualifying as Endangered.

Criterion B. The species does not qualify in view of its very wide distribution.

Criteria C and D. The species does not qualify, since more than 10,000 mature individuals survive.

Conclusion. List as Endangered under criterion A2c.

Dyscophus antongilii

This large frog is endemic to Madagascar, where it has a very small distribution in the east of the country, mainly between Maroantsetra and Andevoranto, and further south around Ambatovaky. The species favours swamps, shallow pools and water ditches, and although the status of the species is poorly known, it can be found in large concentrations. It is probably suffering from loss of habitat. The species appeared in the international pet trade prior to its listing on Appendix I in 1987.

Criteria A. It is unlikely that the decline in this species has amounted to, or will amount to, 50% in 20 years or five generations, and so does not qualify as Threatened under this criterion.

Criterion B. The area of distribution of this species is almost certainly less than 10,000 km². If it is assumed, probably correctly, that the species is in decline, and that its population is severely fragmented, then it would qualify as Vulnerable under criterion B.

Criteria C and D. Given that it can occur in large concentrations, the population of this species is probably greater than 10,000 mature individuals, and so the species does not qualify as Threatened under these criteria.

Conclusion. List as Vulnerable under criterion B1 & B2c.

Partula rosea

Partula rosea is a land snail that is endemic to the island of Huahine in French Polynesia. Its approximate range has been assessed by field biologists. Partulid snails have become extinct in recent years on all the surrounding islands following the introduction (either accidental or intentional) of the predatory snail *Euglandina rosea*. The last visit to the island by experts on *Partula* was in 1991, and no *Euglandina* were seen at that time. However, based on the colonisation of other islands in French

Polynesia, *Euglandina* is expected to invade during the next ten years.

Criterion A. Although currently stable, a decline of 50% over the next ten years is projected on the basis of the likely introduction of a predatory species, and the species thus qualifies as Endangered.

Criterion B. The species probably has an area of occupancy of less than 500 km², occurs at no more than five locations, and is facing a projected decline following the introduction of a predator, and thus qualifies as Endangered.

Criteria C and D. The species probably still has a large population, and so does not qualify under these criteria.

Conclusion. List as Endangered under criteria A2d and B1 & B2e.

Aztekium ritteri

Aztekium ritteri is one of the most unusual Mexican cacti, and is prized by cacti collectors. The population is estimated to number in the millions, but it is restricted to a single valley covering only 50 km². The species has probably declined somewhat, since it has been subject to heavy collecting for many years.

Criterion A. Although the species has probably declined, in view of its large population size, it seems unlikely that the collecting pressure has been sufficient to cause a decline of 50% over the last 20 years or five generations.

Criterion B. The species qualifies as Endangered under this criterion, in view of its area of occupancy of only 50 km², and the fact that it

probably occurs in only one location, and is in decline.

Criteria C and D. The species does not qualify in view of its large population size.

Conclusion. List as Endangered under criterion B1 & B2e.

Paphiopedalum stonei

The species of slipper orchid is found in the limestone cliffs and hills of western Sarawak, Malaysia. It is in decline as a result of limestone quarrying and mining. It is also potentially at risk from international trade.

Criterion A. The species is believed to have declined in the past, or be likely to decline in the future, by at least 50% during 10 years or three generations, and as such qualifies as Endangered.

Criterion B. The species has an area of occupancy of less than 500 km², has a fragmented distribution, and is in decline, and so qualifies as Endangered.

Criteria C and D. The species probably has a population of more than 2,500 mature individuals, and so could not qualify as Endangered under these criteria. If its population is less than 10,000 mature individual, it would qualify and Vulnerable under criterion C.

Conclusion. List as Endangered under criteria A2b and B1 & B2c.

Georgina Mace
Simon Stuart

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Books of Note

1994 IUCN Red List of Threatened Animals

Compiled by the World Conservation Monitoring Centre in association with the IUCN Species Survival Commission and BirdLife International. Edited by Brian Groombridge, 1993, 286 pp., £15.00, U.S. \$30.00. Available from IUCN Publications Services Unit, 219c Huntingdon Road, Cambridge CB3 0DL, U.K.

The SSC has long been associated with the Red Data Book concept, which was originated by the former SSC Chair, Sir Peter Scott, in the mid-1960s. The Red Data Books are catalogues of information on species threatened with extinction, and they aim to focus attention on the plight of the earth's vanishing wildlife. The concept has been outstandingly successful and, over two decades later, many national, regional, and global Red Data Books have been published, while many more countries are in the process of compiling their own lists of threatened species. The information provided in national and regional compilations is inevitably more detailed than the global overview provided by SSC. The demand for a simple international list that categorizes the status of globally threatened taxa continues to grow, partly as a result of the increasing number of relevant international conventions, and it was to meet this need that the first IUCN Red List of Threatened Animals was published in 1986. Further editions appeared in 1988 and 1990, and the 1994 edition is an update of the 1990 edition. As described in detail in this issue of *Species*, the SSC is currently in the process of revising and improving the IUCN Red List categories for threatened species, and it is hoped that the next version, to be published in 1996, will be based on the new categories.

Produced from the advice of SSC members and the databases of the World Conservation Monitoring Centre (WCMC), the Red List

presents, for each species, the scientific name, the English vernacular name (where possible), the IUCN Red List category, and countries of regular occurrence. There is an introductory guest essay by Georgina Mace on the development of the new IUCN Red List categories, and also a foreword by SSC Chair George Rabb. The editor, Brian Groombridge of WCMC, has included introductory material greatly expanded from previous versions, describing the nature of the information in the list and some informative summary tables.

While the increasing length of the Red List (now 5,929 taxa up from 4,477 in 1990) makes depressing reading, the information it contains should be of fundamental value to scientists, managers, and decision-makers responsible for conservation programs.

Pigs, Peccaries, and Hippos. Status Survey and Conservation Action Plan.

Edited by William L.R. Oliver, 1993, 202 pp., £12.50, U.S. \$25.00. Available from the IUCN Publications Services Unit, 219 Huntingdon Road, Cambridge CB3 0DL, U.K.

In his Preface, Gerald Durrell describes this Action Plan as a "pig *Guide Michelin*." This seems an apt description for this collaborative effort of the Pigs and Peccaries Specialist Group and the Hippo Specialist Group as it provides both a broad overview of the status and detailed plans of action for the conservation of the 18 extant species in the sub-order Suiformes. The Plan combines the type of information found in Red Data Books, summarizing much of what is already known about the taxonomy, distribution, ecology, and behavior of each species, with individual "action plans" for each of the species.

The Plan is broken into five sections: an overview of taxonomy within the suborder; a

section on the Neotropical Tayassuids; a section on the Afrotropical Hippopotamuses; a section on the Afrotropical Suids; and a section on the Eurasian Suids. In addition to the individual species accounts, each section includes a review of priorities for conservation action and future research for the regional groupings. There are also special sections on domestication and the issues raised by the problems associated with feral pigs.

At over 200 pages, this Plan is one of the most comprehensive treatments of a taxonomic group to date in the SSC Action Plan series. Richly illustrated with photographs and range maps, the Pigs, Peccaries, and Hippos Action Plan is both a valuable reference source and an invaluable guide to needed conservation actions.

The Red Panda, Olingos, Coatis, Raccoons, and Their Relatives. Status Survey and Conservation Action Plan for Procyonids and Ailurids.

Compiled by Angela R. Glatston, 1994, 103 pp., £10.00, U.S. \$20.00. In English and Spanish. Available from the IUCN Publications Services Unit, 219 Huntingdon Road, Cambridge CB3 0DL, U.K.

The primary aim of this Action Plan is to draw attention to the conservation problems confronting some species of the procyonids and ailurids. The animals comprising these two groups are small-bodied, unobtrusive carnivores, little known and little studied. The document aims to focus the attention of the scientific community on the need for research into the biology of these very interesting species. The Plan makes clear how uncertain we are as to the taxonomic status of many of the species discussed, even to the extent of whether some of these species should be considered as procyonids at all. The document also aims to bring the attention of conservation organizations and governments to the plight of the

threatened species. Because nearly all of the threatened forms occur in Spanish-speaking countries, the Action Plan was published with English and Spanish versions bound together.

The Plan contains an overview of the complicated taxonomy of the Ailurid and Procyonid genera and a statement on the cultural, economic, and scientific values of the species. Threats to Procyonids and Ailurids are discussed in general and in specific detail for the 15 threatened species considered in the Plan. Recommended research and conservation actions are presented by discipline and on a country-by-country basis.

Specialist Group Reports

African Elephant Specialist Group

Ruth Chunge

Triennial Report

The period from 1990 to 1993 has been a particularly interesting and challenging one for the African Elephant Specialist Group (AESG). First convened in the mid-1970s as an independent group, it was merged with the African Rhino Specialist Group (ARSG) in the 1980s. The late 1980s witnessed serious disagreement and fracture among the members of the group, largely due to the extreme views generated by the ivory trade debate. From the end of 1989, the group did not even have a chairman, so the 1991 meeting in Gaborone, Botswana, was chaired by Dr. Simon Stuart, the head of the IUCN Species Survival Program. It is noteworthy that the Botswana meeting was the first meeting to be held since a 1987 meeting in Nyeri, Kenya. The decision was made at the Gaborone meeting for the two groups to revert to independence. This was necessitated by the complexity and uniqueness of issues involved, such as trade in ivory and horn, management and poaching, and the international attention that each mammal was generating.

At the Botswana meeting, members produced terms of reference, applicable to both groups, whereby the overall mission was "to promote the long-term conservation of Africa's elephants and rhinos, and, where necessary, the recovery of their populations to viable levels." Priorities were placed more on reconciliation from a technical standpoint. Members voiced their support for the setting up of a secretariat, first of all for the elephant group, and then the rhino. The post for an executive officer for the AESG was advertised in July 1992 and filled, along with that of a secretary, in January 1993.

In 1991, following the Botswana meeting, two co-chairs were selected for the AESG: Dr. Holly Dublin of the WWF Eastern Africa Regional Office and Bihini Won wa Musiti of Zaire's Gerant du Parc President Mobutu a

N'sele, a choice intended to help the group move away from the political and regional controversies that so characterized it to one with much more technical input and objective debate. At the first meeting under the new chairmanship, which took place in Victoria Falls, Zimbabwe, in November 1992, this transition was largely achieved, a sure indication that the storm the AESG had been through was beginning to subside.

The agenda at Victoria Falls included working group sessions on techniques for censusing elephants and elephant habitat interactions; scientific presentations on recent advances in elephant conservation and biology around the continent; and country and regional updates.

The AESG currently consists of 60 members from 23 (out of 35) range states, Europe, and the U.S.A. who were appointed in 1992. While several of the members have been associated with the group for a long time, there are many new faces: active scientists and managers representing a wide cross-section of the continent, many of whom are African nationals. New additions to the membership are always being considered. Members are involved in all aspects of elephant conservation and management, which include research or other aspects of census techniques, population biology, elephant-human conflict, habitat management, community conservation, and consumptive and non-consumptive utilization of elephants. With the international ban on ivory trade still in place, less attention is now focused on illegal hunting (which has generally declined). Instead, more concern is being placed on the growing problem of elephant-human conflict, resulting in the loss of human life and property. With human populations expanding into elephant range and vice versa, this problem is bound to occupy the thoughts and activities of elephant conservation managers—and therefore the AESG—more and more during the next triennium.

One of the outcomes of the 1992 AESG meeting was a consensus by the membership to improve and expand the African Elephant Database (AED), a geographic information system database on elephant numbers and distribution on the continent. Based at the UNEP headquarters in Nairobi, the project was initiated by the AESG's first chairman, Iain Douglas-Hamilton, in 1986. The 1992 meeting Chair, Dr. Holly Dublin, appointed a task force of five persons to deliberate on the data needs of the AESG, as well as on specific technical and administrative aspects of the AED.

Two task-force meetings were held in 1993, and as a result several important issues concerning the database were defined. Funds were found for a consultant to answer specific queries the task force had raised and to make recommendations for the future running of the AED. Thanks to generous funding from the USFWS, a thorough update of the database will be carried out in the first half of 1994. Future efforts will include improvement in collection, analysis, interpretation, and output of data to help alleviate the chronic difficulty of estimating elephant population densities and trends. In preparation for this, questionnaires for updating purposes have already been distributed to all members.

The next meeting of the AESG will take place in East Africa, alongside the ARSG meeting, in May 1994. It is the hope of the secretariat to sponsor more participants, especially from West and Central Africa, than ever before. Two major themes are envisaged for the meeting: looking for solutions to the problems of human-elephant conflict and discussing the ramifications of the international trade ban in ivory. The meeting will also be used as an important venue to obtain updates of el-

ephant data all over the continent. It is important to make use of the expertise of the membership in all regions and to make a real effort to help the members, although they are diverse in their opinions and expertise, to feel that they are involved.

The AESG office takes responsibility for coordinating the production of *Pachyderm*, a biannual journal of the African Rhino, African Elephant, and Asian Rhino Specialist Groups. Since the establishment of the secretariat in January 1993, two issues have been published, in June and December. In 1993, the mailing list was expanded considerably and now truly reflects a cosmopolitan readership. The AESG office is also building up a bibliography of relevant post-1990 publications with the aim of serving the members better in terms of supplying up-to-date information or articles when requested.

Over the three-year period, considerable financial support for the group has been provided by the USFWS, WWF, the EC, the German government, and the Peter Scott IUCN/SSC Action Plan Fund. Currently, the AESG is requesting specific funds to assist researchers studying human-elephant conflict. While it is not in the mandate of the AESG to generate proposals, there is certainly scope for advising and recommending priority topics for research in addition to reviewing proposals for other parties.

In conclusion, this period can be viewed as a new phase for the AESG, characterized by a fresh enthusiasm to work together for the conservation of the African elephant.

Ruth Chunge
Program Officer
African Elephant Specialist Group

African Reptile and Amphibian Specialist Group

Kim M. Howell

The group is still new compared with the more established SSC groups globally and within the region. It should also be seen in context: three other SSC groups, the Tortoise and Freshwater Turtle Specialist Group, the Marine Turtle Specialist Group, and the Crocodile Specialist Group, deal with specific taxonomic groupings, and a fourth group, also recently established, the Madagascar Reptile and Amphibian Specialist Group, also deals with a distinct portion of the African herpetofauna.

Four group newsletters have been circulated, the latest one in 1993. Efforts have focused on identifying the most important problems faced in conservation of reptiles and amphibians in Africa, establishing priorities among these, and suggesting approaches as to how they best may be solved.

A major difficulty is the disparity of level of conservation awareness, protection, and action among different states of the continent. Lack of trained specialist manpower, poor infrastructure, and lack of the requisite biological knowledge are all serious limiting factors in conservation efforts aimed at reptiles and amphibians, animals that do not usually receive high priorities from natural resource managers. Feedback from some institutions indicate that the newsletter served a role in raising institutional awareness within govern-

ment of the importance of reptiles and amphibians, and so its circulation has been expanded to include these institutions.

Group members have been involved in conservation efforts in varying capacities and levels. The group was called upon to comment on applications to upgrade the conservation status of the Goliath frog, and several members participated in developing, in conjunction with the Trade Specialist Group, a study on the pancake tortoise.

A project has been initiated that will assess the level of protection provided by Africa's Protected Area Network to reptiles and amphibians.

There has not yet been a suitable regional forum or meeting to which we could link a meeting of this Specialist Group. However, given the rapid improvement in communications and the political will for greater cooperation within Africa, it is hoped that this situation will improve quickly and that at least members of the group based in Africa will be able to meet.

*Kim M. Howell, Chair
African Reptile and Amphibian
Specialist Group*



African Rhino Specialist Group

Martin Brooks

For the Triennium 1991-1993

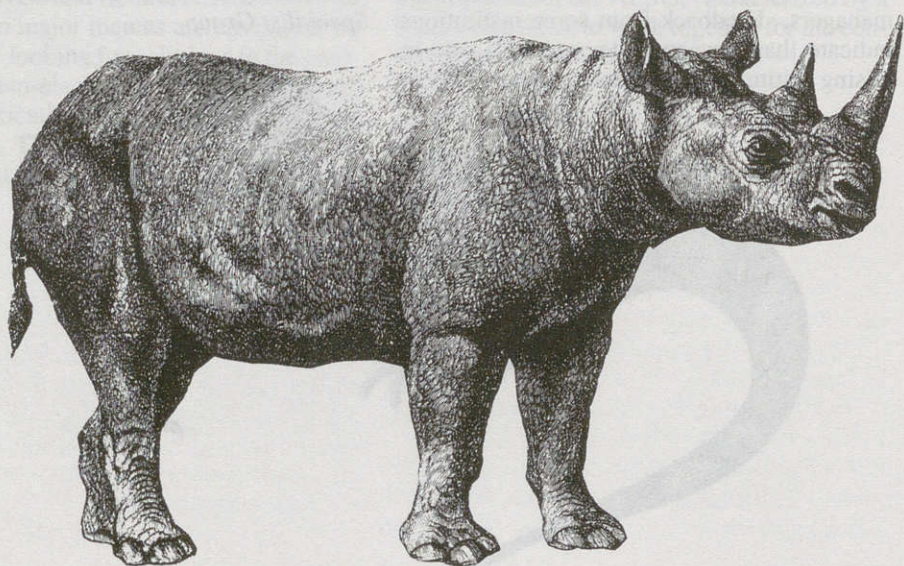
The decision taken in July 1991 to split IUCN's African Elephant and Rhino Specialist Group into separate groups for elephants and rhinos has provided renewed focus on the more endangered rhinos and allowed a more vigorous assessment of their status and the formulation of action plans for their survival.

The newly constituted African Rhino Specialist Group (ARSG) comprised 25 members, seven of whom represented the range states of Cameroon, Kenya, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe. Given the continued decline of the endangered black rhinoceros (*Diceros bicornis*) and the critical status of the northern white rhinoceros (*Ceratotherium simum cottoni*), it was important to translate the Group's mission of promoting the conservation of Africa's rhinos into effective conservation management action. To achieve this, emphasis was placed on facilitating, or assisting with, the design of appropriate rhino conservation plans that could be used to raise the funding required for their implementation.

The first meeting of the ARSG was convened in Victoria Falls, Zimbabwe, in November 1992. Information and ideas were exchanged on a wide range of issues, ranging from captive breeding and genetics to a variety of fairly controversial alternative strategies, such as dehorning safaris, trophy hunting, and possible scenarios for legalizing trade.

The main aims of the meeting were to review the status and trends of the rhino populations in Africa and to identify the priority conservation projects requiring international support in advance of UNEP's Rhino Range States and Donors meeting.

The black rhinoceros, estimated at 65,000 in 1970, continued to decline from 3,450 to 2,475 between 1991 and 1992, with only five populations of more than 100 animals remaining. Fairly large, viable populations survived in South Africa (819), Namibia (489), Zimbabwe (425), Kenya (414), and Tanzania (127), with only South Africa and Namibia having experienced increases in recent years. The remaining range states had populations of only 50 or less. The northern white rhinoceros was



restricted in the wild to a single population of 31 animals in Zaire and a small non-breeding captive population. The southern white rhinoceros (*C. s. simum*) continued to increase, largely due to sound conservation management in South Africa, where more than 90% of the population occurs. Overall numbers increased from about 4,600 in 1987 to 5,800.

In an effort to focus international attention on the populations most important for the survival of the six recognized subspecies of white and black rhinos, a rating system was developed to identify the key populations. This was based on population size, the significance of the population in conserving the relevant subspecies, and the likelihood of protection measures being effective. This resulted in the identification of 25 "key" populations (critically important) and a further 29 "important" populations (extremely valuable) (for details see *Pachyderm* 16). It was felt that if all else fails, the "key" populations must be given sufficient support to ensure their long-term survival.

The critical situation of Africa's rhinos and the limited extent of funds potentially available from the international community required the group to be very selective when identifying priority projects, but it was possible to identify 25 "priority" and 12 "important" projects from 10 range states, most of which went before UNEP's funding meeting for consideration.

Five projects were identified for special ARSG attention during 1993, and good progress was achieved through the involvement of Group members as indicated below.

- A conservation plan for the protection of the last remaining population of the West African black rhinoceros (*D. b. longipes*) in Cameroon was developed at a workshop in Garoua in June 1993, and some progress was made toward securing financial support for its implementation.
- A policy for the management of black rhino (*D. b. minor* and *D. b. michaeli*) in Tanzania was drawn up at a workshop held in Arusha in May 1993, and the foundations were laid for drafting a detailed management plan. International funds were provided for a rhino coordinator.

- International funding was secured for the employment of a scientific officer for the ARSG.
- A workshop to draft a handbook on survey techniques for African rhinos has been planned.
- A study on the economics of the trade in rhino products has been funded and is under way.

ARSG members also played a significant role at the Kenyan Rhino Metapopulation Workshop, held in Nairobi in November 1992, which assessed the established conservation strategy and recovery plan and provided recommendations.

An important milestone was UNEP's Rhino Range States and Donors meeting held in Nairobi in June 1993. The aim of the meeting was to bring together representatives of the range states and major donors in an attempt to secure additional funds. The procedure for identifying priority projects, developed by the ARSG, was adopted and appeared to assist the donor agencies and countries in their deliberations. Since then, many requests have been received for project details and copies of the slide presentation given by the ARSG chairman. Contacts made at this meeting resulted in funds being made available for a number of projects.

The next ARSG meeting, planned for May 1994 in Mombasa, Kenya, will assess the progress made with the many identified priority projects and the program aimed at eliminating the illegal trade in rhino horn; will consider the Group's role at the forthcoming CITES Conference of Parties; and will review the status of all the rhino populations in Africa. The employment of a scientific officer for the Group will provide more support for the range states, facilitate the development of additional action plans and management guidelines, and allow for the review of critical technical documents and issues.

*Martin Brooks, Chair
African Rhino Specialist Group*

Antelope Specialist Group

Richard D. Estes

Triennial Report 1991-1993

Membership

At the end of the triennium the Antelope Specialist Group (ASG) has 120 members, including 42 from Africa, 5 from the Near East, 18 from Asia, 34 from Europe, and 21 from North America.

ASG Participation in Antelope Workshops and Symposia

January 1992. Meeting at The Living Desert, Palm Desert, California with Antelope Working Group of the Captive Breeding Specialist Group (CBSG) and the Taxon Advisory Group of the AAZPA to draft a Global Captive Action Plan for Antelopes.

Deputy Chairman Rod East, Coordinator and Editor of the four-part antelope survey (*Antelopes: Global Survey and Regional Action Plans*), played a pivotal role in identifying the species and subspecies that deserve the highest priority. He also presented a paper that forecasts the prospects of wildlife in general and antelopes in particular in each country of sub-Saharan Africa during the next century, based on current human population density, annual growth rate and doubling time, the percentage of antelopes currently at risk, and the overall level of wildlife protection and management. Apart from a few countries with low population densities and extensive, well-managed reserves, the prospects are dim—unless population growth rates decline and conservation effectiveness increases dramatically in the near future.

June 1992. Antelope workshop at the South African National Zoological Gardens, organized by CBSG. Review of the Conservation Assessment and Management Plan for Antelopes (CAMP document) produced by Karen Sausman, Chairman of the CBSG Antelope

Working Group for Antelopes, and amendments to the Antelope Action Plan.

November 1992, Riyadh, Saudi Arabia. Arabian Gazelle Workshop and Symposium, arranged by the National Commission for Wildlife Conservation and Development.

September 1993, Antwerp Zoo, Belgium. Antelope Workshop, held during the annual meeting of the CBSG. Jelle Boef, representing the ASG, presented revised and updated CAMP sheets for Arabian antelopes.

Action Plan Priorities

Progress in carrying out action plans has been disappointing.

- Although a grant from the Peter Scott IUCN/SSC Action Plan Fund was provided for an initial aerial survey of the hirola or Hunter's antelope (*Damaliscus hunteri*) in eastern Kenya, two years have passed with no action. Whether the risk of being shot at by renegade Somali troops, disagreement among Kenya government and NGOs over jurisdiction, or a combination of the two is behind the delay remains unclear.
- Similarly, funding and personnel (headed by Jeremy Anderson, Regional ASG Chairman for Southern Africa) have been ready these last two years to find out how many giant sable (*Hippotragus niger variiani*) survive in Angola. In this case, continuation of the civil war is obviously the problem.
- Investigate the status of the mountain nyala (*Tragelaphus buxtoni*) and Swayne's hartebeest (*Alcelaphus buselaphus swaynei*) in Ethiopia. Although conditions appear to be peaceful and the Government has invited the assistance of the ASG and Canid Specialist Group, IUCN has not been able to make the necessary arrangements for site visits.

- Investigate the status and develop conservation action plans for endangered duikers. Steady if slow progress has been made here, thanks to the efforts of ASG and other interested parties. Vivian Wilson and Harald Roth are continuing the country-by-country Pan-African Duiker Survey; Marcel Alers is investigating the status of Jentink's and zebra duikers (*Cephalophus jentinki* and *C. zebra*) while carrying out an EC-sponsored survey of coastal forest reserves in the Ivory Coast; and Ole Seehausen et al. surveyed the status of the Zanzibar red duiker (*C. adersi*).

ASG Newsletter Reports about Antelope Conservation

One of the primary functions of the ASG *Gnusletter*, published three times a year, is to serve as a clearing house for information about the conservation status of antelopes in all the countries where they occur. During the past three years, news was published about antelopes in the following countries (numbers in parentheses denote multiple reports):

Sub-Saharan Africa: Angola (2), Botswana (5), Cameroon (4), Congo Republic, Djibouti, Eritrea, Ethiopia (3), Gabon (2), Ghana (3), Guinea-Bissau (2), Ivory Coast (3), Kenya (3), Liberia (2), Mali, Mozambique, Namibia (3), Niger (2), Rwanda (2), Senegal, Sierra Leone, Somalia, South Africa (4), Sudan, Tanzania (3), Zaire (2), Zambia, Zanzibar; *North Africa:* Algeria (2), Morocco, Tunisia; *Arabian Peninsula:* Israel (4), Oman (2), Saudi Arabia (4), Yemen (2); *Asia:* Afghanistan, China (2), India (5) Iran, Kazakhstan (2), Mongolia, Russia (2), Tibet, Vietnam (3).

Of all these reports, I consider a series of three in-depth articles on Botswana the most important. Based on interviews and documents collected during a 1991 visit, and on the results of an IUCN mission, these articles showed how Botswana's wildlife heritage has been nearly destroyed for the sake of the cattle industry and the enrichment of a few-hundred cattle barons, thanks in large measure to a subsidy by the European Community and loans by the World Bank.

The most extraordinary event involving antelopes during the last three—or even the last 40—years, was the discovery in 1992 of a new genus and species in Vietnam, *Pseudoryx nghetinhensis*, during a joint Vietnamese Ministry of Forestry/WWF survey of the Vu Quang Nature Reserve.

Part 4 of the Antelope Survey

The Antelope Survey of North Africa and Asia is going forward and is expected to be published within the next two years. In place of Rod East, the ASG Chairman will serve as Coordinator and Editor. David Mallon, who prepared the accounts of 10 Asian antelopes for the (still-unpublished) *Antelope Red Book*, has kindly agreed to revise and reformat his data for this country-by-country survey.

Richard D. Estes, Chair
Antelope Specialist Group



Asian Elephant Specialist Group

Lyn de Alwis

Triennial Report

One of the major achievements of the Asian Elephant Specialist Group (AESG) during the triennial period was the hosting of a workshop on censusing elephants in forests. There is currently great confusion regarding the number and density of elephants in tropical Asia, given that much of the previous estimates of elephant numbers were largely educated guesses. The workshop was held in Mudumalai Wildlife Sanctuary in Tamil Nadu, South India, in January 1991, and involved the active participation of field biologists from India, Sri Lanka, Myanmar, Bangladesh, Thailand, Laos, Vietnam, Indonesia, U.S.A., and U.K. The workshop included many lectures, field demonstrations, and data analyses pertaining to various census techniques. A consequence of the workshop was the adoption of the indirect method of estimating elephant numbers and density on the basis of dung counts, first formulated by Richard Barnes and K. L. Jensen in 1987.

As a follow-up to this training program, the AESG helped organize another workshop in Thailand at the invitation of the Royal Forest Department to initiate field studies on elephants. The workshop was held in the Erawan National Park and Salakphra Wildlife Sanctuary, where Shanthini Dawson demonstrated the technique of estimating elephant numbers and density using the Barnes & Jensen method, which she had earlier used successfully in India. Subsequently, Dawson has extended her training program to Sabah (Malaysia) and Vietnam, where she has helped initiate several local projects on elephant conservation.

The AESG has also been active in resolving human-elephant conflicts throughout Asia. In March 1991, members of the AESG, led by Shariff Daim, were able to successfully capture and translocate a bull elephant that had strayed into Singapore from nearby Malaysia.

Shariff Daim was later sent to Sri Lanka to assist in the capture and translocation of chronic crop-raiding elephants. Shariff Daim also identified three small groups of elephants, just northeast of Saigon in southern Vietnam, that were trapped in a small patch of forest surrounded by human settlements. These elephants were raiding crops and killing people, and the Vietnam government is currently involved in the capture and removal of these elephants from the area.

The AESG held its fourth meeting at the BIOTROP in Bogor, West Java, Indonesia, in May 1992. An outcome of this meeting was the development of a number of projects to help implement the Asian Elephant Action Plan. Forty participants from Bangladesh, Cambodia, China, India, Indonesia, Laos, Malaysia (Peninsula and Sabah), Netherlands, Singapore, Sri Lanka, Switzerland, Thailand, U.S.A., U.K., and Vietnam attended the meeting.

The Asian Elephant Conservation Centre in Bangalore, India, continues to coordinate AESG activities across Asia. The Centre has compiled over 3,000 references on Asian elephants for the use of members. It has also published two technical reports: *Censusing Elephants in Forests*, and *Translocation of Wild Elephants*.

The AESG continues to produce its newsletter, *GAJAH*, twice a year with funds provided by the World Wide Fund for Nature (WWF). The newsletter has undergone substantial changes and has been upgraded as the *Journal of the Asian Elephant Specialist Group*, given its importance as a vehicle of communication throughout Asia.

Perhaps the greatest breakthrough by the AESG during the triennial period was the establishment of successful lines of communication with the Forestry Department in Myanmar. This was made possible through

the patient diplomacy of the chairman of the AESG, Lyn de Alwis. The Forestry Department in Myanmar extended an official invitation to the AESG to visit Myanmar in early 1994 and initiate a number of projects to enhance local conservation efforts. A small team planned to visit Myanmar in January 1994 to inaugurate elephant conservation. This augurs well for the AESG and its future role in Asia.

One disappointing observation, however, is the lack of funds for Asian elephant conservation despite the more threatened status of the Asian elephant vis-à-vis the African elephant. There are only an estimated 55,000 elephants in the wild in Asia compared to 600,000 elephants in Africa. The Asian elephant is a global rarity, and hence the responsibility for its long-term survival in the wild rests not only on the governments and conservation organizations in the range states, but more importantly on the more wealthy nations in the west. If the African elephant is to survive in the

future, the 33 countries in Africa need a budget of U.S. \$480 million over the next five years. But in the case of the Asian elephant, the 13 countries concerned do not have even half a million dollars provided by the west to implement conservation programs. Time, money, and trained manpower act as brakes on what can be done in the field to enhance elephant conservation in Asia.

Looking into the future, during the next triennial period, the AESG will require more funds from the international conservation community to implement the Asian Elephant Action Plan. International efforts to protect and safeguard the Asian elephant populations throughout their range must therefore include projects and programs that involve the cooperation and participation of the local communities.

*Lyn de Alwis, Chair
Asian Elephant Specialist Group*



Asian Rhino Specialist Group

Mohd Khan bin Momin Khan and Thomas J. Foose

Triennial Report

The Asian Rhino Specialist Group (which designates itself the AsRSG to distinguish its acronym from the African Rhino Specialist Group which AsRSG designates the AfRSG) has been active for the last 10 years but with an increase during the 1991-1993 Triennium as the conservation crisis for these species intensifies.

The major activities and accomplishments of the AsRSG during the triennium include:

1991

A follow-up workshop to a PHVA workshop for Javan rhino in 1989 is conducted in Bogor, Indonesia. The workshop was co-sponsored by the AsRSG and PHVA to develop the Indonesian Rhino Conservation Strategy Workshop.

1992

The first Program Officer is appointed for AsRSG with financial support from the International Rhino Foundation (IRF).

The AsRSG Program Officer represented the AsRSG and the IUCN/SSC at the preparatory UNEP Rhino Conference.

As a result of that Conference, the AsRSG initiated the development of a Global Environment Facility (GEF) Project for \$2 million to assist implementation of the conservation strategy for rhinos in Indonesia and Malaysia.

1993

The AsRSG Program Officer assists with Preparation of Rhino Conservation Action Plans for Malaysia and Indonesia through a grant from UNEP.

The AsRSG participates in the full UNEP Rhino Conservation Conferences in Nairobi, Kenya.

In preparation for and as a product of this UNEP Rhino Conference, the AsRSG develops a continuing process of compiling overviews of priority actions and required funds for Asian Rhino Conservation through the national rhino conservation action plans. This process will be the basis of a strategic funding plan developed by the AsRSG.

AsRSG continues to help with development of the GEF Project and Grant of \$2 million on southeast Asian rhinos.

A full meeting of the AsRSG is conducted at Jaldapara, West Bengal, India.

Representatives from 10 countries including the 4 major range states for Asian rhinos participated in these sessions: India, Nepal, Malaysia, Indonesia, Thailand, Singapore, Kenya, United States, United Kingdom, Switzerland. Unfortunately, representatives from Myanmar and Vietnam were unable in the end to attend. Major objectives of these sessions were to:

1. Review the status of all 3 species of Asian rhinos and confirm the latest estimates of numbers in the wild.
2. Assess the activities and accomplishments of the AsRSG over the last 6 years and develop priorities and directions for the next 3 years.
3. Revise the AsRSG Action Plan which was originally developed in 1987.
4. Recommend Changes in AsRSG Structure and Function for the 1994-1996 Triennium.
5. Prepare a First Draft of Southeast Asian Rhino GEF Project Program Document which will provide U.S. \$2 million for rhino conservation in Indonesia and Malaysia over the next 2 years.
6. Commence formulation of a Strategic Funding Plan for Asian Rhino Conservation.

Table 1. Asian Rhino Conservation Major Range States

	Current Rhino Populations			Total
	<i>Rhinoceros unicornis</i>	<i>Rhinoceros sondaicus</i>	<i>Dicerorhinus sumatrensis</i>	
India	1,318-1,586			1,318-1,586
Nepal	415-440			415-440
Indonesia		~ 50	233-314	283-364
Malaysia			135-200	135-200
Vietnam		< 50	?	< 50
Laos			?	?
Thailand			10+?	10+?
Myanmar			10+?	10+?
Total	1,733-2,026	< 100	388-534	2,221-2,660

7. Initiate a population and habitat viability analysis PHVA process for *Rhinoceros unicornis*.

The AsRG provides technical and financial assistance with Population and Habitat Viability Analyses (PHVAs) for Sumatran rhino in Indonesia and Indian rhino in India.

The latest estimates of Asian rhino numbers are presented in Table 1. The most notable and unsettling fact from these figures is the revelation that numbers of the Sumatran rhino (*Dicerorhinus sumatrensis*) have now declined to no more than, and probably fewer than, 500. Previous estimates had been 700-1,000. The decrease is attributable mostly to a 50% reduction in the numbers estimated for Sumatra in Indonesia. Although the Javan rhino is fewer in number and the African black rhino has perhaps decreased more precipitously over the last 10 years, the combination of low numbers

and decline rate may render the Sumatran rhino now the most critically endangered of all rhino species on the planet.

There is confirmation from the latest transect and photographic surveys in Ujung Kulon that numbers of the Javan rhino are approximately 50 as previous censuses and estimates had contended.

The Indian/Nepalese rhino (*Rhinoceros unicornis*) remains the success story among Asian rhinos with the total population in India at about 1,450 and in Nepal at about 450. However, levels of poaching in both countries are significant and intensifying. In Assam, still the stronghold for this species, poaching in most of the protected areas for the species is estimated at around 5% per year. This level is approximately equivalent to the annual rates of population growth so that any further intensification will cause decline of the population.

Indeed, such decline has already occurred in at least two areas, with the population in Laokhowa being completely annihilated and the population in Manas reduced by at least 50%.

A major concern of the AsRSG is that the Asian rhino species do not receive their fair share of attention or resources from the international rhino conservation community. It was emphasized that despite the drastic decline in African black rhino over the last decade, the numbers of that species was probably still no lower than the total of all three Asian rhino species combined.

Traditionally the AsRSG, like other Specialist Groups, has concentrated on technical information and advice. In the future the AsRSG aspires to assume a more active role in advocacy and fund-raising for Asian rhino conservation. Toward this end, the AsRSG is initiating a newsletter to be published quarterly. The first issue is intended for the end of March 1993.

Objectives for the 1994-1996 IUCN Triennium include:

- Initiation of newsletter. It is intended that the first issue will be published by the end of June 1994.
- Revision of the AsRSG Action Plan. A draft will be prepared by May 1994 with publication of the final Plan expected by mid-August 1994. The Plan will still be based on maintenance or recovery to viable population levels in demographic and genetic terms.
- Activation of GEF Project for SE Asian Rhino. It is expected that funds will be available and activities initiated by September 1994.

- Development of a Strategic Funding Plan. As a first step toward development of a strategic funding plan, the AsRSG devoted time to improving definition of projects and estimation of their costs. The total cost estimated is approximately U.S. \$57,000,000 with \$35,000,000 required from external donors by the range states.

- Better publicity for the plight of Asian rhinos.

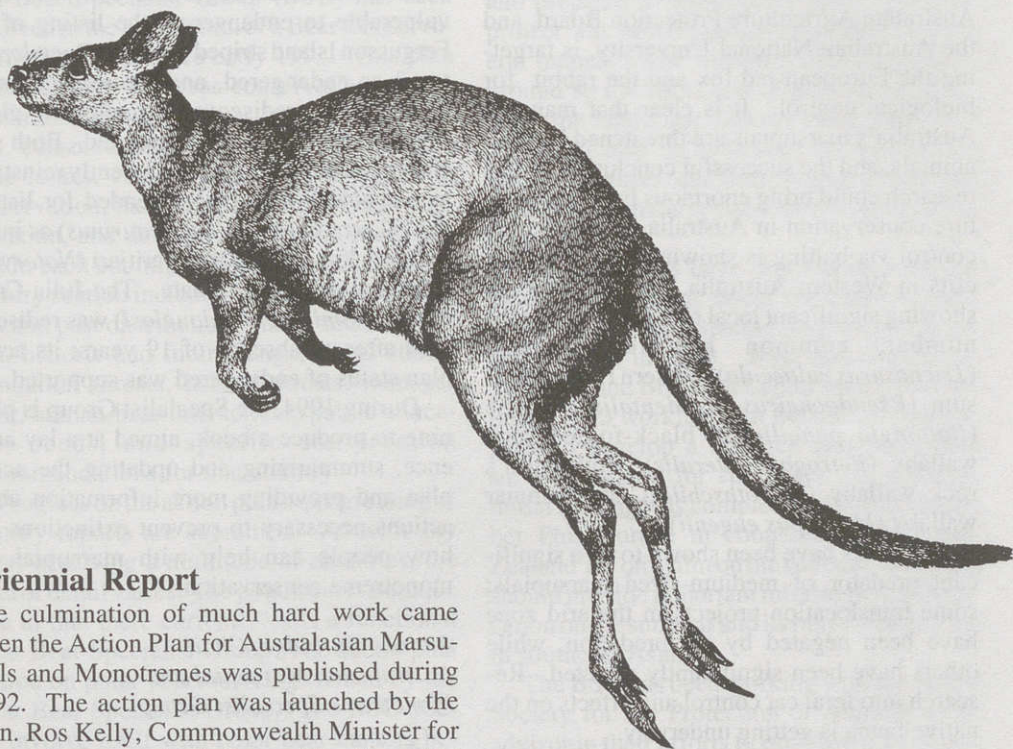
- Establishment of a Secretariat for the AsRSG. This process has largely been initiated with the appointment and operation of the Program Officer. The addition of the second program officer and initiation of the newsletter will advance this objective.

Anyone desiring further information on Asian rhino conservation or the work of the AsRSG is requested to contact the AsRSG program Officer, Dr. Tom Foose, International Rhino Foundation, 85 East Gay Street, Suite 603, Columbus, OH, 43215, U.S.A., Fax: 1-614-228-7210, Tel. 1-614-228-0402.

Mohd Khan bin Momin Khan, Chair
Thomas J. Foose, AsRSG Program Officer
Asian Rhino Specialist Group

Australasian Marsupial and Monotreme Specialist Group

Andrew Burbidge



Triennial Report

The culmination of much hard work came when the Action Plan for Australasian Marsupials and Monotremes was published during 1992. The action plan was launched by the Hon. Ros Kelly, Commonwealth Minister for the environment, in Sydney. The Specialist Group acknowledges the help of many mammalogists from our region; the financial support of World Wide Fund for Nature Australia and the Australian Nature Conservation Agency; and the support of the SSC Office and the Peter Scott IUCN/SSC Action Plan Fund. WWF Australia also provided much logistic support for Michael Kennedy, the Action Plan compiler, who is to be congratulated on an excellent result.

Support for the conservation of threatened marsupials in Australia is increasing rapidly at present. Recovery plans have been written, and implementation has commenced for the chuditch (*Dasyurus geoffroii*), woylie (*Bettongia penicillata*), kowari (*Dasyarcus*

byrnei), mala (*Lagorchestes hirsutus*), bilby (*Macrotis lagotis*), bridled nailtail wallaby (*Onychogalea fraenata*), northern hairy-nosed wombat (*Lasiorhinus krefftii*), Julia Creek dunnart (*Sminthopsis douglasi*), eastern barred bandicoot (*Perameles gunnii*), and long-footed potoroo (*Potorous longipes*). Recovery plans are being prepared for the numbat (*Myrmecobius fasciatus*) and Leadbeater's possum (*Gymnobelideus leadbeateri*). Many other species are the subject of detailed research. Considerable impetus to the recovery process in Australia has been provided by the Commonwealth Government's Endangered Species Program, with state and territory governments

and private sponsors also increasing their support, although hard economic times have made some projects difficult to get underway.

Also great news is the setting up of a cooperative research center for the control of vertebrate pest populations. This team, comprising the CSIRO Division of Wildlife and Ecology, the Western Australian Department of Conservation and Land Management, the Western Australian Agriculture Protection Board, and the Australian National University, is targeting the European red fox and the rabbit for biological control. It is clear that many of Australia's marsupials are threatened by feral animals, and the successful conclusion of this research could bring enormous benefits to nature conservation in Australia. Already, fox control via baiting is showing dramatic benefits in Western Australia. Species that are showing significant local recovery include the numbat, common brushtail possum (*Trichosurus vulpecula*), western ringtail possum (*Pseudocheirus occidentalis*), woylie (*Bettongia pencillata*), black-footed rock wallaby (*Petrogale lateralis*), Rothschild's rock wallaby (*P. rothschildi*), and tammar wallaby (*Macropus eugenii*).

Feral cats have been shown to be a significant predator of medium-sized marsupials; some translocation projects in the arid zone have been negated by cat predation, while others have been significantly affected. Research into feral cat control and effects on the native fauna is getting underway.

Translocation research is also increasing, with experiments involving several species underway or planned. A major conference on translocations took place in Healesville Sanctuary, part of Melbourne Zoo, in April 1993.

Review of marsupial and monotreme status for the 1994 Red List resulted in several changes in status being recommended to the World Conservation Monitoring Center. Changes from those in the action plan included the listing of all species of Papua New Guinean and Irian Jayan tree kangaroos as either endangered or vulnerable, the change of the long-beaked echidna (*Zaglossus bruijnii*) from vulnerable to endangered, the listing of the Fergusson Island striped possum (*Dactylopsila tatei*) as endangered, and the recommended listing of the rediscovered mahogany glider (*Petaurus gracilis*) as endangered. Both species of marsupial mole (one recently reinstated as a species) were recommended for listing, the kakarratul (*Notoryctes caurinus*) as insufficiently known, and the itjaritjari (*Notoryctes typhlops*) as indeterminate. The Julia Creek dunnart (*Sminthopsis douglasi*) was rediscovered after an absence of 19 years; its action plan status of endangered was supported.

During 1994, the Specialist Group is planning to produce a book, aimed at a lay audience, summarizing and updating the action plan and providing more information about actions necessary to prevent extinctions and how people can help with marsupial and monotreme conservation.

Andrew Burbidge, Chair
Australasian Marsupial and
Monotreme Specialist Group

Bear Specialist Group

Christopher Servheen

Triennial Report

The Bear Specialist Group (BSG) has been involved in the production of a Bear Conservation Action Plan since early 1993. This plan includes goals for bear conservation action, implementation techniques for bear conservation, conservation needs and priorities, bear trade issues, captive bears and their role in conservation, the role of genetics in bear conservation, and detailed sections on each species in each country in which it occurs. Each country section includes detailed maps of current and past distribution, status and distribution, historic and future range, legal status, population threats, habitat threats, management, human-bear interactions, public education needs, and specific conservation recommendations for that country.

Progress on the action plan is progressing as country reports are submitted. As with any effort involving a multitude of countries, the level of detail varies. The polar bear is a unique case in that there currently exists a functional Polar Bear Specialist Group. The action plan section on polar bears is being written by the Polar Bear Specialist Group. The BSG does not involve itself with polar bear matters because of the existence of this polar bear group.

The conservation action plan will be the source document for information on the status, conservation needs, and conservation implementation for the bears of the world. It is designed to be user-friendly to wildlife managers and decision-makers in government and conservation organizations.

The BSG has been involved in consultations with various government and conservation group organizations. The BSG was asked to act as a consultant to the French Ministry of Environment on the effects of a proposed road improvement project in the Aspe Valley directly through the remaining habitat of the brown bears in the Pyrenees. BSG members

Chris Servheen and Djuro Huber visited the site, interviewed scientists and road engineers, and prepared a report to the Ministry. This project was initially proposed to include several tunnels where the road would go underground so the bears and other wildlife could cross the landscape without being disrupted. The BSG also disseminated information on ideas, structures, and designs to colleagues in several eastern European countries about bears crossing roads.

BSG members have also helped train law enforcement agents about the trade in bears and bear parts by presenting programs in Alaska and Canada in 1993. BSG members Chris Servheen and Bruce McLellan were in Borneo in fall 1993 working with Malaysian counterparts to develop a research and population survey program for sun bears. In addition, initial filming was completed with BSG member Phil Hurrell in cooperation with New Zealand TV on a film on the sun bear. This film should provide important information and education on the sun bear and its rain-forest habitat in southeast Asia.

The BSG has been working with the World Society for the Protection of Animals as an advisor in their efforts to establish a sanctuary for "dancing" bears used by Gypsies for entertainment in Greece and Turkey. This effort has resulted in many of these badly abused bears being seized by government authorities and the establishment of facilities to care for these animals. A "National Geographic Explorer" TV program about this effort will be shown in July in the U.S. The interest in the welfare of the "dancing" bears has increased interest in the conservation of wild bears in both Greece and Turkey. This increased interest was part of the reason for the development of the bear conference in June 1994 in Bursa, Turkey.

In 1994, BSG members will participate in several meetings and symposia. From May 31

to June 5, 1994, Chris Servheen and others will participate in the International Conference on Aspects of Bear Conservation in Bursa, Turkey, to focus on bear conservation needs in Turkey. Chris Servheen will participate in the Third East Asia Bear Conference in Beijing from August 4 to 8. Steve Herrero and Chris Servheen will participate as co-conveners in the symposium on Coexistence of Large Predators and Man from October 10 to 15 in Krakow, Poland. A meeting of the eastern European members of BSG will be held on October 15 on the last day of this symposium. Chris Servheen has been awarded a Fulbright Scholarship in portions of 1994 and 1995 to work with the Greek resource management officials, WWF Greece, and various non-governmental bear conservation groups in Greece to develop a research and management plan for the brown bears of Greece. This is cooperative program initiated by WWF Greece and the Greek government.

*Christopher Servheen, Co-chair
Bear Specialist Group*



Bison Specialist Group

Zdzislaw Pucek

This Group includes specialists on North American and European bison, acting somewhat separately in two subgroups. The Group has not held a joint meeting. Group members have been active in advising authorities in their countries as to conservation strategy for both bison species.

A scientific conference on problems of protection, research, and management of the European bison was organized in March 1992 by nature conservation authorities and the Academy of Sciences of the Belarus Republic. Some 40 scientists, including seven members of the Group, took part. Research priorities for the European bison were identified. These include determining the genetic structure of the species, heterozygosity of the World Herd and particular isolated sub-populations, effects of inbreeding, and methods of genetic management, including PVA. Determining the cause of disease of male sexual organs in the Bialowieza herd was considered to be the crucial point for survival of this population (see *Species* 20).

As a result of this meeting, a research program has been created in the Belarus Republic for the genetic investigation of bison herds.

A program for genetic management of the bison herd in Poland has been prepared and will be based on a data bank in the "*European Bison Pedigree Book*." The book is now connected with the Bialowieza National Park, and will be updated regularly.

A new system of bison management has been worked out in Belarus, Russia, and Ukraine. In Russia, a working group for the European bison has been created, chaired by Dr. V. Pererva, in the Institute of Nature Conservation and Reserves, and the Institute has been indicated as the coordination center for all future scientific and management work with European bison. Two main goals for the working group were developed: to prepare the program of bison genome conservation, and to work out the strategy of bison restoration and use in Russia.

The main activity of the Specialist Group has been concentrated on the development of an Action Plan for bison. A final draft of the Action Plan for North American Bison conservation has been completed by Dr. Van Zyll de Jong, and the part for the European bison is nearly complete (compiler: Z. Pucek).

The Action Plan for North American Bison indicates the necessity of reestablishing several free-roaming populations of plains bison in a number of national parks and reserves, especially along the periphery of the historical range of the subspecies (Canada) and in the tallgrass prairie (U.S.A.). The Plan also calls for the re-establishment of the natural predators of the bison (e.g. in Yellowstone National Park). For the wood bison, needs include: eradicating bovine tuberculosis and brucellosis from the population in Wood Buffalo Park; establishing wood bison populations in historical parts of its range, including replacement of plains bison with wood bison in some ranges in Canada and Alaska; verification of taxonomic identity of some bison herds to maximize genetic variability of wood bison; and assessing the possibility of creating new populations of wood bison.

The conservation strategy for European bison includes the following goals: more reintroductions are needed to establish a "continuous" range of recent species, guaranteeing free contact between isolated herds; two genetic lines (pure lowland *bonasus*) and lowland-Caucasian (*bonasus* x *caucasicus*) should be separated in the wild as they are in confined herds; measures against eventual crossing of lowland-Caucasian bison and American x European bison hybrids in Caucasus Mountains should be undertaken; migration of bison genes should be intensified to avoid inbreeding and to balance genetic contribution of particular founders; captive breeding of European bison should be continued, along with further reintroductions to the wild.

Zdzislaw Pucek, Chair
Bison Specialist Group

Species 43

Canid Specialist Group

David Macdonald

Since its inception in 1981, the Canid Specialist Group has sought to catalyze interest in, and focus expertise upon, canid conservation. Its core membership is small, approximately 20 international specialists, but its work is supported by many affiliates and adherents throughout the world, who regularly contribute information on canids' status and conservation in their respective country or areas of expertise. During its first decade, most CSG activity revolved around a series of workshops in conjunction with the International Theriological Congresses, and privately circulated reports (such as The Canid Conservation Dossier), among which the Frame-Fanshawe report on African wild dogs was of paramount importance. This work culminated in the publication of the Canid Action Plan in 1990, the completion of which was made possible only by the unstinting effort of Joshua Ginsberg, then appointed Deputy Chair of the group.

From this base, the group's endeavors have blossomed during the 1990s, so that our activities can now be categorized under the following headings:

Funding

Although the CSG itself has no budget from the IUCN/SSC, we have been successful in raising money for priority projects. Our strongest supporter has been the Peoples' Trust for Endangered Species and with their help we have raised funds directly for work on species ranging from Blanford's foxes in Israel to Ethiopian wolves. They have also contributed to projects on bush dogs and African wild dogs, and to the funding of our publications and the Wild Dog PVA in Tanzania. Other organizations, such as the Fauna and Flora Preservation Society, have also been generous to projects supported by the CSG, such as work on the reintroduction of swift foxes to Alberta, Canada, and, most recently, a new study of

African wild dogs in Zambia by Kenneth Buk. The CSG has also endorsed several research proposals on priority studies, thus facilitating funding by other organizations.

Actioner

Following an initial grant from the Peter Scott IUCN/SSC Action Plan Fund, the PTES has taken over a long-term commitment to employ our half-time "actioner". This role, discharged with selfless dedication by Laura Handoca, is effectively indispensable, considering the volume of correspondence which currently besieges Specialist Groups. Laura is based in the CSG Office at Oxford University's Wildlife Conservation Research Unit, a unit which is probably home to a greater array of canid projects worldwide than is any other.

Laura Handoca is maintaining a database on all the technical publications on canids, and also on canid research projects worldwide. Laura has also set up links through Internet with several biological NetNews and has received feedback and news items from at least 30 users. She is also, species by species, attempting to produce updated distribution maps. However, most important of all is Laura's work on the CSG periodical *Canid News*.

Canid News

The first 25-page issue of *Canid News* was published in January 1993, and the second issue, of 50 pages, went to the printer in December. The Canid Group has bought its own desktop publishing system allowing highest quality copy at the lowest possible prices.

Canid News contains various sections, including feature articles, news items on canid research projects and conservation, information on relevant meetings, reports on relevant workshops or working groups, recent publications and book reviews, and also an update on captive breeding populations. In this context,

Juli-ana Brandao from Brazil has taken responsibility for collating information on South American zoos, captive breeding, and reintroduction.

The response to *Canid News* has been amazing: we distributed 500 copies to a mailing list worldwide ourselves, and a further 750 through the PTES, who distributed it to members of the British public who have taken out a subscription. After the initial success of the first issue in 1993 we will produce two issues in 1994 and years thereafter. Each issue of *Canid News* will allow us to launch a new distribution survey—in the first issue Paul Stewart of Oxford's WildCRU initiated a dhole survey and the current issue includes distribution maps of the Ethiopian wolf and Blanford's fox. The current issue will include a questionnaire aimed at expanding the CSG projects database by gathering more information on current projects.

We remain a separate group to the Wolf Specialist Group, but we include wolf articles in *Canid News*. Of particular interest are news from North America and Europe of wolves recolonizing areas where they were previously extinct.

Meetings

Recently, we have steered away from our former modus operandi of organizing sessions at mammalogical congresses (although we anticipate holding a workshop at the Second European Congress of Mammalogy in Southampton, U.K., March 1995). Instead, we have concentrated on more focused meetings. Paramount among these was the African Wild Dog Population Viability Assessment Meeting in Arusha in March 1992, where we greatly enjoyed both the collaboration of the Tanzanian authorities, including the Ministry of Tourism, Natural Resources, and the Environment and the Tanzania National Parks, and the participation of researchers and wildlife managers involved with wild dogs in Kenya, Tanzania, Zambia, Zimbabwe, Botswana, Namibia, and South Africa. The PVA was the product of a huge administrative effort by Joshua Ginsberg, and he and I are soon to complete and publish an action plan for the conservation of the African wild dog as a result. The action plan presents results on population biology

and modelling of the remaining wild dog populations, information on current status, research and veterinary studies and draws management strategies and action plans. The largest populations of *Lycaon* occur in southern and eastern Africa, and for this reason the PVA and action plan concentrate in these regions. Populations in western and central Africa are critically endangered. The modelling suggested that the most critical variables affecting long term survival are population size and most important of all, the integration of multiple populations into a single metapopulation. Due to the ability of wild dogs to disperse, multiple sub-populations can ensure that local extinction need not lead to population extinction. The action plans for *Lycaon* are extensive, including plans for a continent-wide monitoring system, and plans for more coordination between veterinary and ecological research.

Representatives of the CSG also played an active role at the Canid CAMP meeting in Texas in May 1993, and others were active at the Southern and Eastern African Rabies Group meeting at Onderstepoort, South Africa, where I delivered a paper on the conservation implications of rabies. In South America, Juli-ana Brandao attended the First Workshop on Breeding and Management of Bush Dogs that took place in Americana, Brazil, in March 1992; and the Second Workshop in Itaipú, Paraguay in October 1992. The main recommendations originating from those meetings were further coordination of captive efforts, the need for a genetic variability study, and of field studies in order to assess the possibility of future reintroduction programs. Juli-ana also participated in the Maned Wolf Workshop organized during the Canid CAMP Meeting in Texas.

As a result of the joint Canid, Hyaena and Aardwolf CAMP, organized jointly by three Specialist Groups and the AAZPA Canid Taxon Advisory Group, a preliminary Conservation Assessment and Management Plan has been compiled. The status of the 34 species and 221 distinct taxa (subspecies) recognized in the family Canidae was evaluated: two species are now listed as critical (Ethiopian wolf and wild dog), four as endangered (small-eared zorro, maned wolf, dhole, red wolf), and six as vulnerable. At subspecies level, eight taxa are

listed as critical, 10 endangered, and 15 vulnerable. Twenty-nine taxa were recommended for one of four levels of captive program and a plan was proposed to re-allocate the 3,600 canid zoo spaces available.

The main conservation and research recommendations arising from the CAMP were:

- to develop an immediate action plan for *in situ* and *ex situ* conservation of *Canis simensis*;
- disease monitoring on *Canis simensis* and *Lycaon pictus* populations;
- a genetic comparison of African wild dog populations; further surveys of east and west African wild dog populations;
- conduct surveys and collect basic ecological information of all South American canids, particularly the little known *D. vetulus* and *D. sechurae*, clarify taxonomic issues, specifically for *Dusicyon* and *Speothos*;
- conduct surveys, emphasizing distribution, density estimates and limiting factors on most Asian canids, particularly on the critically endangered *Cuon alpinus sumatrensis*.

Expertise (trouble-shooting)

Members of the CSG contribute to a wide variety of debates on canid conservation. For example, the distressing disappearance of wild dogs from the Serengeti has prompted debate which has occupied thousands of man hours of CSG time during almost two years. In this case, a working group of international scientists coordinated by David Macdonald reviewed the scientific debate, which concerned the possible roles of stress due to handling and of disease in the disappearance of these dogs, and produced various evaluations of the evidence. Growing out of this effort, a panel of experts coordinated by Joshua Ginsberg analyzed various data and produced a confidential report that has been distributed to all interested parties. Ginsberg and colleagues concluded that handling had not had significant effects on rates of mortality of wild dogs in any of the

ecosystems studied, and therefore handling seemed an improbable cause to the demise of the Serengeti dogs. The results of this analysis will be published shortly. Meanwhile, the CSG attaches such importance to *Lycaon* that it has established a special *Lycaon* Working Party to coordinate research and conservation efforts throughout the species' range. The LWP is coordinated by Dr. Gus Mills, who is assisted by Dr. Scott Creel as secretary to the group.

In the same vein, Claudio Sillero represents the CSG in fostering the conservation of the Ethiopian wolf. Of special concern in this case is the possibility of starting a captive breeding program, in order to safeguard the genetic identity of this, the rarest canid, from hybridization with domestic dogs. The CSG has raised funds for the production of an action plan for this species too, which will be written by Claudio Sillero and published during 1994.

Liaison

Much of our work is liaison, a vastly time-consuming occupation that produces results that are often valuable but intangible. Nonetheless, our correspondence files are hefty. We are naturally enthusiastic to liaise with other IUCN/SSC groups and have been in close touch with the Captive Breeding and Hyaena Specialist Groups at the Texas CAMP, with the CBSG and the Antelope Specialist Group over conservation plans in Ethiopia, and with the Veterinary Specialist Group regarding rabies in *Lycaon* and the debate on handling effects.

David Macdonald, Chair
Canid Specialist Group

Caprinae Specialist Group

Sandro Lovari



In the last triennium, the Caprinae Specialist Group included 36 members from 27 countries.

The main task of the group has been the preparation of the World Action Plan for Caprinae, compiled by Dr. David M. Shackleton, Deputy Chair of the Group. The preparation of the Action Plan is proving a titanic effort of both the ca. 200 authors/reviewers of the 60 country reports and in particular of the compiler, who has had to coordinate, revise, and often rewrite each country report.

In the last triennium, the Caprinae Specialist Group has been asked to evaluate research applications on behalf of the National Geographic Society, the World Wide Fund for Nature, and the Austrian Science Foundation. The group has also cooperated with other IUCN Specialist Groups, CITES, U.S. Fish and Wildlife Service, American Zoo Association, and C.I.C. Caprini Working Group.

Three issues of the newsletter, *Caprinae News*, have been published.

It is hoped that the Caprinae Action Plan will be soon finished, a major goal without which establishing priorities of action is difficult. Certainly *Capra* seems to be the genus including the most endangered/threatened taxa (e.g., *C. pyrenaica pyrenaica*, *C. falconeri*, *C. (ibex) walia*). Most argali (*Ovis ammon* ssp.) are also at great risk. In general, one notion is clearly emerging: we still know amazingly little of the systematics, status, distribution, and population dynamics of many caprinae taxa.

One of the first steps to achieve better conservation measures will be to stimulate surveys, censuses, and sound research on the systematics of many caprines, especially in Asia, a continent difficult to penetrate where international and local interest on goat antelopes, wild sheep, and goats is strongly needed to promote and support conservation.

Sandro Lovari, Chair
Caprinae Specialist Group

Cat Specialist Group

Peter Jackson

Triennial Report

The plight of the tiger dominated most of the 1990-1993 triennium. During the 1980s complacency had reigned about its prospects, with tigers becoming ever more visible in some protected areas, such as India's Ranthambhore Tiger Reserve. Towards the end of the decade sporadic evidence began to emerge of poaching, as usual for skins, but now also for bones, which are used in Chinese medicine. From about 1991, the rarity of sightings of Ranthambhore's "friendly" tigers was at first thought due to changes in behavior. But a census in 1992 indicated a large drop in tiger numbers in the reserve. It was obvious that well-known tigers, which had become world famous through books and films, had vanished and must have been poached. Anxiety grew with the discovery in India and Nepal of sacks of tiger bones, apparently en route to Chinese-ruled Tibet. This was followed by the arrest of a poacher, caught red-handed in Ranthambhore. The display of tiger skins, bones, penises, teeth and claws in markets throughout southeast Asia confirmed that the tiger was facing a major assault.

Press, radio and television began to publicize the alarm raised by Cat Group members, but official circles at first appeared little disturbed. There are, however, 23 Indian members of the Cat Group, among them distinguished wildlife researchers and managers, several of whom have held high positions in the Indian administration. At a regional meeting of the Cat Group in Delhi, in November 1992, the Inspector General of Forests and the Director of Project Tiger were present and the Minister for Environment briefly took part. It proved a turning point. An international symposium on the tiger, planned as a celebration of 20 years of India's Project Tiger in February 1993, became a platform at which the serious threat to the great cat was publicly

accepted by the authorities. The symposium recognized the problems faced by wildlife managers from human pressures on reserves, in some of which armed political rebels have taken refuge, as well as the obvious damage from poaching, not only of tigers, but of prey species and forest resources, such as timber. The Minister for Environment called for all tiger range countries to join in a Global Tiger Forum, which is due to assemble in Delhi in February 1994.

At the same time, news from the Russian Far East showed that, in the chaos following the collapse of the USSR, the Siberian tiger, which the former regime had successfully conserved, was being poached in almost unbelievable numbers—60-100 in 1992, or between one-quarter and one-third of the estimated population of 300-400. Open commercial contacts with China, Korea and Japan, even with Alaska, were providing lucrative markets for tiger products. And the tiger's main prey, deer and wild boar, were under assault for local markets. At a conference in Khabarovsk in March 1993, attended by the Chair of the Cat Group, Russian conservationists, several of them Cat Group members, called for international help to save the Siberian tiger. WWF is now launching a major three-year project and other NGOs are planning aid.

The Standing Committee of CITES, which had been concentrating on rhino problems, had already taken notice of overall grim tiger situation at a meeting in March 1992 and had asked the Cat Specialist Group to provide a report on the tiger's status. This was presented at the following meeting in September, when an official call was issued for stricter measures to halt illegal trade and protect tigers.

In the summer of 1993, the US Government threatened China and Taiwan with trade sanctions unless they effectively stopped the trade in rhino and tiger products. Shortly after-

wards, China's State Council promulgated a ban on trade in tiger products, backed by the sealing of stocks and the prohibition of their pharmaceutical use. Taiwan also stiffened its legislation.

All of this is to be welcomed. However, unless laws are strictly enforced to protect tigers and their prey and unless their habitat is also protected and illegal trade suppressed, there must be a real fear that the tiger could be reduced below any realistic hope of recovery in the early part of the next century. The Cat Group is cooperating with other conservation organizations to try to ensure that this does not happen.

Poaching is also threatening leopards, snow leopards and golden cats, whose bones are acceptable substitutes for tiger bone in Chinese medicine. Whenever tiger skins are found, there are usually many more leopard skins and often a clouded leopard skin or two.

A welcome outcome of the tiger crisis was the formal convening of an Indian Regional Sub-group of the Cat Group, which is coordinating the collection of all forms of data on the 15 cat species found in India.

In China, some 20 Chinese specialists took part in a review of the status of the 12 cat species found in China at a workshop convened by the Cat Group Chair in Beijing. The tiger has been virtually wiped out in China in the past 40 years. Other cats are presumed to have declined, although there are no data in the absence of any field research. The leopard cat in China is now the most heavily exploited wild cat, with exports of 200,000 skins recorded annually through most of the 1980s. These went mainly to Europe until a ban in 1988, and thereafter to Japan. Fortunately, the leopard cat is prolific and adaptable, but a detailed study for CITES of its ecology and the trade is now under way, sponsored by the Cat Group, which will provide data on which to regulate the off-take.

The lynx, extinct in western Europe since the turn of the century, is making a comeback in the Alps and Jura following release of lynx from the Carpathians in Switzerland in the mid-70s. Records are being collected from

neighboring alpine regions in France and Italy. Re-introduced lynx in Slovenia have also done well and have spread westwards into Italy and northwards to Austria. A Eurasian lynx subgroup of the Cat Group is coordinating efforts to promote the spread of the lynx and re-create a flourishing population throughout the Alps.

In 1991 and 1992, the Council of Europe organized symposia on lynx and wildcat respectively, to which Cat Group members contributed.

In Latin America, plans are under way to establish an active network of specialists for the area, which is the home of 10 cat species.

The Cat Action Plan has now been completed, subject to final checking and review. With the help of a world network of specialists, not only Cat Group members, an up-to-date report on the known status of all the wild cats has been prepared, and the many gaps in our knowledge highlighted. The plan includes a unique method of establishing the level of vulnerability of all cat species, based on their geographical range, number of different habitats used and body size. Problems caused by big cats in livestock areas are reviewed and recommendations made for management of livestock, as well as of the cats. Other chapters deal extensively with habitat, re-introduction, captive breeding and trade. Along with recommendations for general strategy of conservation there are notes on projects in progress or considered priorities. Professional wildlife photographers have donated spectacular photographs, notably of the rare and little-known Andean cat, the Saharan cheetah and the sand cat. The Cat Group expresses its gratitude to all who have contributed.

*Peter Jackson, Chair
Cat Specialist Group*

Cetacean Specialist Group

Steve Leatherwood and Randall Reeves

CSG Activities during the 1991-1993 Triennium

During the 1991-1993 Triennium, members of the Cetacean Specialist Group (CSG) were involved in a variety of activities affecting the conservation of whales and dolphins. We have continued to focus primarily on projects intended to prevent the extirpation of stocks and the extinction of species. Most of CSG's resources have been directed to problems that were initiatives in areas where national governments, international agencies, or regional bodies were, for one reason or another, not already developing suitable conservation programs. Few of our resources have been spent on work in developed countries or on problems that were already being vigorously addressed by governments.

Until recently, efforts on behalf of the vaquita, the highly endangered porpoise of Mexico's Gulf of California, were being promoted and supported almost entirely by organizations outside Mexico, including the CSG. Scientific disagreement within Mexico had prevented the formulation and implementation of an official national plan for conserving the vaquita. Mounting scientific evidence that the species was, in fact, in crisis, finally convinced the Mexican Government to accept the responsibility for taking conservation action. The measures enacted over the past 1-2 years include banning use of large-mesh gillnets, monitoring fishing activities and establishing a biosphere reserve encompassing part of the vaquita's range. An international consortium, including CSG representation, now oversees a comprehensive research program which includes searching for alternative livelihoods for fishermen affected by protection measures. Recent findings suggest reproductive failure in some segments of the vaquita population, increasing fears that these actions may have come too late.

For nearly a decade, it has been clear that the population of China's endangered baiji is desperately small (arguably fewer than 200) and declining as human activity continues to degrade the Yangtze. The CSG has continued to advise Chinese scientists and resource managers in their efforts to implement the recommendations of an IUCN-sponsored workshop held in Wuhan, China, in 1986. In frequent correspondence and through a 1993 Population and Habitat Viability Analysis, cosponsored by the CBSG, the CSG has continued to place strong emphasis on *in situ* approaches to baiji conservation, such as enforcing protective regulations, establishing and enforcing protection in natural reserves, and translocating baiji from doomed populations to the one adequately-tested semi-natural reserve at Shi Shou. *Ex situ* approaches, notably removal to oceanaria for captive research and breeding programs, have been critically evaluated. Those who are responsible for developing the two captive breeding programs in China, have been encouraged to use, primarily or exclusively, animals that have been brought into captivity and rehabilitated after injury. CSG members are active in following up recommendations of the PHVA workshop and in developing further conservation strategies.

The CSG has also been active in matters involving other river dolphins. For example, we co-sponsored international workshops to develop conservation actions plans for bhulan and susu (Delhi, August 1992) and for franciscanas, tucuxis and botos (Buenos Aires, September 1992). Follow-up, with CSG support and involvement, has been most intensive for river dolphins in the Indian subcontinent. Collaborative investigations were carried out on susus in Nepal and northern India. A series of surveys of the Brahmaputra improved understanding of distribution, relative abundance and conservation status of this species in Assam State. Small-scale experiments provided some

basis for dispelling the belief that meat, blubber and oil of susus are the best bait for catfish. The task now is to work with fishermen to bring about widespread acceptance and use of alternative baits. Arrangements have been made for international collaboration in surveys of bhulan populations in Pakistan. The CSG membership was expanded to include more members from countries where susus and bhumans live. The CSG's roles with respect to South American river dolphins has been to encourage investigators in different range states to pursue their individual projects but to relate their findings to species populations rather than only local areas.

A major program developed in collaboration with the CSG has provided a better understanding of Philippine cetacean fauna and conservation status. It has also resulted in legal protection for dolphins and progress towards establishment of marine protected areas. Field guides were developed with CSG support and participation for West Africa and the eastern Central Pacific and oceans of the world are intended for use in programs like that in the Philippines.

Peruvian scientists provided an important model for preventing cetaceans from dying in gillnets by working with fishermen to replace the gillnets with less harmful longlines. As attempts to prevent gillnets from killing non-target animals, including cetaceans, continue to fail, replacement of gillnetting with techniques that are less harmful to wildlife but still provide livelihoods for fishermen are crucial to conservation.

With CSG promotion and funding, research was begun or continued in Argentina and Chile, especially focusing on the continuing use of marine mammals as crab bait. The CSG joined other groups in encouraging the provincial government of Chubut, Argentina to maintain its important right whale reserve at Peninsula Valdes, warning about the potential dangers of development projects under consideration in that area.

CSG members reviewed over 40 proposals and reports on various topics. The Group commented, for example, on the adequacy of New Zealand's measures to protect its en-

demie Hector's dolphins, and after re-evaluating the species' classification, recommended that its status be upgraded to Vulnerable. A highly critical review of an FAO-sponsored report on Sri Lanka's fisheries that kill cetaceans was forwarded to FAO and to the report's authors. The CSG also provided advice to the South Pacific Regional Environment Programme (SPREP) on formulation of conservation strategies for cetaceans as part of the planned GEF project for the South Pacific.

The CSG maintained close working relationships with UNEP (reporting to the Scientific Advisory and Planning and Coordinating committees of the Global Plan of Action on Marine Mammals), advised IUCN on the adequacy of proposed new listing criteria (Red List and CITES), contributed to the initial work of the Sustainable Use Specialist Group, and offered continuing advice to IUCN on matters related to the International Whaling Commission.

A new five-year action plan (for 1994-1998) was submitted to IUCN headquarters following review by CSG members and other interested colleagues. The document "*Cetaceans: An Action Plan for the Conservation of Whales, Dolphins, and Porpoises, 1994-1998*" will be published in 1994. Among other projects, the new action plan identifies the need for a workshop to develop standardized techniques for conducting surveys of river dolphins, and accelerated and expanded work on the bhulan, susu, baiji, and franciscana. Although the focus on smaller cetaceans has been renewed, several projects involve endangered Northern Hemisphere right whales. Developments involving resumption of commercial whaling are being carefully monitored.

At the beginning of the new triennium, the CSG will reconstitute its membership to include more members from problem areas and to provide more expertise to solve the most serious conservation problems. Work of the volunteer Secretariat continues from Hong Kong (Leatherwood) and Montreal (Reeves).

Steve Leatherwood, Chair
Randall Reeves, Deputy Chair
Cetacean Specialist Group

China Reptile and Amphibian Specialist Group

Er-mi Zhao

Conservation and Research of the Chinese Alligator

Professor Zhang Zheng-dong and Mr. Wang Ren-ping, members of this Group, have worked on the artificial breeding of the Chinese alligator (*Alligator sinensis*). A summary report was presented by Prof. Zhang at the First Asian Herpetological Meeting held in Huangshan, Anhui Province during July 1992. Participants of that meeting, including twenty foreign herpetologists, came from twelve countries, heard his lecture and visited the Research Center of Chinese Alligator Reproduction at Xuanzhou City, Anhui.

Survey of the Crocodilian Lizard

Professor Zhang Yu-xia and Mr. Fu Jin-zhong, members of this Group, have made several surveys of habitat and have done research on the ecology of the Chinese crocodilian lizard. Fu Jin-zhong published a report on the survey of crocodilian lizard in Guangxi and provided some comments on its conservation.

Conservation Research on the Chinese Giant Salamander

Several members devoted time to the study of Chinese giant salamander conservation. Professor Song Ming-tao has worked on the ecology of giant salamanders for many years. In addition, Mr. Feng Jing-tao and Jin Li-cheng have successfully studied breeding giant salamanders in a granite area in southern China.

Mr. Cheng Wen-fa made ecological surveys of giant salamanders in the forest region of Anhui Province. They provided many valuable comments in their four articles published in the *Proceedings of the First Asian Herpetological Meeting*.

Red Data Book for Chinese Amphibians and Reptiles

On behalf of the National Committee of Endangered Species of China, Professor Zhao Er-mi, Chair of the Group, is editing the *Chinese Red Data Book (Section Amphibians and Reptiles)*. Most members of the Group were invited to write accounts of endangered species for this book. The Chinese version of the manuscript is finished and will be printed in the near future.

*Er-mi Zhao, Chair
China Reptile and Amphibian
Specialist Group*

Chiroptera Specialist Group

Paul Racey and Tony Hutson

1. The Chiroptera Specialist Group (CSG) held meetings during the 9th International Bat Research Conference, Madurai, India, August 1992, and during the 6th European Bat Research Symposium, Evora, Portugal, August 1993.
2. CSG has directed efforts toward implementing the recommendations of the Action Plan for the Conservation of Old World Fruit Bats, published at the end of 1992:
 - Paul Racey organized a two-day international symposium for the Zoological Society of London and the U.K. Mammal Society on "*Recent Advances in the Biology of Bats*," a day of which was devoted to the ecology of megachiroptera.
 - Tony Hutson led a two-week expedition to the Maldives to survey fruit bat populations and to investigate the effect of control measures.
 - CSG has advised and supported "Action Comores," an ongoing series on expeditions from Bristol University to study the ecology and behavior of *Pteropus livingstonii* and to assist in the successful capture of individuals that have bred at the Jersey Wildlife Preservation Trust.
 - Field studies are planned to investigate the role of fruit bats as keystone species in tropical forests during 1994, including: (a) a joint Aberdeen and Boston University expedition to Krau Game Reserve, West Malaysia, and the Danum Valley Research Center, Sabah; and (b) expeditions from Aberdeen and Kent Universities to Madagascar.
 - One of the consequences of the information obtained during the preparation of the action plan was that 51 of the 161 species of old world fruit bats have been submitted for inclusion in the new Red List, compared with 25 of 850 microchiroptera.
3. The current priority of CSG is the production of a Microbat Action Plan. The first step involved convening a workshop on neotropical bats in Gainesville, Florida, during October 1993, immediately following the 23rd North American Bat Research Symposium. This was highly successful and dealt with about a third of the 850 species of microbats. The future progress of the Microbat Action Plan will, however, depend on the availability of funding.
4. The European Bats Agreement will come into force on January 16, 1994. CSG has established a European coordinating panel for bat conservation (chair: Peter Lina) to assist in the implementation of this agreement. Paul Racey will visit the Czech and Slovak republics and Poland during February 1994, together with Peter Lina, to encourage local bat workers to become involved in the implementation of the European Bats Agreement and also to view progress in protecting Europe's most important hibernaculum at Nietoperek, a project that has been supported financially by the Peter Scott IUCN/SSC Action Plan Fund.
5. CSG members are preparing a proposal to add *Tadarida taeniotis* to Appendix 2 of the Bonn Convention to enable this species to be included in the European Bats Agreement.
6. CSG continues to campaign for the conservation of threatened sites of international importance to bats, such as Pine Creek mine, Northern Territory, and Iriomote Island, Japan.

Paul Racey, Co-chair
Tony Hutson, Co-chair
Chiroptera Specialist Group

Coral Reef Fish Specialist Group

Don E. McAllister and Patricia Almada-Villela

The primary goal of the Coral Reef Fish Specialist Group (CRFSG) has been to prepare on *Overview on the Global Status of Coral Reef Fishes and Their Habitat*. The bringing together of information on global status for the first time is regarded as a necessary foundation for an action plan and for the initiation of international discussions on this topic. Information on the activities of the group is being shared in *Sea Wind*, the quarterly bulletin of Ocean Voice International.

There has been discussion on the status and conservation of coral reef fishes at the local reef and at national level in some countries. At the national level, the focus has tended to be on the management and status of commercial fisheries, not on the full diversity of fishes. But there are many countries where coral reef fisheries and conservation receive modest attention. Marine parks and reserves almost universally are given lower priority than terrestrial parks and reserves. Globally, there is not even a firm count of the number of coral reef fishes, although the number has been approximately estimated at 4,000 species. Despite the fact that there are more species of coral fishes in the world than mammals, coral fishes are more conspicuous by their absence from global and national Red Lists than their presence. This is largely because of the lack of attention to their status and to the perception that coral reef fishes are geographically so widespread that there is little concern for their survival. The global status of the habitat of coral fishes, the coral reefs is better known thanks to the UNEP/IUCN three-volume *Coral Reefs of the World*. But although there are data on the national status of coral reefs, some quite disturbing, there is no overall global estimate of coral reef conditions comparable to that for forests.

Ocean Voice International, a Canadian NGO devoted to the conservation of marine biodiversity and the ecologically sustainable and equitable harvest of marine resources, works in partnership with the CRFSG. Ocean Voice

has devised an equal-area global grid for use in geographic information systems (GIS). The equal-area grid was developed to assist in comparing species, taxonomic, and endemic species richness in terrestrial and marine animals and plants. Available on the QUIKMAP GIS system, which can run on a desktop computer, this global grid is being used by the CRFSG to evaluate the status of coral reef fishes.

The CRFSG overview is focusing on the following main points:

1. Using geographic information systems what are the global "hotspots" for coral reef fishes—for all species in the sample studies, for taxa (species, general, and families, or for clades in one or more families), and for endemic species? This information will help prioritize areas for protection.
2. Using the equal-area GIS grid, what are the global "hotspots" for human impacts such as human population density and growth, pollution from land and sea sources, and destructive fishing methods? This information will help prioritize and focus conservation activities.
3. Catalog coral reef fishes of the world to provide the first realistic estimate of the richness of coral reef fish taxa. Prepare a list of marine aquarium fishes in the trade, with recommendations to guide hobbyists and industry as to whether a particular species can be kept by beginning, mid-level, or experienced hobbyists, or whether the species should be excluded from trade for conservation reasons. Prepare a preliminary Red List of coral reef species.
4. Carry out a country-by-country analysis of the status of coral reef fishes and habitat. This will enable analysis of what is known and identify the gaps in knowledge.
5. Evaluate the impact of the marine aquarium industry on coral reef fishes.

6. Produce preliminary recommendations to stimulate open discussion of the status of coral reef fish conservation.

The CRFSG is hoping to complete its overview by the middle of 1995.

GIS Analyses

Dr. Callum M. Roberts and Julie Hawkins have prepared spot distribution maps for over 1,000 species of coral fishes in eight families. Support has been obtained to raise the total to at least 1,600 species. Data to date for about 800 species have been entered into a computer database, and preliminary analyses have been made by Dr. Frederick Schueler to locate hotspots for all species (in the sample), taxa, and endemic species. Additionally, latitudinal and longitudinal gradients have been studied. The results are being published by McAllister, Schueler, Roberts, and Hawkins (1994, in press). Two of the several findings may be mentioned. Coral reef fishes off the coasts of Gabon and Rio Muni, west Africa, had very high levels of endemism: 28 of 42 species were endemic to this area. Secondly, although it is well-known that many species display broad Indo-Pacific geographic ranges, a considerable proportion of species were shown to be endemic to relatively small areas. This demonstrates that some coral reef fish species could become endangered or extinct due to local or regional human impacts.

The World Conservation Monitoring Centre and ICLARM have shown interest in the database being created, and the former has offered support to increase the amount of data captured.

The second part of the GIS analysis will focus on human impacts. Impacts will be individually mapped to show their extent. A crude index will be developed to combine threats into a single, overall threat index. We are just about to begin this phase. Some information is available in computer-readable form, though it may have to be adapted; other information will have to be collected from publications, mapped into the grid, and captured.

Coral Fish Lists

A preliminary list of fishes of the world has been prepared and progress begun on selecting a sub-

set of these inhabiting coral reefs. Frank Greco has prepared a preliminary list of marine aquarium fishes of the world, with indications of ease of keeping by aquarium hobbyists. Jaime Baquero is preparing an annotated draft list of butterfly fishes, family Chaetodontidae, from this master list. This draft sublist will be circulated to elicit comments from people in the conservation movement and the industry as to the format and content. Resources are being sought.

Country-by-Country Study

Dr. Patricia Almada-Villela is attempting to access the conservation status of coral reef fish and habitats worldwide. To this effect, she has sent a survey questionnaire to around 400 experts throughout the world. This survey includes all countries that count coral reefs among their ecosystems. Replies have been received for about one-third of the respondents and have included additional material, which is currently being processed. A *Preliminary World List of Coral Reef Fishes at Risk* has been compiled and includes species at risk by country and by family group. The information on habitats and fisheries from this survey will also be used for the GIS analyses by other members of CRFSG.

A key product of this project is that species and/or families of fish highlighted by the survey may be used as indicators of the health of the coral reef environment in specific countries and/or areas of the world. In combination with the results of the GIS analyses, this information in turn will be most useful in the establishment of new marine-protected areas or the strengthening of existing ones. Funding is currently being sought to complete this investigation.

Aquarium Industry

Literature on the aquarium industry and its environmental impacts is being gathered. The CRFSG attended a meeting of the aquarium industry sponsored by the Pet Industry Joint Advisory Council in Washington D.C. in June 1993.

*Don E. McAllister, Co-chair
Patricia Almada-Villela, Co-chair
Coral Reef Fish Specialist Group*

Crocodile Specialist Group

James Perran Ross

Triennial Report 1991-1993

The Crocodile Specialist Group (CSG) is the principal advisor to SSC, IUCN, and their member groups on the conservation of all crocodilians (crocodiles, alligators, caimans, and gharials). The group provides an expert network to assess conservation priorities, develop plans for conservation, and initiate actions needed for the survival of the 23 extant species of crocodilians. Crocodilians have some unique aspects of natural history that create special challenges for their conservation. They are the largest predators in their habitats and can prey on humans and their livestock. They are also exploited for their valuable skins and other products, which supports an international trade worth over U.S. \$200 million annually. They are heavily impacted by habitat loss and the pollution of aquatic habitats.

The Crocodile Specialist Group is now firmly convinced that sustainable economic use of crocodilians is a major component of the conservation of many species. The group also recognizes that some species are not suitable for exploitation by virtue of their endangered status or the preferences of the commercial trade, and these require alternative strategies for protection. The activities of the group in this triennium have been to strengthen this position and ensure that the priority of conservation concerns is maintained in the face of economic pressures for increased exploitation. The group is developing a model of crocodilian management that combines status surveys, protection to allow population recovery, biological study, and sustainable use to maintain crocodilian populations and habitats. A central component of this model is the protection of adult females and development of crocodile ranches that rely on wild populations to produce farm stock of eggs and hatchlings. The effective implementation of this strategy requires that trade at all levels is closely regu-

lated and monitored. Ideally, all crocodile products in trade will have their origin in sustainable use programs and some of the economic benefits will be reinvested to support conservation.

Organization and Membership

The CSG was directed by the chairman, Professor H. Messel, who is also executive chancellor of Bond University in Australia, assisted by the deputy chairman, Professor Wayne F. King, and the CSG executive officer, Dr. James Perran Ross. The group maintained offices at the Florida Museum of Natural History, Gainesville, Florida, U.S.A. Regional and special topic activities were coordinated by nine vice chairmen. The regional vice chairs and their deputies constituted a steering committee that was expanded by increased regional representatives to a total of 34. The group stabilized its membership for the triennium at 355 individuals representing 60 countries. Members represent the scientific community, crocodile management agencies, non-governmental organizations, crocodile farming and ranching groups, traders and manufacturers of crocodilian products, and interested individuals.

The CSG has found it impossible for all members to meet simultaneously, but a substantial number attend meetings and conduct the business of the group. The Steering Committee met on five occasions during the period. Minutes of these meetings were published promptly in the group's *Newsletter*. The next Steering Committee meeting is scheduled for May 1993 in Pattaya, Thailand, in conjunction with the 12th Working Meeting of the CSG.

The CSG conducted its 11th Working Meeting in Victoria Falls, Zimbabwe, in August 1992. The meeting was attended by 160 registered participants. The group initiated a program of regional meetings in November 1991—with a meeting in Santa Marta, Colom-

bia, attended by 230 participants—and addressed a variety of regional issues. Another regional meeting was held in Darwin, Australia, in March 1993 with 170 participants. The 12th Working Meeting of the CSG was held in Pattaya, Thailand, May 1994.

Publications

Dissemination of information on crocodilian conservation and management was one of the CSG's most vigorous and successful activities with the publication of five major works and the quarterly *Newsletter*. The CSG *Newsletter* continued its regular publication four times a year. The *Newsletter* is distributed to over 750 subscribers. The CSG's major publication for the triennium was the action plan for Crocodiles which appeared in early 1992 and forms the blueprint for worldwide crocodile conservation. The rapid action and changing conservation scene is reflected in *Crocodile Conservation Action*, published in late 1992, which reports a series of field surveys and project evaluations following up on the action plan. The group also published *Proceedings* for its 11th Meeting (1992) and the Regional Meeting in Santa Marta (*Zoocria de los Crocodylia*, 1993). Several long-standing publication projects were also brought to fruition in the period. A collection of germinal works on crocodile management were translated into Spanish and appeared as *Crianza de Cocodilos* (1991). Richard Luxmore of WCMC completed a revised *Directory of Crocodilian Farming Operations* (1992). Publication projects still in process are the *Proceedings of the Darwin Regional Meeting*, *A Model Management Plan for Crocodiles*, a 1993 update of *Crocodile Conservation Action* reporting recent projects, and an update of the action plan.

Finances

The CSG continues to fund its central office, executive officer, and some field activities by funds donated to the group. A core group of some 35 patrons provide regular gifts, and additional funds are generated by the sales of publications, voluntary subscriptions to the *Newsletter*, and grants and contracts. Quarterly and annual financial reports are submit-

ted to the chairman, Steering Committee, and SSC. Revenues were between \$57,000 and \$72,000 annually and expenditures held at around \$66,000 annually, so the group remains solvent despite a generally difficult period for fund raising.

In 1992, the Steering Committee resolved to invite voluntary subscriptions to the *Newsletter* while continuing to distribute it without charge upon request. This program has been moderately successful, generating around \$4,000 annually, which covers about half the cost of *Newsletter* production.

Activities

Much of the group's activity is undertaken independently by individuals, national representatives, and regional groups. The large size of the group, widespread distribution of crocodiles, and complexity of conservation issues involving them has necessitated a significant decentralization of action, while cohesion and coordination are maintained through the chairman, the central office, and the executive officer. A sampling of activities indicates the broad scope of the CSG's interest.

The action plan for crocodiles identified seven species of top priority for conservation concern and action and much of the group's activity has been focused on these. Direct intervention, surveys, and development of conservation strategies have been initiated for the Philippine crocodile, the Cuban crocodile, the Siamese crocodile, and the Chinese alligator. Existing programs for the Orinoco crocodile and the gharial continue to be supported and expanded. The remaining priority species, *Tomistoma schlegelii*, is now the focus of intense concern and project planning in conjunction with other interested groups and agencies.

Workshops were held by regional groups in Brazil, India, and the Philippines and valuable workshop reports and position papers generated. CSG Steering Committee members undertook field inspections and reviewed conservation and management activities in China, Cuba, Thailand, Indonesia, Paraguay, the Philippines, and Honduras that resulted in reports and recommendations for assisting these countries in developing crocodilian conservation and management programs. CSG mem-

bers undertook crocodilian surveys in Guyana, Cuba, Nicaragua, Bangladesh, India, Cambodia, Indonesia, and Venezuela, as well as ongoing monitoring and research in numerous countries. The results of this recent work will contribute to a revision of conservation priorities in the action plan.

The CSG continued to work actively with the CITES secretariat and with management authorities in many countries to develop sustainable use and regulated trade in crocodilians. The CSG conducted a review of proposals for the 8th Meeting of CITES in Kyoto and was instrumental in the adoption of a series of measures concerning crocodilian trade. Foremost of these was the adoption of a universal crocodile skin tagging requirement that the group has advocated for many years. The group is now closely involved in assisting management authorities and CITES in implementing this rule and with the general revisions to CITES that are underway. As a result of concerns expressed at the Kyoto CITES meeting, CSG undertook to review the improvement of crocodile management and conservation in Thailand and Indonesia and make recommendations to CITES in 1994 concerning trade from those countries. The group sent inspection teams to both those countries in 1992 and 1993 and has maintained an active dialogue to assist crocodile conservation. Following a final review of results in mid-1994, recommendations will be made to the CITES secretariat.

The CSG assisted SSC and IUCN in the development of revised Red Data Book status assessments for crocodilians and with the development of the new IUCN criteria for evaluating status. We also participated vigorously in the development of the IUCN Sustainable Use Guidelines.

Strategy for the Next Triennium

The CSG will continue to focus on its priority species for conservation action and on the development of sustainable use and regulated trade as a conservation tool. The action plan will undergo revision based on the newest information and continue to serve as a general guide for action. Our model of a large, inclusive membership and active steering commit-

tee seems to be working and will be maintained. We anticipate that we will increase the amount of decentralized action, which will become the group's primary mode of operation, and we will strive to maintain the international coordination this requires. The reconstitution of SSC members that is mandated for 1994 will give us an opportunity to renew and refresh our membership while maintaining our active and effective constituents. Maintaining contact with, and the confidence of, regional groups and remaining responsive to their concerns will be a challenging necessity. Unresolved problems with illegal trade and inadequate management will require our continued attention.

An important activity during the coming period will be our participation in and influence on the debate on sustainable use and conservation, which will be pursued within IUCN and CITES. Crocodilians represent one of the most compelling successful examples of sustainable use in action, and we will use our insights and experience to support wider adoption of these policies.

A significant challenge will be the group's ability to maintain its funding base. We have survived a very difficult period when many of our supporters suffered from depressed economic conditions. In order to maintain and expand our funding base, we must retain the interest and sympathy of our patrons and our relevance to their concerns. At the same time, we must remain responsive to the conservation concerns of the majority of CSG members and our stated priority of conservation of crocodilians.

The CSG is now in a mature period of development, with stability of leadership and structure, well defined goals and objectives, and proven modes of operation. The coming triennium should be a period when success in achieving our conservation goals should be realized.

*James Perran Ross
Executive Officer
Crocodile Specialist Group*

Deer Specialist Group

Chris Wemmer

1991-1993 Triennium Report

The Deer Specialist Group is comprised of four regional coordinators who handle deer conservation issues regionally. At the time of writing the coordinators are:

- Dr. Dietland Muller-Schwarze (Latin America), SUNY Syracuse, NY
- Dr. Georg Schwede (Europe and the Near East), WWF-Germany, Frankfurt
- Dr. William Oliver (insular Asia), Jersey Wildlife Preservation Trust
- Dr. Michael J. B. Green (mainland Asia), WCMC, Cambridge, U.K.
- Dr. James Peek (North America), University of Idaho, Moscow, ID, U.S.A.

Dr. Muller-Schwarze, who became a regional coordinator in 1990, declared his intention of stepping down to make way for a Latin American to undertake work in the region. His efforts and responsiveness have served the interests of the DSG very well during the past four years. He will continue to pursue studies of behavior ecology of the pampas deer.

Representatives of the Deer Specialist Group met in August 1991 at the Conservation and Research Center, where a Deer Action Plan was drafted based on a survey mailing by regional coordinators the previous year. A first draft revealed significant gaps in the information from northern South America. To mitigate the deficiency, a second mailing of surveys was undertaken, and in summer 1993 the Latin American section was completed. With financial assistance from the National Zoo, a contract has been let to Andrew McCarthy to complete compilation, and the final draft should be finished by late summer 1994.

As a result of species status estimates made during the action plan workshop, the Captive Breeding Specialist Group (CBSG) targeted three species for PVHAs during the triennium: the Florida key deer (*Odocoileus virginianus floridanus*), pampas deer (*Ozotoceros bezoarticus*), and marsh deer (*Blastoceros dichotomus*). These workshops brought together for the first time biologists from the cone of South America.

The group will be assisting the Myanmar Wildlife Department to initiate field studies of thamin (*Cervus eldi thamin*) in 1994, and the insular Asia coordinator has played an active role in the Philippine deer conservation initiative, which is focused mainly on securing a nucleus of animals for *ex situ* conservation, including research and captive breeding. In South America, several Ph.D. dissertation projects on marsh and pampas deer are underway or nearing completion.

Dr. Michael J. B. Green edited the annual newsletter until 1993. Dr. Chris Wemmer and Laura Walker are currently editing the newsletter in a revised format. An effort is being made to compile e-mail addresses of all group members to expedite routine communication.

*Chris Wemmer, Chair
Deer Specialist Group*

Edentate Specialist Group

Gustavo Fonseca

After a long period of inactivity, the Edentate Specialist Group was reorganized in 1993. Dr. Gustavo Fonseca of the Federal University of Minas Gerais and Conservation International in Brazil is now chairman, and Dr. Kent Redford of the Nature Conservancy is deputy chairman. Dr. Gustavo Zuleta of the INEUCI-CONICET is serving as the group's liaison in Argentina, a country harboring significant edentate diversity. In the long term, the group is looking for the development of an action plan containing the conservation priorities and the main tools to implement the plan.

The first difficulty in achieving the above-mentioned goals was the rather small composition of the original group and our fragmented knowledge of current projects focusing on edentates. Therefore, the group's first task was to initiate a newsletter, *Edentata*. The first issue came out in January 1994, just in time for the SSC meetings in Buenos Aires, prior to the IUCN General Assembly. The newsletter, edited by Dr. Fonseca, Yuri Leite, and Ilmar Santos (the latter from Fundacao Biodiversitas

in Brazil), is composed of articles, news on projects and ongoing initiatives, lists of recent publications, and announcements of forthcoming meetings. *Edentata* will begin with two issues per year and will serve as a forum for scientists and conservationists working with all aspects related to the ecology and conservation of edentates, as well as their native habitats. Given the highly positive response from the first issue, we are sure that *Edentata* will serve as a networking vehicle for the activities of the ESG, leading to the development of the first action plan.

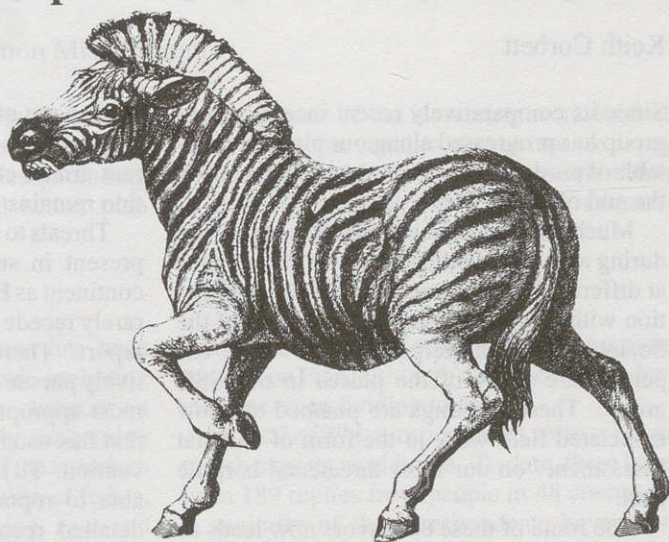
The ESG is also welcoming nominations of new members who are likely to contribute to the activities of the group. Expanding the group's composition represents a vital step for our work, particularly because it has lacked coordination for such a long time.

*Gustavo Fonseca, Chair
Edentate Specialist Group*



Equid Specialist Group

Patrick Duncan



The recent review of the status of wild equids (Equid Action Plan 1992) showed that four of the seven species are endangered, and only three of the twenty subspecies present at the beginning of the twentieth century are definitely safe. This family is among the most threatened of large mammals.

The group has focused its work on the priorities identified in the plan, but progress has been slow, principally because of a lack of resources (the group operates on a spare-time basis and has no regular funding), and because of the difficult political and economic situations in many of the countries concerned, Somalia, Eritrea, Turkmenia to name only a few. A grant from the Chicago Zoological Society contributed to the costs of a mission to Turkmenia, where the only large population of kulans (*E. h. kulan*) in the Badkys National Park is threatened by poaching. With the authorities we are seeking a solution.

The reintroduction of Przewalski's horse to Mongolia looks closer—the Global Management Plan Working Group (Chairman, Oliver Ryder) is developing an integrated management project for the Gobi National Park which includes this reintroduction.

To strengthen the group, we have asked one member to take on responsibility for each of

the species. To strengthen links to other organizations we are conducting a series of PHVAs in cooperation with the CBSG. The first, on Mountain zebras, organized by the ESG Mountain zebra coordinator (Dr. Peter Novellie, South African National Parks Board) was held in Pretoria in June 1993 produced broad agreement on the priorities for action, and contributed to building synergistic relations between the people and organizations involved. Two more are in gestation, on African wild asses (Dr. Patricia Moehلمان, WCI) and on the Asian hemionies.

The group has also been reinforced by the arrival of Ms. Sylvie Houte, who started in October as part-time Development Officer. She is preparing a newsletter, a meeting of the group, and is seeking funding (e.g. from the GEF) for field projects on the most endangered taxa, the African and Asian wild asses.

As part of the development strategy we have cooperated with WWF-France to produce an illustrated issue of "Panda Magazine" on the Equids, and are currently preparing a follow-up in Europe's most widely circulated publication for horse-lovers, "Cheval Magazine".

*Patrick Duncan, Chair
Equid Specialist Group*

European Reptile and Amphibian Specialist Group

Keith Corbett

Since its comparatively recent inception, our group has progressed along our planned timetable of producing our European action plan by the end of 1994.

Much of our deliberation is carried out during working meetings held every six months at different European venues and in combination with the Conservation Committee of the Societas Europea Herpetologica, whose experts share many of the places in our SSC group. These meetings are planned to allow associated field work in the form of "habitat assessment" on our most threatened herptile taxa.

The route of these endeavors now leads us to spring 1994, when our next meeting will be hosted at IUCN headquarters in Gland with the specific task of converting three years of necessary background work into the required action plan format. This will embrace our three recent studies for the Berne Convention (Council of Europe) on *Threatened Amphibians of Western Europe*, *Threatened Reptiles of Western Europe*, and *Threatened Amphibians and Reptiles of Eastern Europe*.

Most of our members are professionally involved in herptile research and conservation through their national or regional governments, universities, or NGOs. Therefore, I have to recognize all of their efforts as furthering the cause of herpetofaunal conservation. However, if I must pick out one contribution par excellence, it would be the work of our two Swedish experts on the unique habitats and endemics of the Caucasus and northeast Turkey. Their pioneering work also serves to

remind me of the practical difficulties facing field work in those areas of Europe with current armed conflicts, where nature conservation remains off the political agenda.

Threats to species and their habitats are ever present in such a developed and pressured continent as Europe, and those more imminent rarely recede while awaiting the next research report. Therefore, we have continued to actively pursue such matters politically using the most appropriate means available to us, and that has usually proved to be the Berne Convention. To that end, we are encouraged to be able to report that 1991 saw the two most detailed recommendations ever adopted by this convention, with a total of 101 separate elements covering 56 species of amphibians and reptiles, and addressed to 19 different western European governments.

It is to be hoped in the near future that the powerful European Community might also open its doors to NGOs for environmental matters such as wildlife conservation; then even more progress may be anticipated. Meanwhile, our Specialist Group suspects that the completion of our action plan will prove to be straightforward, but pursuing its implementation may yet turn out to be our most arduous goal in the foreseeable future.

*Keith Corbett, Chair
European Reptile and
Amphibian Specialist Group*

Freshwater Fish Specialist Group

Christopher Andrews and Simon Mickelburgh

The activities of the Freshwater Fish Specialist Group (FFSG) for 1993 can be divided into two broad areas: general activities (including revisions to the Red List) and action plan compilation.

General Activities

A wide range of correspondence has been received from around the world, including requests for information and/or support on issues such as CITES (especially concerning *Scleropages formosus*), the role of the aquarium trade and hobby in the conservation of fishes, cryopreservation and gene banking, zoos and aquariums and fish conservation, the conservation status of cave fishes, the plight of the European percid (*Romanichthys valsanicola*), and input into the IUCN Encyclopedia of Endangered Species.

Members of the FFSG also provided extensive comments on the revision for the 1994 Red List and look forward to being involved in the further modifications to this important document. Contact has also been made with the IUCN Specialist Group on Sustainable Use of Wild Species and the AZA Freshwater Fish Taxon Advisory Group.

The third issue of the FFSG newsletter (*FISH*) was prepared and circulated to members and a large number of interested parties, and it continues to be used (in addition to previous issues) to promote the activities of the group. Relevant papers were presented at a number of meetings, including the Third World Congress of Aquariology (Boston), Exploring the Depths of the Aquarium Trade (Washington, D.C.), Society for Conservation Biology (Phoenix), and the AZA Annual Meeting (Omaha), and articles on the activities of the group (and on fish conservation in general) have appeared in a number of "lay" publications.

As a result of the increasing work load of the group, some changes in structure are being considered, which may include the nomination of individuals with responsibility for certain zoogeographic areas and/or subject matter.

Action Plan

Additional funds are still needed to complete the Action Plan, although we have had moderate success in funding to date.

A total of 394 questionnaires were sent out to fish experts worldwide. To date, there have been 189 replies from people in 48 countries. A majority of these respondents have been asked for contributions by April 1994, at the latest. An extensive library of relevant published literature is also being assembled, and although the actual number of additional contributions has so far been disappointing, this should improve over the next three months.

Close links with several individuals or organizations should greatly assist in the production of the plan. For example, preliminary contact has been made with the Natural History Museum, London, with a view to utilizing their WORLDMAP program to investigate areas of high freshwater fish biodiversity.

Simon Mickelburgh is now compiling an expanded Red List of Freshwater Fishes and preparing country accounts for freshwater fishes based on available information. In the near future, he will begin writing a section on the major threats to freshwater fishes and the broad recommendations for fish conservation worldwide, prior to circulation of these items to the FFSG members and other interested parties.

C. Andrews, Chair
Simon Mickelburgh
Freshwater Fish Specialist Group

Hippo Specialist Group

S. K. Eltringham

Triennial Report

The principal activity of the Hippo Specialist Group over the past three years has been the preparation of the Action Plan, which was published jointly with that of the Pigs and Peccaries Specialist Group in November 1993. The plan passed through a number of drafts that were scrutinized by members of the group, as well as by other authorities. The report was based mainly on information received from questionnaires distributed to likely helpers throughout regions of Africa where hippos are known or thought to occur.

It was recognized that an attempt to obtain an accurate assessment of the number of hippos was not likely to be successful, owing to their wide distribution over what is often remote country where there are few residents interested in the species. The cryptic behavior of the animals in regions where they are harassed, coupled with their nocturnal habits, makes it very difficult to count numbers. This is particularly true of the pygmy species, which is solitary and nocturnal and lives in thick forest, but it can also be true of the larger species. Counts from a boat or from the land can rarely be made of the whole group at one time because individuals are continually bobbing up and down in the turbid water. Aerial counts are not much better because it is often difficult to distinguish one animal from another in a tightly packed group, even in photographs. Despite these problems, it is considered that the totals presented are not far wrong and certainly give a fair measure of the conservation status of at least the larger species. It was not possible to provide a total for the pygmy hippo because in addition to the practical difficulties of counting, the country where most of them occur, Liberia, was in a state of political turmoil at the time of the survey and local travel was unsafe.

The results of the survey showed that the common hippopotamus is widely distributed in Africa. It is represented in 34 countries,

although its conservation status varies considerably. The species is thought to be in decline in 18 countries, with numbers stable in only six. Populations most at risk are those in West Africa, where numbers are low and the distribution is particularly fragmented. A total of 7,000 was derived for the 19 West African countries containing hippos. The situation is much better in East Africa, where there are some 70,000 hippos in eight countries, and in southern Africa, with a total of 80,000, also in eight states. Countries with large populations include Zambia (40,000), Zaire (30,000), Mozambique (up to 20,500), and Malawi (10,000). The total in Ethiopia and Sudan can probably be numbered in tens of thousands. The continent-wide total of 157,000 may seem satisfactory, especially as some countries have really large populations, but the West African situation is worrying as the long-term survival of many of the populations there is doubtful. The total should also be considered in light of elephant numbers, which are three or four times higher, yet the elephant is generally perceived as being at risk and the hippo is not. The greatest threat to the hippo seems to be loss of grazing habitat. It is hunted for meat in several places but probably within sustainable limits. The possibility of an increase in the trade in hippo teeth as a substitute for ivory, following the ban on the ivory trade, was explored, but little evidence was found. Subsequently, there have been reports that the trade has probably expanded, and this could signal an added threat to survival, especially as hippos are relatively easy to hunt.

No reliable data are available for the number of pygmy hippos, but the bulk of the population occurs in Liberia. A small group of perhaps 80 is present in Sierra Leone, and a few more are found in Guinea. Numbers in Liberia were put at several thousand in the early 1980s. A further population occurs in

Nigeria some 1,800 km away in Nigeria. These belong to a separate subspecies, which numbered only around 30 in the 1940s. There have been no recent sightings of the animals, and the possibility that the subspecies is now extinct was raised in the Action Plan. However, some reports received since the Plan went to press strongly suggest that it still survives. The reported existence of another population in Guinea Bissau is discounted.

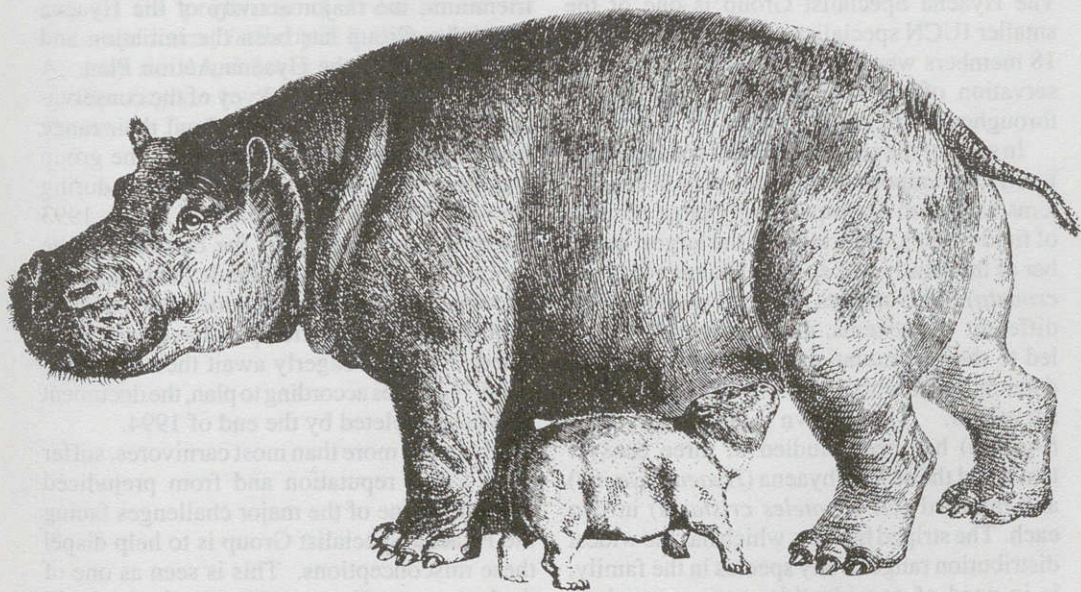
An investigation of the number of specimens in captivity was undertaken. Both species were well represented in zoos, although usually in pairs rather than in properly balanced social groups. The reproductive rate of captive common hippos is well below that of wild animals, suggesting that improvements in husbandry practices are needed. The future of the pygmy hippo seems brighter in captivity than in the wild, with a healthy population of 340 (131 males, 206 females and three of unknown sex) alive in 1990 in 131 collections throughout the world. The captive population

is self-sustaining, but juvenile mortality is higher than it should be, again suggesting that management needs to be improved.

Other activities of the Hippo Specialist Group have included answering numerous routine queries from various interested parties, such as school children carrying out projects on hippos, as well as from research workers. Comments have been made in response to a number of enquiries about possible trade in hippo teeth, and advice was given to the World Conservation Monitoring Centre and to the SSC Trade Specialist Group over the conservation status of hippos.

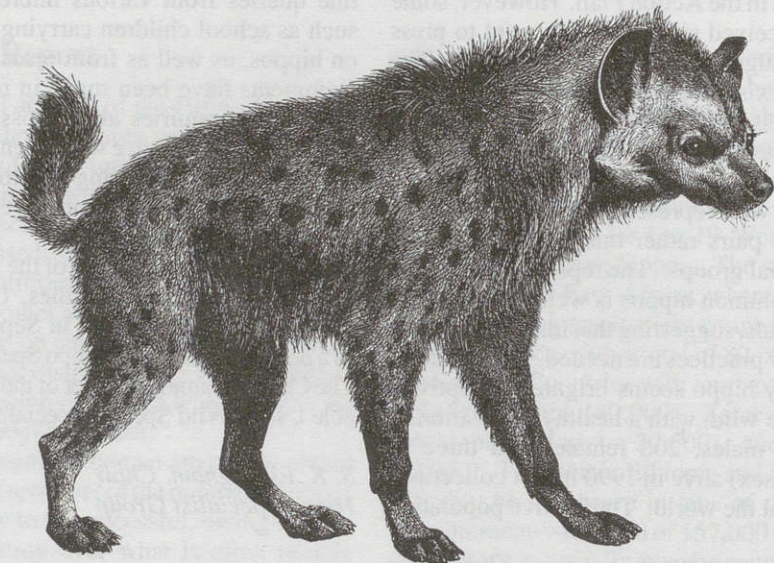
Dr. Alastair Macdonald of the Royal (Dick) School of Veterinary Studies, University of Edinburgh, was recruited in September 1992 as a new member of the Hippo Specialist Group. The Chair became a member of the SSC Sustainable Use of Wild Species Specialist Group.

*S. K. Eltringham, Chair
Hippo Specialist Group*



Hyaena Specialist Group

Gus Mills



The Hyaena Specialist Group is one of the smaller IUCN specialist groups. It comprises 18 members who are responsible for the conservation of the four species in the family throughout Africa and Asia.

In spite of the small number of species in the family, the important role they play in ecosystems has led to a comparatively large number of field studies, especially on the largest member of the family, the spotted hyaena (*Crocuta crocuta*). This species has been studied in ten different ecosystems, and these studies have led to the accumulation of a large volume of data, much of which has relevance to its conservation. The brown hyaena (*Hyaena brunnea*) has been studied in three ecosystems, and the striped hyaena (*Hyaena hyaena*) and the aardwolf (*Proteles cristatus*) in two each. The striped hyaena, which has the widest distribution range of any species in the family, is in need of considerable more research in different parts of its range. It is the only member of the family on which a detailed definite study is lacking.

Besides the two newsletters produced in the

triennium, the major activity of the Hyaena Specialist Group has been the initiation and development of the Hyaena Action Plan. A detailed questionnaire survey of the conservation status of hyaenas throughout their range has been completed. A meeting of the group and other interested parties in Sydney during the Sixth Theriological Congress in July 1993 led to the drawing up of the contents of the action plan and a work schedule. This has been circulated among the group members, and the contributors to the action plan have been identified. We now eagerly await their contributions. If all goes according to plan, the document will be completed by the end of 1994.

Hyaenas, more than most carnivores, suffer from a bad reputation and from prejudiced opinions. One of the major challenges facing the Hyaena Specialist Group is to help dispel these misconceptions. This is seen as one of the key areas of hyaena conservation and will be treated as such in the action plan.

Gus Mills, Chair
Hyaena Specialist Group

Indian Subcontinent Reptile and Amphibian Specialist Group

S. K. Dutta

The Indian Subcontinent Reptile and Amphibian Specialist Group (ISRAG) was formed during 1991 with an objective of conserving the herpetofauna of India, Sri Lanka, Maldives, Pakistan, Nepal, Bhutan, and Bangladesh. During 1992, the first conference of the group was held at Utkal University, Orissa, India, and that was the stepping stone toward the formulation of an Action Plan for conservation of amphibians and reptiles of the subcontinent. Several members of the group have contributed data for incorporation into the Action Plan, and the compilation process will be over by mid-1994.

With regard to research achievements of the group members, during the last three years, several monographs and books have either been published or are in the process of compilation: (in preparation) *Treatise on the Gymnophiona of India* by R. S. Pillai; *A Pocket book of the Amphibians and Reptiles of the Chilka Lagoon* by T. S. N. Murthy; *Gahirmatha, the Turtle Paradise* by M. C. Dash and

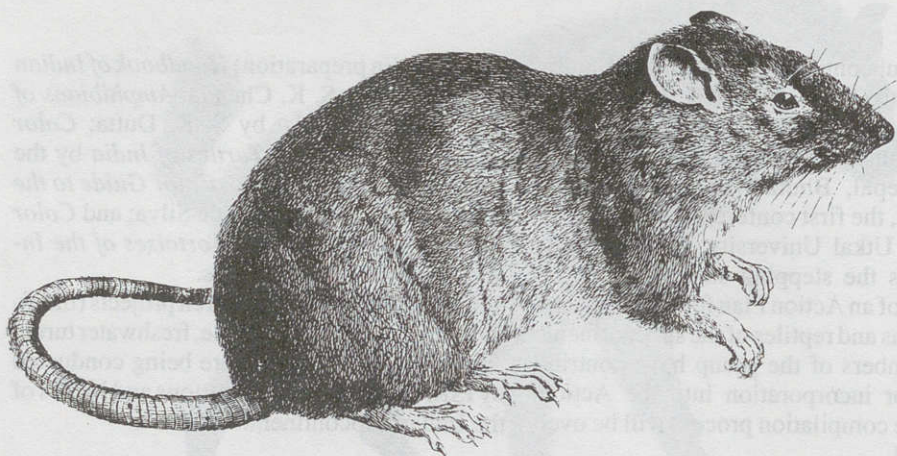
C. S. Kar; (in preparation) *Handbook of Indian Amphibians* by S. K. Chanda; *Amphibians of India and Sri Lanka* by S. K. Dutta; *Color Poster of Freshwater Turtles of India* by the Wildlife Institute of India; *Color Guide to the Snakes of Sri Lanka* by A. de Silva; and *Color Guide to the Turtles and Tortoises of the Indian Subcontinent* by I. Das.

In addition, several research projects (monitor lizard, sea turtle, crocodile, freshwater turtle, and amphibian projects) are being conducted by ISRAG members, institutions and NGOs of the Indian subcontinent.

S. K. Dutta, Co-chair
*Indian Subcontinent Reptile
and Amphibian Specialist Group*

Invasive Species Specialist Group

Ian A. W. Macdonald



Current Status of the Group

This group was started in 1993 and is still in its formative stage. It is therefore not appropriate to attempt to report on progress to date and, accordingly, this report aims more to sketch the background of the group's formation and indicate its possible future aims. As the group has not yet met and its composition is still fluid, what follows should be seen as suggestions rather than decisions.

Why Is an Invasive Species Specialist Group Necessary?

The invasion of natural areas by alien species is a phenomenon that has not received the attention it deserves from both practical conservation managers and academic conservation biologists. IUCN has simply reflected this omission.

In reality, invasions by man-introduced species have been second only to habitat destruction as a cause of extinctions over the historical period.

Unfortunately, for many years most of the leading thinkers in the field of nature conservation accepted as dogma the proposition that alien species could only invade man-disturbed ecosystems. The conservation management implications of this assumption were simple: reduce or eliminate human disturbance and the alien species will cease to be a problem.

However, the proposition is false: protected area managers throughout the world were increasingly finding that alien plant and animal invasions were reducing the native biodiversity and altering the functions of the undisturbed ecosystems they were attempting to conserve. In several areas, programs to contain these invasions were becoming the dominant component of management.

At the same time that this practical realization of the size of the "alien problem" was growing, the scientific awareness was also increasing. In 1983, the International Council of Scientific Union's subcommittee on problems in the environment (SCOPE) initiated a project on the ecology of biological invasions. This reviewed, on a global basis, the scientific

information on this subject. By the time the final global synthesis volume on this subject was published in 1989, the project had dispelled many of the academic myths that had surrounded this subject. The review concluded that alien invasions of natural ecosystems are in fact a very significant and globally pervasive phenomenon.

The SCOPE Working Group on Introduced Species in Nature Reserves

To some extent, the IUCN Invasive Species Specialist Group grew out of the working group that concentrated on the nature conservation implications of these invasions as part of the SCOPE project. This group drew together conservation scientists and managers from a wide array of nations and biomes and pooled their collective experience. The report of the working group was published in 1988 as a special number of the journal *Biological Conservation*. The IUCN Plants Program had contributed to this synthesis and distributed 100 copies of this number to key institutions throughout the world.

Composition of the IUCN Invasive Species Specialist Group

The group is chaired by Dr. Mick Clout of the Center for Conservation Biology in the University of Auckland, New Zealand. The Deputy Chair is Professor Michael Usher of Scottish Natural Heritage, Edinburgh, Scotland. At present there are a total of 15 members in the group: six New Zealanders, two from continental U.S.A. and two from Hawaii, and one each from Galapagos, Seychelles, U.K., Switzerland, and South Africa. Wendy Strahm, the IUCN Plants Program officer, provides staff support based on her extensive experience with invasives in the Mascarene Islands.

The group is keen to recruit further members/correspondents in areas of the world not yet represented by existing members. We are also keen to recruit invasive species specialists in under represented fields such as invertebrates and in the marine and freshwater ecosystems. Prospective members are requested

to make contact with the chairpersons or with Wendy Strahm.

Preliminary Plans for the Next Triennium

One of our priorities for early 1994 is to develop contact points with the existing specialist groups. The group has no intention of duplicating any existing initiatives within IUCN Commissions or, indeed, within any of its member institutions. Please contact the group to let us know what is already happening in your specific field on the topic of invasive species.

The group will probably concentrate initially on invasions on oceanic islands as these systems are particularly susceptible to alien invasions and often show massive biodiversity losses and ecosystem perturbations as a result of such invasions.

This focus will not exclude other contemporaneous activities of a more general nature, such as the creation of a network of interested people or the creation of a global database of invasive species and of invaded ecosystems. Possibly most useful would be a compilation of a database of effective control measures linked to practical "case studies."

Our Specialist Group is not interested in the academic issues associated with alien invasions; it is interested, as is the whole of IUCN, in aiding conservation practitioners in preventing or reducing the deleterious effects of these invasions. As a result, the group will take special efforts to ensure that it does not get side-tracked into activities that do not contribute substantially to the attainment of this objective. It will also attempt not to duplicate any existing initiatives in this field (e.g., the production of an international handbook on invasive plant management, which we know is currently being produced by the WWF Plants Program).

Please write to us and tell us what you would like the Invasive Species Specialist Group to do for you. If we hear nothing, we will probably do nothing!

Ian A. W. Macdonald
Invasive Species Specialist Group

Lagomorph Specialist Group

Andrew T. Smith

1991-1993 Triennium Report

The preceding triennium concluded with the successful publication of "*Rabbits, Hares and Pikas: Status Survey and Conservation Action Plan*." The Lagomorph Specialist Group (LSG) Chair and editor of the Action Plan, Dr. Joseph A. Chapman, resigned and was replaced by Dr. Andrew T. Smith for the current triennium. The first goal of the LSG was to take stock of the priorities outlined in the action plan and design an active membership around these issues. The initial composition of the Specialist Group reflected those species that were listed as threatened and in need of immediate conservation action. Later in the triennium the group expanded to include members whose expertise was in the area of sustainable use and/or control of lagomorphs. With minor adjustments, the composition of the LSG will remain unchanged in the next triennium as it continues its ongoing activities. This report concentrates on those threatened taxa the LSG identified as of primary concern during this triennium. Of 78 lagomorph species worldwide identified in the action plan, 17 (22%) were identified as threatened, and an additional 23 (29%) were listed as being species of special concern or species for which one or more isolated subspecies are threatened. Thus, conservation action is needed for more than half of all lagomorph species.

The greatest number of forms of threatened lagomorphs (14) occur in China. However, as far as can be determined no conservation action was directed at any of these forms during the triennium. In fact, the reverse occurred: only one of these forms is listed in the recently drafted "Biodiversity Conservation Action Plan for China". An additional two species, not listed in the LSG Action Plan do appear on the Chinese list. Communication with LSG members in China has been very limited. During the next triennium the LSG hopes to incorpo-

rate Chinese members that will actively pursue conservation issues and work with the LSG in the development of regional multinational efforts throughout central Asia.

In contrast, Mexico, with the next greatest number of threatened or sensitive lagomorphs (7), has engaged in an active program. A local lagomorph conservation organization (AMCELA) was founded by LSG members and remains active. Three major books authored or edited by LSG members were completed concerning the Volcano Rabbit (one already published—in English), and Survival Anglia produced a major educational film on this form through consultation with a LSG member. Research projects have been directed at 5 of the 6 remaining species. UNAM has appropriated \$24,073 to a LSG member for a study of the biology and conservation of endemic mammals of the Gulf of California islands which includes 3 of the endangered forms of lagomorph in Mexico. UNAM also funded research on the Tropical Hare (\$1,054), captive breeding of the Volcano Rabbit (\$1,190), and a study of chromosomal and morphometric variation of selected species of Mexican lagomorphs (\$55,000). The University of Amsterdam supported the doctoral research of one of the LSG members on the Volcano Rabbit which led to the preparation of two of the books listed above (total contribution \$150,000).

The Riverine Rabbit in South Africa has been the subject of a two pronged conservation approach. The first is the continued captive breeding of the form at the DeWildt Research Centre, a program that is plagued by small numbers and, perhaps, by concomitant inbreeding. A joint effort by the Cape Division of nature and Environmental Conservation and the South African Nature Foundation has been using the Riverine Rabbit as a flagship species

for the threatened ecosystem of the dry river beds of the Karoo region. Habitat evaluation systems have been developed, as well as research on the negative impacts affecting the Riverine Rabbit in the area. These data are being integrated into an interactive program with local landowners. \$21,542 has been invested in these conservation programs directed at the Riverine Rabbit.

In Japan, the Amami Rabbit is subject to numerous threats on the two small islands on which it is endemic. Members of the LSG have conducted the only thorough censuses of this species (funded by WWF-Japan; amount unknown), unfortunately documenting its precipitous decline and the increasing loss and fragmentation of its habitat. The LSG has encouraged the Environment Agency-Japan to recognize these trends and list the species as endangered. They have responded by asking a LSG member to aid them with further surveys of the status of the species. The LSG hopes that this interaction sets the stage for further cooperation between IUCN/SSC and the Environment Agency.

LSG members in Nepal and India have continued to survey the enigmatic pika biodiversity along the Himalayan massif. Problems with deforestation, erosion and overgrazing have reduced populations and subspecies in certain areas. One putative new species has been discovered. A grant to NYZS is pending to further this work. Another endangered lagomorph is shared by these two countries, the Hispid Hare. Again, surveys by LSG members have turned up new localities of this form, and additional surveys are underway.

Primarily using personal resources, a LSG member and his students are actively investigating the last European pika (the little, or steppe, pika). This form has been retreating eastward across the steppes in historical time as a result of habitat alteration. Isolated populations, where the animal was thought to be extirpated, have been located, and a conservation action plan to stabilize the decline in range and numbers of the form is being developed. In addition, one member of the LSG has con-

structed a multi-disciplinary team to use pikas as a model for conservation studies; grants are pending to the MacArthur and Soros Foundations. This work will enhance our understanding of pika systematics (which is badly needed), metapopulation dynamics, and population viability analysis. Both Russian LSG members engaged in active programs (in China and the U.S.) to broaden their understanding of pika systematics to use as a foundation for this work. One goal of the LSG in the next triennium is to tie together these loose ends and concentrate on biodiversity "hotspots," areas of endemism, and areas of faunal ignorance throughout central Asia..

Threatened forms in the US have also received considerable attention. The Lower Keys marsh rabbit was investigated thoroughly by a University of Florida graduate student who authored the USFWS draft recovery plan (which was then commented on by LSG members). The pigmy rabbit in Washington State was studied by a graduate student at the University of Washington who, together with a LSG member, are formulating conservation initiatives for the form. A recently added LSG member in Alaska is initiating work on the declining Alaskan Hare. The prior chair of the LSG cleared up the systematics of the New England cottontail this year, dividing it into two species. This move now sets the stage for further clarification and conservation action of some populations of these animals which may be imperilled.

*Andrew T. Smith, Chair
Lagomorph Specialist Group*

Marine Turtle Specialist Group

Karen A. Bjorndal and George H. Balazs

During the last triennium, the major activity of the Marine Turtle Specialist Group has been the development of an action plan. Our action plan is now in the final stages of preparation.

Throughout the past three years, members have continued to address the many threats that endanger sea turtles worldwide. Principal threats include non-sustainable harvests for food, leather, and shells; incidental capture in fisheries; and degradation of nesting and foraging habitats. Despite the great efforts of many individuals around the world, the threats to sea turtles continue to increase.

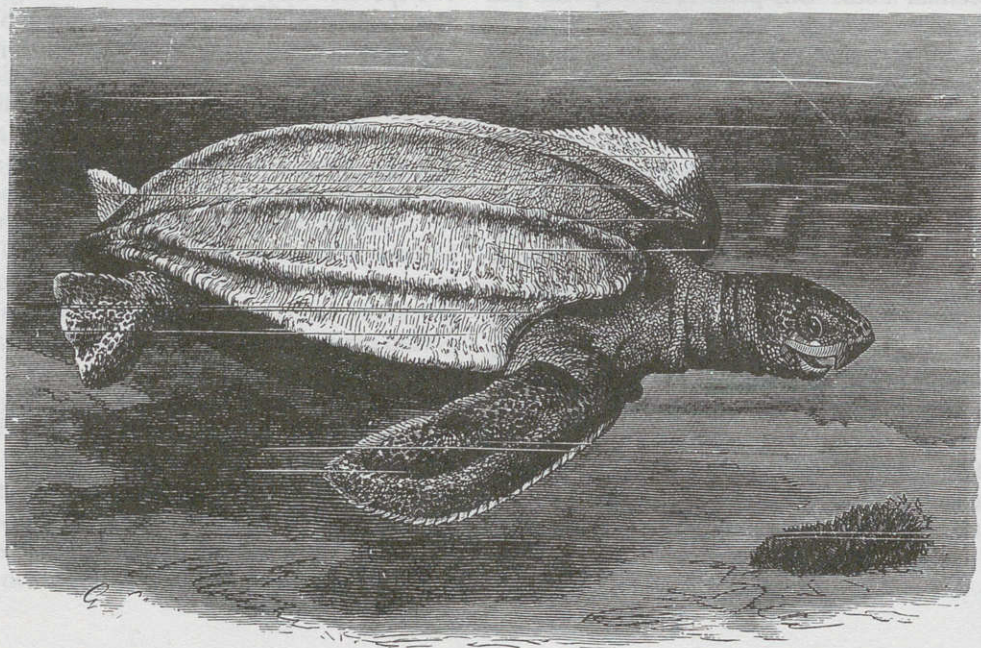
There have been some encouraging events during the past triennium, of which only a few can be listed here. The government of Japan has agreed to withdraw its reservations on sea turtle species under CITES. This decision will have a significant impact on sea turtle populations because Japan has been the largest importer of sea turtle products. The use of turtle excluder devices in shrimp trawls has expanded, thus reducing the number of sea turtles drowned

in shrimp trawls each year. There has been a small increase in the number of nests deposited by Kemp's ridleys, the most endangered species of sea turtle, which we hope represents the beginning of a reversal of the precipitous decline of the last 50 years. Government officials from Sabah and the Philippines are once again discussing the possibility of a joint Turtle Islands Park.

We look ahead to what we hope will be the most productive triennium for the Marine Turtle Specialist Group. Recently, through the efforts of the Center for Marine Conservation, a generous donation was obtained from an anonymous donor to support the activities of the MTSG. With these funds we will hire a program officer for the MTSG, and we will be able to move ahead with the implementation of the action plan.

Karen A. Bjorndal, Chair

George H. Balazs, Deputy Chair
Marine Turtle Specialist Group



Mollusc Specialist Group

Philippe Bouchet and Sue Wells

Triennial Report

The Mollusc Specialist Group (MSG) redeveloped its membership in 1991 with emphasis on experts in land and freshwater faunas. The Group now comprises 18 members from 11 countries with adequate representation of Europe, North America, and Australasia, but still too few members representing the tropics.

The emphasis on land and freshwater faunas reflects the fact that global extinction affects mostly non-marine molluscs, particularly those species with narrow geographic ranges and ecological requirements, such as spring snails (family Hydrobiidae) and tree snails (families Achatinellidae, Partulidae, and Amastridae). Land and freshwater molluscs are probably good indicators of what may be happening in other invertebrate groups with narrow-range endemism. Unfortunately, there are currently very few specialists working on the most threatened faunas, especially in the tropics, and many extinctions probably go unnoticed.

Although marine species comprise 75% of the 100,000 or so species of molluscs, few are globally endangered and threats are those related to their unsustainable use.

Meetings

The MSG met in Siena, Italy in August 1992 during the 11th Malacological Congress. The Congress also hosted an Alan Solem memorial symposium on Molluscan Diversity and Conservation, during which many MSG members presented papers. The proceedings, edited by MSG members A. van Bruggen and S. Wells will be published in 1994 with financial support from the People's Trust for Endangered Species. Papers from the conservation symposium of the 6th Malacological Congress, held in Edinburgh in 1986, will shortly be published as an SSC Occasional Paper, along with a

"Framework for action on molluscan conservation" prepared by A. Kay.

Action Plan and Newsletter

During the Siena meeting, it was agreed that the group will focus its work towards an Action Plan for Land and Freshwater Molluscs, with P. Bouchet taking responsibility for editing. Emphasis will be on centers of endemism and diversity, as it is important to detect if they are congruent with recognized Endemic Bird Areas. Regional coordinators have been identified to assemble data for the major regions of the world.

A 32-page issue of the MSG Newsletter *Tentacle* was published in 1993 and distributed to some 100 institutions, malacologists, and conservationists.

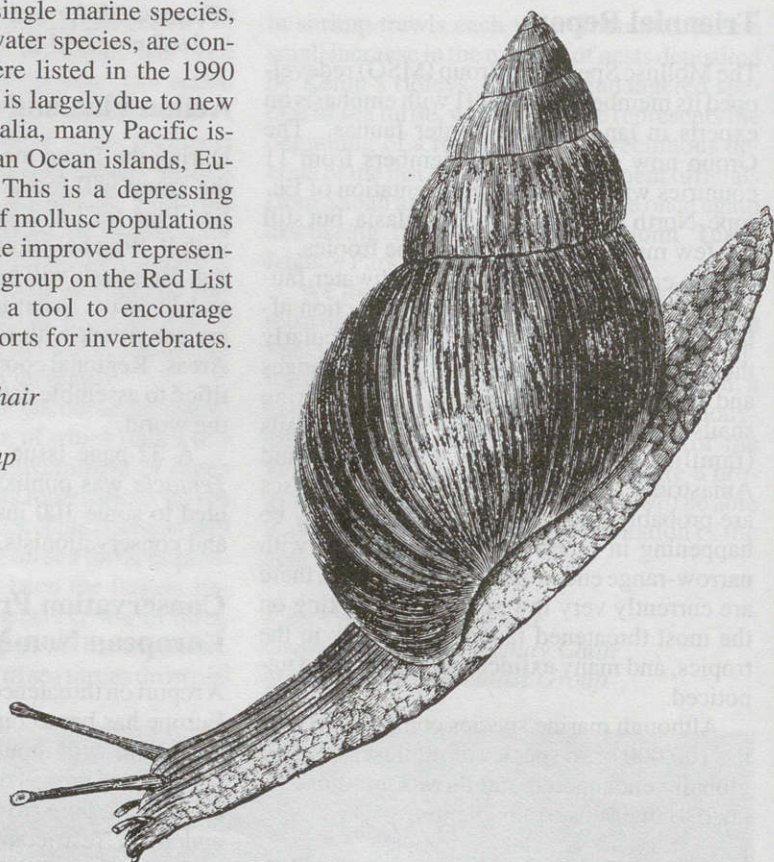
Conservation Priorities for European Non-Marine Molluscs

A report on threatened non-marine molluscs of Europe has been compiled by S. Wells and J. Chatfield, with input from many MSG members. Three groups of species were identified: (a) those endemic to a single country; (b) 'near endemics' restricted to a single geographical region but found in more than one country; and (c) widespread but declining species. In Europe, the island of Madeira has the highest molluscan diversity and endemism: 193 endemic species, of which at least 17 have not been seen for the last 100 years. Since the report was published in 1992 by the Council of Europe, the European Community Habitats Directive has been approved. It lists 20 terrestrial and freshwater molluscs. The focus of the Directive is the creation of a network of Special Areas of Conservation, to cover all listed species.

IUCN Red List of Threatened Animals

Data for the 1994 edition of the Red List were compiled by S. Wells, with input from MSG members and other specialists. The number of molluscs listed has increased dramatically, to over 1000 species. A single marine species, but 285 land and freshwater species, are considered extinct; 191 were listed in the 1990 Red List. The increase is largely due to new information from Australia, many Pacific islands, some of the Indian Ocean islands, Europe, and the U.S.A. This is a depressing reflection of the status of mollusc populations around the world, but the improved representation of this taxonomic group on the Red List will hopefully provide a tool to encourage greater conservation efforts for invertebrates.

Philippe Bouchet, Co-chair
Sue Wells, Co-chair
Mollusc Specialist Group



Mustelid, Viverrid, and Procyonid Specialist Group

Roland Wirth

The triennium was a successful period for the Specialist Group. Thanks to group member Dr. Harry Van Rompaey and the support of the Zoological Societies of Antwerp and Rotterdam, the group's newsletter, *Small Carnivore Conservation*, is now well established, and six numbers have been mailed out in the triennium to a large number of people interested in small carnivores. The newsletter has kept a high standard ever since its inception but has steadily grown in size and has reached 30 pages in the most recent issue.

The Procyonid Action Plan has been compiled under the leadership of this sub-group's Chair, Dr. Angela Glatston.

In North America the triennium saw the first attempts to reintroduce black-footed ferrets (*Mustela nigripes*) to the wild. Because this project is in its early stages and problems were expected, it was encouraging to everybody involved that litters were born to and successfully raised by some of the reintroduced ferrets, and a few of the animals of the first release survived both of the intermediate winters.

In Europe, the plight of the European mink (*Mustela lutreola*) received considerably more attention than in the past. The numerous articles published on this species in *Small Carnivore Conservation* by numerous authors are both, a reflection of the increasing awareness of the problem, and a tribute to the role the Specialist Group played in publicizing the endangered status of the European mink. Although the status of the species has certainly continued to deteriorate over the last three years, the increasing research and conservation activities in France, Spain, Estonia, and Belarus, as well as the newly established captive breeding program, give some hope for the future of the species. The captive breeding program, which was also developed in close cooperation with the Specialist Group, is noteworthy as it not only aims to establish a viable population of the species against extinction

but also works to generate funds from the zoo community for *in situ* conservation.

In Vietnam, efforts of the Specialist Group focused on Owston's palm civet (*Chrotogale owstoni*) another priority species from our Action Plan. Partly as a result of interest in this species, a major conservation program is now in place at the Cuc Phuong National Park, funded by the Frankfurt Zoological Society/Help for Threatened Wildlife. A conservation poster depicting Owston's palm civet is being produced with aid from the Zoological Society of Milwaukee County, and a detailed two-year study of this rare viverrid is being organized by Specialist Group member Shelagh Heard of the University of Cambridge.

In India, our efforts focused on the Malabar civet (*Viverra civettina*). Following a pilot study organized by the Specialist Group and funded by the Zoological Society for the Conservation of Species and Populations, the Wildlife Institute of India has further investigated the status of the species. This species is undoubtedly critically endangered, and at present the next conservation activities are planned jointly with Ajith Kumar of the Salim Ali Centre for Ornithology and Natural History.

As of this writing, the first ever status survey and research program on the enigmatic Colombian weasel (*Mustela felipei*) is ongoing in Colombia. This project has received funding from numerous sources, including the Peter Scott IUCN/SSC Action Plan Fund, and it also won the support of the BP Expedition Competition.

A Conservation Assessment and Management Plan Meeting (CAMP) was held jointly with the Otter and Captive Breeding Specialist Groups and was generously hosted by Rotterdam Zoo. Recommendations from this meeting are already increasingly being used by the world's zoo community.

Roland Wirth, Chair
Mustelid, Viverrid, and Procyonid
Specialist Group

New World Marsupial Specialist Group

Ricardo Ojeda

The principle objectives for the work of the New World Marsupial Specialist Group are: to compile information about all aspects of the biology of the species; to know the distribution of the species and detect the most vulnerable habitats; to list the species that are threatened, potentially threatened, and not threatened; to identify those countries that most urgently need plans of action for the conservation of marsupials; and finally to write plans of action for cases where the species or its habitat is most threatened. The information search has been completed using the existing bibliography as a base, as well as contact with specialists.

The first step for the Group has been to evaluate the state of the systematics of the species, which we found to be very complicated and in the past years very much modified. Once we overcame this problem, a primary objective of the group was to find information regarding all of the species and the current situation of conservation and distribution of marsupials in the Neotropics.

We have discovered that of the 69 known species and their habitats, 42 (60.8%) are considered threatened, 16 are intermediately threatened (23.2%), and 11 are not threatened (16%). The principal cause of threat we have detected is the destruction of habitat by cultivation or timber extraction. This is because the majority of marsupials are associated with forested or wooded areas and a great percentage of the species are arboreal.

The biogeographical province that contains the greatest number of threatened species is the Amazon. Analyzing by country, we found that Brazil has the greatest number of marsupials (38), 57.9% of which are very threatened and 23.7% intermediately threatened. Colombia is another country that presents a great number of species of marsupials (27), 85.2% of which are threatened. Additionally, we have found that

there are species that have a very restricted area of distribution, such as the region in south-east Brazil and northeastern Argentina. These species, being endemic and occurring in forested zones with great human impact outside of protected areas, have been cataloged as threatened. With respect to the rest of the countries, it is important to mention that in Chile, although it has only three species, two are endemic to the Valdivian forests and represent monotypic genera (*Ryncholestes raphanurus* and *Dromiciops gliroides*). Recently, one of these species was also found in Argentina, in the area that borders Chile.

It is important to note the scarcity of existing information about the majority of marsupials. There is abundant information about only a few species, which are those that have wide distribution and few problems, such as *Caluromys philander*, *Didelphis marsupialis*, *D. virginianus*, and *Monodelphis domestica*. In spite of this lack of knowledge, one cannot wait until there is sufficient information about these species to start to write and implement action plans. However, in the short term, it will be necessary to increase our knowledge about the majority of species.

With respect to the action plan for Neotropical marsupials, we are still in the process of contacting more specialists and receiving replies, finishing the action plan, and increasing our collection of photographs of the different species. The list of threatened marsupials and their respective habitats and state of conservation will be sent to the specialist for a last revision and offered to all interested persons to make comments. Copies can be obtained from Ricardo Ojeda. We believe that by mid-year 1994 we will have completed the objectives we established for this first step.

Ricardo Ojeda, Chair
New World Marsupial Group

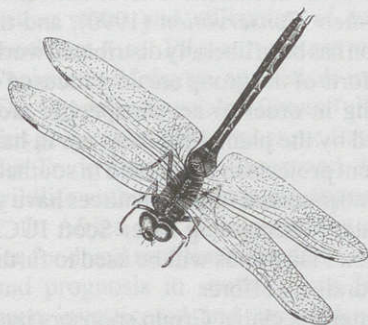
Odonata Specialist Group

Norman W. Moore

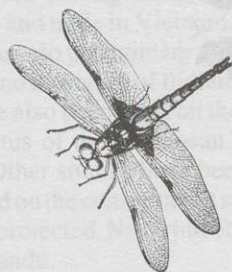
Triennial Report 1991-1993

The Odonata Specialist Group held two meetings, one in Trevi, Italy, in August 1991 and one in Osaka, Japan in August 1993. As usual, the meetings were held in connection with biennial symposia of the Societas Internationalis Odonatologica (S.I.O.) and were open to members of that organization. One of the main purposes of these meetings is to review reports from different parts of the world. The reports are then made available to a wider audience in the Reports of the IUCN Odonata Specialist Group. These reports, edited by the chairman, are produced under the aegis of S.I.O. Report No. 9 covers the meeting at Trevi; the report on the Osaka meeting is in press. The reports also summarize subjects of general interest debated at the meetings. In the period under review, the main topics discussed were additions, alterations, and deletions to the Red List of Threatened Animals; conservation and collecting in protected areas; and the Dragonfly Action Plan.

The main work of the Odonata Specialist Group is done by individual members. They have furthered the conservation of dragonflies in their own and other countries by describing new species, studying the distribution of species thought to be threatened, and researching the biology of dragonflies, and by playing their part in furthering conservation nationally and



internationally. Recent outstanding events have been the discovery of populations of *Hemiphysalis mirabilis* in Tasmania, Flinders Island, and Victoria (only a few years ago this "ancient" and highly specialized damselfly was thought to be extinct); the publication of *The Australian Dragonflies: A Guide to the Identification, Distribution, and Habitats of Australian Odonata* by J. A. L. Watson, G. Theischinger, and H. M. Abbey in 1991; and important studies of dragonflies in the Philippines, Thailand, on the Ryukyu Islands of Japan, and in South Africa. Six dragonfly reserves in Japan and two in England have been created or improved during the period under review. In the United Kingdom, the Dragonfly Conservation Group of the British Dragonfly Society has been active in promoting the conservation of dragonfly habitats in nature reserves managed by other conservation bodies. Members of the Odonata Specialist Group have been active in these and other activities. Finally, it should be recorded that the member covering Brazil, Professor A. B. Machado, who is the founder of Fundação Biodiversitas, played a key role in the United Nations Rio de Janeiro conference in 1992.



Norman Moore, Chair
Odonata Specialist Group

Otter Specialist Group

Pat Foster-Turley

In the past triennium, the Otter Specialist Group produced their document *Otters, An Action Plan for their Conservation* (1990), and this publication has been liberally distributed worldwide. Efforts of the group are now focused on fundraising in order to act on specific areas mentioned by the plan. Proposals are in hand for different projects in Africa and in southeast Asia, but no potential funding sources have yet been located. Remaining Peter Scott IUCN/SSC Action Plan Funds will be used to further these fundraising efforts.

The Otter Specialist Group sponsors international otter conferences every three years. The most recent conference, the Sixth International Otter Symposium, was held in September 1993 in South Africa and was attended by 60 delegates from 21 countries. The next international otter conference, in three years, will most likely be held in Latin America. In 1995, there will also be a regional Asian Otter Symposium in Indonesia.

On a final note, I will be resigning as Chair of the Otter Specialist Group but will continue to serve in an advisory capacity. My nominee for the next chairman is Dr. Padma de Silva, University of Peradeniya, Sri Lanka, who has served as Asian coordinator for the OSG for the past three years and was a member prior to this. She has actively participated in all OSG conferences and other OSG activities during this time period and is also heading up the planning for the 1995 Asian Otter Symposium. Padma has indicated a strong willingness and commitment to carry out the task of Chair and feels confident of some institutional support in this regard.

*Pat Foster-Turley, Chair
Otter Specialist Group*



Pangolin Specialist Group

Kevin Lazarus

The Pangolin Specialist Group is in its infancy. It was first initiated in early 1992, and the Chair was appointed in June 1992. The initial activity of the group was to obtain members. There are now 16 members, and it is hoped that the membership will grow. Current members have in some way or other been involved in pangolin research.

There are seven extant species of pangolins of a single genus. Four occur in Africa: the tree (*Manis tricuspis*), long-tailed (*M. tetradactyla*), and giant ground (*M. gigantea*) pangolins in West Africa and Temminck's ground pangolin (*M. temmincki*) in North, East, and Southern Africa. The three Asian pangolins are the Chinese (*M. pentadactyla*), Indian (*M. crassicaudata*), and Malayan (*M. javanica*).

Not much is known on the biology of pangolins. They are heavily utilized for scales—scales are used in traditional medicine—meat, and skin. The greatest impediment to effective conservation of the pangolins is the lack of biological knowledge of the species and the difficulty of enforcing protective legislation. The message is clear: more research is needed before effective conservation measures can be taken.

Some work has been done on trade in the species particularly in Laos, Thailand, and Vietnam. TRAFFIC Southeast Asia is working with the University of Hanoi to establish a trade-monitoring program that will gather information, among other things, on pangolin capture and trade in Vietnam. A member from India may do preliminary studies on the population and mortality of Indian pangolins. Studies have also been done on the general biology and status of the Formosan pangolin in Taiwan. Other studies have been conducted and reported on the conservation status of pangolins in the protected Nagarjun Royal Forest near Kathmandu.

The Trade Specialist Group has initiated a project on the field assessment of the conservation status and utilization of pangolins in southeast Asia. Pilot surveys are to be done in Peninsular Malaysia and Sabah in Malaysia. The Pangolin Specialist Group fully supports this project and has acted as mediator between the Trade Specialist Group and the relevant wildlife authorities to obtain approval.

In Africa and Asia, pangolins are utilized for food and traditional medicine. The status and prognosis in southwestern Nigeria has been investigated and reported. TRAFFIC East/Southern Africa—South Africa has quoted Namibian wildlife officials reporting a significant increase in the number of confiscations of live and dead Temminck's ground pangolins. Pangolin scales are reportedly for sale in Pretoria, South Africa, at a price of U.S. \$15.00 per scale. There is concern that a possible decline of availability of Asian pangolin species may have led to increased demand for African scales. Further investigations are necessary in both Africa and Asia.

We hope that more can be done in the future, particularly in the build up of a database on both the Asian and African pangolins. We hope to see a bright future for them.

The Pangolin Specialist Group hopes to better organize itself in the near future. Appointment of office-bearers will be made after discussions with current members. With this, better coordination and dissemination of information in work carried out by members and other specialist groups and agencies can be done. We also hope to eventually have a newsletter for members and will work toward the preparation of an Action Plan for pangolins.

Kevin Lazarus, Chair
Pangolin Specialist Group

Pigs and Peccaries Specialist Group

William L. R. Oliver

Summary Report on Group Activities 1991-1993

Despite the group's major preoccupation—the production and recent (November 1993) publication of its Action Plan—numerous projects were completed and others initiated during the triennium. Several *ad hoc* meetings were arranged, and the group was also effectively reorganized by the appointment of “regional coordinators” for each of the three regions of principal interest, namely: Central and South America, Africa, and south and southeast Asia. The group's principal activities in each of these regions may be summarized as follows:

Central and South America

Following the success of the African Suiform Survey (see below), the group's Deputy Chair and regional coordinator for Latin America, Andrew Taber, has initiated a similar survey on the three species of peccaries. About 80 questionnaires have been sent to date to selected scientists and conservationists throughout this region. With funding support from Wildlife Conservation International, Taber completed a three-year field study and status survey of the Chacoan peccary (*Catagonus wagneri*) in the core area of its range in western Paraguay in 1991. An action plan for the conservation of the species in this region was also produced and published for distribution to relevant governmental authorities and researchers. This survey has subsequently been extended into southeastern Bolivia, where *Catagonus* is scarce and declining, and expanded to include studies on the conservation and ecology of the two *Tayassu* peccaries at the southern edge of their range. Work has also started recently on the development of management plans for the creation of a proposed new national park (>1 million ha) in the region, which may also prove crucial to the ultimate survival prospects of the Chacoan peccary.

Another member of the group, Richard Bodmer, who has previously undertaken extensive studies of frugivory among ungulates in the Peruvian Amazon and developed a management strategy for peccaries in Peru, has now started work on a study of the population structure, density, and hunting pressure on peccaries and other large mammals in lowland Amazonian forests, with a view to the development and implementation of recommendations for various management programs.

This and diverse other current and future research and conservation projects on peccaries (for details see *Species* 18) were discussed during a meeting of several members of the group's peccary section and relevant researchers in Belém in 1992. During the course of this meeting it was agreed that a foremost priority was the production of a peccary “manual,” aimed at wildlife managers throughout the Neotropics, which would provide details of the biology, ecology, human utilization, field methodologies, and future requirements for the enhanced future management of peccary populations throughout their ranges. The desired early production of this manual will be facilitated by the recent publication of the group's Action Plan. However, following our recent Action Plan implementation meeting, it has also been agreed to produce Spanish and Portuguese versions of the peccary sections as an Action Plan for the Peccaries for distribution throughout Latin America, along with a conservation-education poster drawing attention to the ecological and economic importance of these animals.

Africa

The two major activities during the triennium were the completion of a major review of the sub-generic taxonomy of the African suids by Peter Grubb and the analyses of current distribution and status data collected during a wide-ranging questionnaire survey initiated in 1989

in collaboration with the Hippo Specialist Group. Data from this survey, which resulted in the receipt of 236 completed questionnaires (or other relevant data) from 93 informants in 34 countries, provided much of the information necessary for the formulation of research and management recommendations for each of the African suiforms in the Action Plan, a process greatly facilitated by Grubb's comprehensive re-interpretation of the geographic and genetic variation of these animals. This study, which was also published in the Action Plan, was based on the most complete examination of available museum material yet attempted. Among the most important findings were the absence of intermediates between the highly distinct red river hog of the equatorial forest zone and the bushpig of eastern and southern Madagascar. Consequently, these pigs are now treated as two distinct species, *P. porcus* and *P. larvatus*, respectively. In comparison, however, the two previously recognized forms of forest hogs, *Hylochoerus meinertzhageni*, from Central Africa, *rimator* and *ituriensis*, are effectively inseparable and should therefore be regarded as synonymous (the former name taking precedence). This reduces the number of recognized subspecies from four to three, though Grubb also drew attention to the absence of any museum specimens of the (now?) isolated forest hog populations of central and southeast Ethiopia, which may represent another (as yet undescribed) subspecies.

However, the most intriguing result of this study was the emergence of clear evidence that the extant warthogs also comprise two distinct species, namely the common warthog, *Phacochoerus africanus*, which is widely distributed through the savannah zone, and the cape or desert warthog, *P. aethiopicus*, a species of arid habitats with a discontinuous distribution. The nominate form of the latter species is now almost certainly extinct in South Africa (see below), but it evidently survives in Somalia as a separate subspecies, *P. a. delamerei*. The two species are quite clearly differentiated by a suite of functionally independent cranial and dental features and are—or were—marginally sympatric in northern Somalia (for details see *Species 17*). Their present status in the latter region is unknown,

but further information is urgently required for the development of management recommendations for this population and the neighboring Eritrean and Djibouti race of "common" warthogs, *P. aethiopicus delamerei*. Three skulls recently acquired from northeastern Kenya by the group's regional coordinator for Africa, Jean-Pierre d'Huart, have confirmed the occurrence of these animals in that country. Unfortunately, similar investigations into the possible occurrence of surviving populations of the nominate race, *P. a. aethiopicus*, in the northern Cape, by Darryl Mason, proved fruitless in that the warthogs of this area proved to be *P. africanus*.

South Asia and Southeast Asia

The problems in the Manas Wildlife Sanctuary and Tiger Reserve (300 sq. km), which has remained largely under the control of insurgents since February 1989, continue to be a matter of the gravest concern to the group. This area holds the largest, and perhaps the only viable, population of pygmy hogs, *Sus salvanius*, and it is also a crucially important site for a larger number of major threatened species than any other area in the Indian subcontinent. Unfortunately, recently improved management practices in the only other area known to support pygmy hogs, the tiny (26.21 sq. km) Barnadi Wildlife Sanctuary, approximately 70 km east of Manas, have also deteriorated in the last couple of years, and it remains uncertain whether the species still occurs there. These problems have been highlighted in the development of a conservation management plan for the species, though its implementation has been repeatedly postponed as a result of the continuing civil unrest in this region. The details of an agreement have now been approved by both the Indian Central and Assam State Governments, and it is hoped that this will be signed by these authorities, as well as the Pigs and Peccaries Specialist Group and the Jersey Wildlife Preservation Trust, in the near future in order to enable the earliest possible implementation of those parts of this plan that can be initiated safely.

A similar agreement covering a range of field research, practical management, and conservation-education initiatives focused on the

second most endangered suid, the Visayan warty pig, *Sus cebifrons*, was signed in April 1993 by the Department of Environment and Natural Resources (DENR, Government of the Philippines) and the Zoological Society of San Diego. As a result, captive breeding and other projects have now been initiated on the two islands, Negros and Panay, which still support remnant populations of these animals. Other recent and continuing activities in this country include the conduct of field status surveys of wild pigs and other endemic ungulates on the neighboring island of Masbate and on Balabac and the Calamian Islands in Palawan; the production and distribution of a conservation poster and other education materials featuring wild pigs; the organization of the first two of a proposed series of biodiversity conservation workshops; and the acquisition of specimen materials for taxonomic studies (for details see *Species* 16, 17, and 19). These studies have greatly facilitated the recent upheaval in our understanding of the distribution, conservation status, and systematic relations of the Philippine pigs, including the recent recognition of two endemic species, *S. cebifrons* and *S. philippensis*.

Several important projects have also been initiated elsewhere in southeast Asia during the 1991-1993 triennium. These projects include a number of ongoing studies of babirusa,

Babyrusa babyrusa, being conducted by group members (see *Species* 16 and 17). Lynn Clayton started the first detailed study of wild populations of *B. b. celebensis* in Sulawesi in 1991, while Alastair Macdonald, Paul Vercammen, and other workers have developed a variety of studies on captive wild pigs, conducted field studies on Seram and neighboring islands, and assisted the collection of data on the distribution and status of the rarer subspecies of babirusa on Buru and the Sulu Islands (*B. b. babyrusa*), the Togian Islands (*B. b. togeanensis*), and in southwest Sulawesi. Preliminary results from the latter area have indicated the possible survival of relictual populations of *B. b. bolabatuensis*, which is otherwise known only from subfossil deposits. However, despite enquiries by a number of biologists who have conducted faunal surveys in south Vietnam over the last years, no such evidence has been obtained as yet that might indicate the possible survival of the (highly enigmatic) Vietnam warty pig, *Sus bucculentus*, which is known from only two skulls collected in the region in the late 1980s.

William L. R. Oliver, Chair
Pigs and Peccaries Specialist Group

Polar Bear Specialist Group

Øystein Wiig



Report for 1991-1993

The work of the Polar Bear Specialist Group can be summarized from the presentations at the meetings of the group, held every three to four years.

The 11th meeting of the IUCN Polar Bear Specialist Group was held in Copenhagen, Denmark, January 1993, under the chairmanship of Erik Born of the Greenland Fisheries Research Institute. Scientific delegates represented each of the five circumpolar nations—Canada, Greenland (Denmark), Norway, U.S.A., and Russia—signatory to the International Agreement on the Conservation of Polar Bears and Their Habitats. Three indigenous hunters from Alaska, Canada, and Greenland attended as invited specialists on traditional knowledge of polar bears.

The group reviewed progress on research and management of polar bears since the last meeting, held in Socchi, U.S.S.R., in 1988. Significant progress has been made in several areas. The extensive use of satellite tracking of female polar bears has made it possible to determine the boundaries of several relatively discrete subpopulations, some of which are shared by different countries and therefore require international cooperation to manage as directed by the International Agreement on the Conservation of Polar Bears. For example, populations are shared between Russia and Alaska (U.S.A.), Canada and Greenland (Denmark), and Svalbard (Norway) and Franz Josef Land (Russia). It is essential to determine the distribution of each subpopulation before its size can be estimated. There appear to be about

15 subpopulations, although the boundaries of some, especially in the vast, unstudied areas of the Russian Arctic, have yet to be determined.

A review of the worldwide status of the polar bear, based on available knowledge, was conducted. The state of knowledge of individual subpopulations ranges from good to almost nothing. In summary, the world population of polar bears was thought to be between about 21,000 and 28,000. However, it is vital to remember that polar bears are distributed in geographically distinct subpopulations, each of which must be managed individually.

Hunting polar bears is an important part of the culture and economy of indigenous people throughout the Arctic. However, because polar bears have low reproductive rates, sustainable levels of harvest are lower than in species such as caribou. Harvest levels in hunted populations must be set at very low levels to ensure that depletion does not occur. To be sustainable, the harvest should not include more subadult and adult females than about 1.5% of the population size.

Research on toxic chemicals indicated higher concentrations of PCBs in the vicinity of Svalbard than anywhere else in the Arctic. The reason for this is not understood. Fat samples for toxic chemical analyses have been collected from polar bears in a wide range of other locations throughout the Arctic, but the results are not yet available. Concern was also expressed about the possible detrimental effects on the Arctic marine ecosystem of nuclear waste dumping in the vicinity of Novaya Zemlya in the Russian Arctic. It is considered critical to continue monitoring polar bears to determine possible effects of man-made substances and activities.

Concern was expressed about the possible detrimental effects of climate warming on polar bears. Current models project that the first and most significant effects will be detected at high northern latitudes and that this will likely reduce the extent of sea ice. If the models are correct, prolonging the ice-free period will shorten the period during which polar bears in

many subpopulations are able to feed on seals, causing nutritional stress. Early signs of impact would include declining body condition, lowered reproductive rates, reduced survival of cubs, and an increase in polar bear-human interactions. Eventually, the seal populations would decline if the quality and availability of breeding habitat is reduced. Rain during the late winter may cause polar bear maternity dens to collapse, causing the death of occupants. Human-bear problems will increase as the open-water period becomes longer and bears fasting and relying on their fat reserves become food-stressed. Tourism based on viewing polar bears in western Hudson Bay will likely disappear. Should the Arctic Ocean become seasonally ice-free for a long enough period, it is likely that polar bears would become extirpated from at least the southern part of their range. Because the polar bear is at the top of the Arctic marine food chain and ice is an essential component of its environment, it is an ideal species through which to monitor the cumulative effects of change in Arctic marine ecosystems.

Several priorities were identified as important for future research and management. These included continuing to identify the boundaries and size of subpopulations; studying the effects of the harvest and the effects of manipulating the sex composition of the harvest on populations; and the relationships between bears, seals, and sea ice conditions.

The proceedings from the meeting will be published during spring 1994. It is not certain whether the SSC will publish the proceedings as an occasional paper.

Dr. Øystein Wiig, Norwegian Polar Institute, Norway, was nominated as chairman for the next triennium.

*Øystein Wiig, Chair
Polar Bear Specialist Group*

Primate Specialist Group

Ardith Eudey and Anthony Rylands

Asian Section

Asian Primates, the newsletter designed to facilitate communication among members of the Asian section of the Primate Specialist Group (PSG), has entered its third year. Presently, *Asian Primates* is mailed to about 400 individuals and institutions, of which approximately 38% are primatologists, NGO's or governmental officials in Asia.

During the XIVth Congress of the International Primatological Society in 1992, PSG Chair, Russell Mittermeier, announced that the Group would be encouraging increased regional autonomy, including the formation of regional or national committees with local coordinators. Pro. Yukimaru Sugiyama was put forward as regional coordinator for Japan and Dr. Kunkun Jaka Gurmaya was nominated as regional coordinator for Indonesia. The next Congress of IPS will be held in August 1994 in Bali, Indonesia. Indonesia exhibits the greatest primate diversity in Asia, and it is hoped that one result of the Bali Congress will be to focus national attention on primate conservation issues in general in Indonesia.

During the Fourth Lion-tailed Macaque Symposium, which was held in conjunction with a PHVA for the species at Arignar Anna Zoological Park in Madras in October 1993, two more PSG regional committees were formed. Dr. Ajith Kumar will serve as regional coordinator for South India, with Dr. Rauf Ali as administrator, and A. K. Gupta will serve as regional coordinator for northeast India. This was the first international symposium on lion-tailed macaques held in India; the previous three had been organized by zoos in the United States.

In March 1993, following a meeting held in Cuc Phuong National Park to discuss the status of Vietnam's primates, a memorandum of agreement entitled "Rescue of Endangered Primates of the Socialist Republic of Vietnam," was signed by representatives of a consortium of foreign zoos and NGO's. The intent of the

memorandum of agreement is to assist the government of Vietnam, as represented by the Ministry of Forestry, to take the following actions: to ensure effective implementation of legal protection for threatened primates; to work toward the creation of a special protected area (or areas) for the endemic *Rhinopithecus avunculus* (Tonkin snub-nosed monkey), one of the most endangered primates of Asia; to grant permission for long-term research efforts in protected areas and for searches and surveys to document any recently discovered populations elsewhere; and to provide land and the legal framework necessary to undertake a rescue center for endangered primates. Collaborative field studies have already been initiated on *R. avunculus* and *Nycticebus pygmaeus* (pygmy slow loris). *In situ* conservation of Vietnam's primates was given top priority at the Cuc Phuong meeting. The need to curtail market exploitation of primates, beginning with the most endangered species and initially targeting the Ho Chih Minh City market also was recognized at the meeting. In January 1994, Vietnam declared its intention to become a Party to CITES. Professor Vo Quy, a member of the PSG, expedited this decision. The focus of international attention upon the unannounced shipment of at least 90 pygmy slow lorises to Ho Chic Minh City, the survivors of 102 earlier smuggled into Taiwan, and the subsequent deaths of all but four, may have facilitated this action.

Neotropical Section

On the occasion of a Primate Specialist Group (PSG) meeting held during the Congress of the International Primatological Society (IPS) in Strasbourg, Anthony B. Rylands (Federal University of Minas Gerais, and Conservation International Brazil Program, Belo Horizonte, Minas Gerais, Brazil) and Ernesto Rodriguez Luna (Universidad Veracruzana, Mexico) were appointed co-vice chairs for the Neotropics.

Threatened Taxa

Anthony Rylands organized a revision of the 1990 IUCN Red List of Threatened Animals, involving South American species. A preliminary proposal was drawn up from the published literature and sent, with a questionnaire, to 32 PSG members. Principal changes included: (a) the inclusion of 22 taxa; (b) the removal of three; and a change in status of six. Some taxonomic changes were also suggested including: (a) that all *Callithrix* forms be considered full species; (b) *Saguinus oedipus* and *Saguinus geoffroyi* be considered as species rather than subspecies; (c) *Ateles paniscus chamek* be considered subspecific to *Ateles belzebuth*. The final proposal included 19 callitrichid and 43 cebid species and subspecies.

Action Plans

Regional Primate Action Plans will be prepared for Mesoamerica, Amazonia, and the Brazilian Atlantic Forest (included neighboring areas in Argentina, Paraguay and central and northeastern Brazil). Ernesto Rodriguez Luna is currently working on the Mesoamerican Plan, and organized a workshop to that end during the IV Symposium of the Mexican Primatological Society. The Atlantic Forest and Amazonian Primate Action Plans are being prepared by Anthony Rylands, with priority being given to the former.

Newsletter

The first newsletter for the PSG Neotropical Section, *Neotropical Primates*, was published in March 1993. Editorial support was provided by the Fundacao Biodiversitas, and the financing and distribution was provided by the Conservation International Brazil Program. The newsletter is quarterly.

International Management Committees

PSG Members are heading five International Management Committees for the following taxa: *Leontopithecus rosalia*, *L. chrysomelas*, *L. chrysopygus*, *L. caissara*, *Cebus apella xanthosternos* and *C. a. robustus*. These committees are officially recognized in their consultative, guiding role by the Brazilian Institute for the Environment (IBAMA). The four lion tamarin committees met following a one-day symposium in the Poco das Antas Biological Reserve, May 1993. These committees advise the international studbooks for the four species, along with captive management procedures and initiatives concerning *in situ* research and conservation measures. Notable was the purchase of 1,058 ha of forest, annexed to the Una Biological Reserve which protects *L. chrysomelas*. The capuchin monkey subspecies' International Committee was created in October 1992 by IBAMA, with Ilmar B. Santos (Fundacao Biodiversitas) and Jean-Marc Larnould (Mulhouse Zoo) as chairmen. The first meeting was held in April 1993, and included the creation of a studbook for *C. a. xanthosternos*, and recommendations regarding the establishment of a breeding program for *C. a. robustus*.

Ardith Eudey, Chair, Asian Section

Anthony Rylands, Co-vicechair,

Neotropical Section

Primate Specialist Group

Rodent Specialist Group

Giovanni Amori and J. Mary Taylor

Rodents include over 2,000 species (about 45% of all mammal species), and occur in all continents except Antarctica, at almost any latitude and longitude and occupy most habitats. It is thus a major challenge to obtain detailed information about the status of all these species. The challenge is compounded by the difficulty of securing funds for their conservation, because rodents are not generally viewed as important or charismatic species.

The Rodent Specialist Group has met regularly each year at the time of the annual meeting of the American Society of Mammalogists, and additionally at the meetings of the International Theriological Congresses. Since producing the publication, *Rodents: a World Survey of Species of Concern*, the next goal of the group has been to develop Action Plans. There is a Coordinator for each major region, as follows: Eastern North American Region, Dr. Gordon L. Kirkland, Jr.; Northern North American Region, Dr. Murray L. Johnson; Southwestern North American Region, Dr. Joseph G. Hall; Middle American Region, Dr. Gerardo Ceballos; Caribbean Region, Dr. Charles A. Woods; South American Region, Dr. Luis C. Contreras; Australasian Region, Dr. Anthony K. Lee; Eastern Asian Region, Dr. Wang Sung; Southeast Asian Region, Mr. Songsaldo Yenbutra; Western Asian Region, Dr. Iyad A. Nader; Indian Region, Dr. Ishwar Prakash; Russian Region, Dr. Andrei Tchabovsky; European Region, Dr. Giovanni Amori; African Region Co-Coordination, Dr. Duane A. Schlitter and Lilian M. Westlin.

To date, there are manuscripts of Action Plans for the rodents of the following regions: Australasia, North America, Europe, and Western Asia. Because the rodents represent an enormous group, the action plans will be published in a series of papers.

After several years of serving as Chair of the RSG, J. Mary Taylor requested appointment of a co-chair. Giovanni Amori accepted the co-chair in 1993, and will be overseeing the manuscripts of Action Plans for all except those named in the previous paragraph. The following is a summary of future plans.

Future plans are to prepare the Action Plans for those regions still not covered (Russia, Africa, South America, Middle America, Caribbean, Southeast Asia, Eastern Asia, and India). In some of these regions there are few specialists. Consequently, any useful information about rodents is welcome. Moreover, on the basis of the action plans a few pilot projects will be identified and aimed at the conservation of selected species around the world. In certain instances, this can be done in collaboration with other IUCN/SSC Specialist groups. Because the conservation of some rodent species is related to the introduction of exotic species, some of these pilot projects should develop and/or apply measurements of control of introduced species (e.g. Red squirrel replacement by Grey squirrel in Europe).

As a general trend, the activities of the RSG whenever possible, should be regionalized. The possibility of producing a Newsletter to promote awareness about rodent conservation problems is also being considered.

*Giovanni Amori, Co-chair
J. Mary Taylor, Co-chair
Rodent Specialist Group*

Seal Specialist Group

Peter Reijnders

Activities carried out by the Seal Specialist Group during 1993

The Seal Specialist Group (SSG) activities can be categorized under three headings: (1) activities initiated by the group itself; (2) activities related to its functioning within IUCN/SSC; and (3) activities concerning advice on request to other partners.

1. Activities Initiated by the Group Itself

The major event this year was the publication of the Pinniped Action Plan. It appeared in September 1993 after a last half year of continuous updating and correspondence about editorial questions with SSC-headquarters. There was ample opportunity to promote the plan at the last Biennial Conference of the Society for Marine Mammalogy in November, in Galveston (Texas). One of the symposia was devoted to the Status of Marine Mammal Conservation Efforts. Three SSG members presented papers on the Action Plan itself and further elaborated on the status of respectively Northern and Southern Hemisphere pinnipeds. Related further activities were the global distribution of the plan and initiatives on the implementation of the proposed actions. The SSG acted as an intermediary for transfer of a grant for the implementation of one of the listed projects, a population study on spotted seals in the region Kamchatka/Alaska. The plans for a captive breeding program for Mediterranean monk seals are still a controversial issue. The SSG took the initiative to draft a document on the criteria for captive breeding, which could obtain the support of the scientific community. IUCN's Captive Breeding Specialist Group was invited to review the text. Some versions have been improved and it is anticipated that a draft concept paper could be available in spring 1994. The SSG is further

involved in this matter by the participation of two of its members in an expert committee nominated by the French Ministry of Environment, that will identify and describe the technical aspects of captive breeding.

The SSG will work closely with the SCAR Group of Specialists on Seals, since the chairman of that group and one of its members have become members of the SSG. In this way, the SSG can benefit from that particular expertise on antarctic seals.

The European Commission is implementing the announced habitat directive in its member states. Biodiversity and designation of special protected areas are the basic principles on which the EC bases its environmental protection policy. The Global Marine Biological Diversity Strategy developed by the Center for Marine Conservation/IUCN/UNEP has been made available through SSG as guidelines in this process.

2. Activities Related to its Functioning Within IUCN/SSC

The communication between SSC headquarters and SSG was either of a strategic nature or had to do with the general functioning of the SSG as a consultant group on different technical matters.

Some of the major strategic matters the SSG advised on were: New criteria for IUCN Red List Categories plus CITES Appendices and the SSC Strategic Plan Questionnaire, in particular the Review of the SSC Mission. The SSG reviewed a draft version of a planned IUCN educational booklet on seals and submitted information that was incorporated in the IUCN activity report to the 5th PCC meeting on the Marine Mammal Action Plan, at the UNEP headquarters in Nairobi. Correspondence with SSC was carried out on the content of a small-scale public relation effort with the release of the Pinniped Action Plan.

3. Activities Concerning Advice on Request to Other Partners

The world conservation Monitoring Centre made a revision of the IUCN Red List of Threatened Animals, and asked the SSG for advice on the pinniped species. Advice was provided to FAO, which prepares Species Identification Sheets for Marine mammals of the World. They requested our opinion on the status designation for each seal species.

SSG assisted IUCN's Trade Specialist Group in their 1993 SSC Survey of CITES Appendix II species, subject to significant levels of trade, in particular on possible trade of walrus in Russia.

The SSG provided advice to WWF for silverine artwork on endangered species, the Mediterranean monk seal and the Caspian seal.

Documentation on the Mediterranean monk seal was compiled for a book on "*Threatened Vanishing Wildlife in Africa*", to be prepared by the African Carnivore survey.

SSG presented, on request, a paper on Pinniped Conservation at an international conference in Brussels "Responsible Wildlife Resource Management", organized by the European Bureau for Conservation and Development.

*Peter Reijnders, Chair
Seal Specialist Group*



Sirenia Specialist Group

John E. Reynolds III

Members of the Sirenia Specialist Group met in Sydney, Australia, in July 1993, as part of a workshop on sirenians and seagrasses held during the Sixth International Theriological Congress. The Sirenia Specialist Group members noted that sirenians have been well studied in relatively few of the 60 countries whose waters they occupy. Nonetheless, there is growing interest in developing sirenian research or conservation programs by scientists in countries with unstudied or poorly studied sirenian populations. In many cases, the scientists possess great enthusiasm, but lack funds. Some of the scientists wish to initiate expensive, high-technology programs (e.g. telemetry) at the outset. The Sirenia Specialist Group recommends a more fundamental, cost-effective approach to initiating a sirenian research or conservation program.

The Group discussed research priorities for unstudied sirenian populations. The group recommends the following research activities, in the order in which they should be implemented: (1) Determine the presence or absence of sirenians in the region; (2) Assess overall distribution and define high-use areas; (3) Describe general characteristics of important habitats; (4) Assess impacts of humans; and (5) Evaluate major aspects of population dynamics.

The Group advises that scientists undertaking studies of relatively unstudied sirenian populations start with fundamentals, including, but not limited to: (1) becoming familiar with literature dealing with sirenians; (2) interviewing local people who might provide insight regarding presence/absence, important habitat, impacts, and cultural attitudes that might facilitate or retard conservation efforts; (3) using knowledge already available and generally applicable as a framework for developing research questions that may assess area-specific biological traits; and (4) developing interdisciplinary alliances with specialists (e.g. anthropologists, sociologists, ecologists, or

Geographic Information System specialists) whose expertise could be valuable in understanding and conserving sirenians or habitat. The Sirenia Specialist Group noted that the most important studies of sirenians will develop long-term databases, which probably can only be maintained by developing local/regional expertise, enthusiasm and financial support.

The sirenians are "flagship species", a term reflecting in this context their visibility and the enthusiasm with which the public often address sirenian-related issues. Efforts to preserve sirenians may, therefore, be easier to fund or to engender public support for than efforts to preserve other components of ecosystems. Nonetheless, adequate and appropriate conservation of sirenians within a particular region will have important consequences for habitat conservation.

The Group notes that education and awareness efforts should parallel research to achieve regional goals of sirenian or habitat protection. Education, like research, should have a local focus, and should be region-specific to accommodate cultural or socio-economic practices. However, effective education programs also involve educating managers and administrators, who can provide funds for initiation and continuation of programs, and the scientists themselves. The Group recommends that development of multi-focal education programs accompany development of research programs.

In summary, the Sirenia Specialist Group recommends a step-wise approach to research, as well as a multi-focal education program, to learn about and conserve unstudied sirenian populations. A great deal can be learned and accomplished using fundamental approaches that require neither high levels of funding nor extensive technological expertise.

*John E. Reynolds III
Sirenia Specialist Group*

Social Insect Specialist Group

Donat Agosti

Triennial Report 1991-1993

The creation of the Social Insect Specialist Group (SISG), a change from the earlier Ant Specialist Group into one including additionally termites and social bees and wasps, occurred in the previous triennium. It was hoped during this triennium, to establish the new group, formulate aims and a concept of further actions, and to link with organizations of similar interests.

A link with the International Union for the Study of Social Insects (IUSI) was formally set up at the international meeting in Bangalore, India, 1990. It was agreed, that the chairman of the SISG should at the same time act as the conservation officer of IUSI, and thus coordinate and initiate conservation efforts within the two organizations.

The set up of the group was delayed through the change of the Chair from Graham Elmes to Donat Agosti in early 1993. It was at this time agreed between SSC and SISG to prepare a concept of future activities, and how to proceed, before the group is reorganized accordingly. We now aim to prepare the concept for general discussion for the international meeting of IUSI in Paris in August 1994.

Aims for 1994-1996

The following question needs to be answered before the preparation of an Action Plan and reorganization can be done: Shall SISG be kept as a separate group, or shall it be merged with other groups, which do not aim at the conservation of individual species but rather their habitats? This question will be raised at the international meeting of IUSI in Paris, 1994, and in discussions with SSC. If the SISG is to be kept a separate group within SSC, it should aim to formulate an Action Plan, including the status quo of the taxa included, special features of the social insects which would make them a primary target group for

conservation efforts such as monitoring or assessing biodiversity. Based on this action plan, the SISG would then be reorganized and activities be planned.

Reflections

The change from the Ant Specialist Group which aimed successfully at protecting especially the red wood ants in Europe to an enlarged group including all the social insects (SISG) can at the same time be viewed as a change from the conservation of species by protecting them individually to a conservation attitude which aims at preserving their habitats. One of the main reasons for that change is the lack of the knowledge of the threat of almost all the species included. However, the social insects have a unique combination of features which make them a predominate group in assessing biodiversity and monitoring environmental changes. Social insects include species of two main insect orders, the Hymenoptera (ants 15,000 species, bees ca. 1,000 social species and wasps 1,500 species) and Isoptera (termites 2,200 species). In almost all ecosystems, social insects are among the prevailing if not the dominant ecological groups. They are all characterized by possessing nests including a few tens to several millions of individuals, which are, especially in the tropics, active all year round. Several very efficient, semi-quantitative methods are available to collect representative samples in a short time. Although the taxonomy of most of the taxa is not very well known, efforts are currently underway to change this situation. The combination of these factors make social insects a group, which would be extremely well suited as a tool in the management of ecosystems.

*Donat Agosti, Chair
Social Insect Specialist Group*

South American Camelid Specialist Group

Hernán Torres

The South American Camelid Specialist Group is composed of 24 experts from Argentina, Bolivia, Chile, Germany, Peru, and the United States. During the period of 1991-1993, the Specialist Group has accomplished the following tasks:

- Publication of the document titled *South American Camelids: An Action Plan for their Conservation*. This Action Plan was published in both English and Spanish, and it has been delivered to several decision makers at the political level in all of the south Andean countries. At the same time, the document has been submitted to potential donors with the aim of obtaining financial support.
- Joint SSC-South American Camelid Specialist Group and IUCN Sustainable Use of Wildlife Program technical assistance to Corporación Nacional Forestal (CONAF) in Chile. This assistance was to prepare a plan for the sustainable use of the vicuña in the Paríjncota Management Area. The plan includes sections regarding the biology of the species, habitat descriptions, suggested management techniques, participation of Aymara local communities, economic value of sustainable use, and proposed mechanisms to carry out an international trade of cloth transformed from live vicuña fiber. The document strongly emphasizes the reduction of negative impacts caused during the capturing, shearing, and releasing process. This project has been funded by the U.S. State Department and IUCN thanks to the efforts made by the IUCN Sustainable Use of Wildlife Program.

- Preparation of the book titled *Técnicas para el Manejo del Guanaco*. This book includes several sections written by different group members. Silvia Puig is responsible for editing the manual, and she has finished the first manuscript, which will be revised by the group members and sent to the printer. The manual contains sections regarding biology of the species, distribution, status, census methods, capturing techniques, potential sustainable uses, and trade.
- Technical assistance to CONACS in Peru. One of the group members has given technical advice to the Consejo Nacional de Camélidos Sudamericanos (National Council for South American Camelids) in Peru. This technical assistance was requested by CONACS in order to improve management policies at the national level.

Several project proposals have been submitted to some potential donors to obtain financial support to implement the action plans. However, no positive response has been received yet.

Hernán Torres, Chair
South American Camelid Specialist Group

South American Reptile and Amphibian Specialist Group

Jorge D. Williams

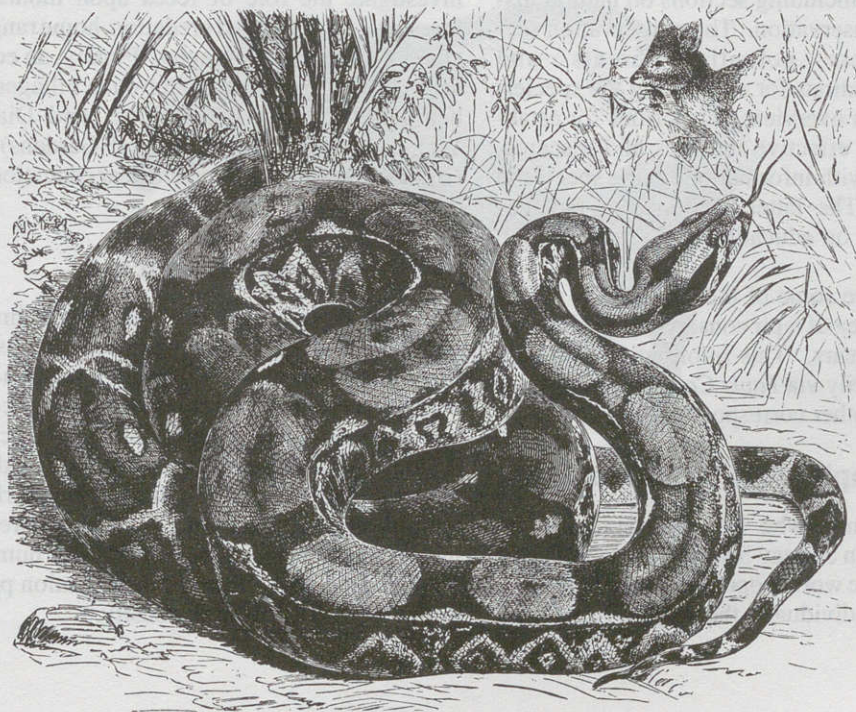
The South American Reptile and Amphibian Specialist Group (SARASG) was formed in 1993. It is coordinated by Aline Tristao Bernardes from Brazil, and Jorge Daniel Williams from Argentina. We are now inviting South American herpetologists to join the SARASG, and in the near future we will extend the invitation to specialists from other countries whose work also deal with Neotropical herps. We are preparing, with the collaboration of the Asociacion Herpetologica Argentina (AHA), a South American Herpetologists Directory, which will be very important to integrate herpetologists with SARASG. Designation of regional SARASG coordinators from different South American countries is also planned.

The first priority of SARASG is to determine the conservation status of South Ameri-

can reptiles and amphibians. Also we are making an inventory of South American herps, and we hope to create a computerized database with systematics, as well as distributional and conservation data. We are also interested in building a library and bibliographic database for South American reptiles and amphibians. We would appreciate the invaluable help of all herpetologists in sending us publications dealing with South American herps and related literature.

We are designing a SARASG newsletter, which will be published with financial support of the Fundacao Biodiversitas, Brazil.

*Jorge D. Williams, Co-chair
South American Reptile and Amphibian
Specialist Group*



Tapir Specialist Group

Daniel M. Brooks

The past three years have witnessed two major accomplishments of the IUCN/SSC Tapir Specialist Group. The first is the circulation of a periodic newsletter, *Tapir Conservation*, with support from Conservation International and Wildlife Preservation Trust International. The first copy was circulated in September of 1990. The main purpose of the newsletter is to keep group members and other parties interested in the conservation of tapiridae informed of recent items and developments in the field.

The second accomplishment is the near completion of *The Road to Recovery: An Action Plan for the Family Tapiridae*, with support from the Peter Scott IUCN/SSC Action Plan Fund, Houston Zoological Gardens, and the Belize Zoo and Tropical Education Center. A draft was submitted at the IUCN meetings in Buenos Aires in January 1994. Following the introduction by noted mammalogist John Eisenberg are species accounts for woolly, Malayan, Central American, and South American tapirs, each including sections on natural history and conservation. The conservation section covers potential threats and recommendations for conserving the species, including an overview of priorities for establishment of effective reserves and research, and closes with information on the species in captivity. The latter section also includes information on education and reintroduction programs.

Below are some of the highlighted activities in the area of tapir conservation during the past three years. This information was supplied primarily via *Tapir Conservation*, status reports, or other correspondence.

Woolly Tapir (*Tapirus pinchaque*)

Craig Downer, who has been studying the population in Sangay National Park, Ecuador, estimates the world population to be only a few thousand individuals, the majority of which

are in Colombia and Ecuador. Major threats to this species, restricted to high Andes paramo and cloud forest, include: habitat destruction and disease transmission due to cattle ranching; mercury contamination due to gold mining concessions; road development through the park, allowing further access to previously unoccupied regions; and foreign trophy hunters who are willing to pay local guides to take them on a tapir hunt—indeed, two of Downer's six radio-collared animals were poached.

Other research and conservation-related activities during the past three years include that of Yvonne Guinan (University of North Wales), who recently finished studying attitudes of the Alao community to Sangay National Park, tapirs, and other wildlife. Research in Colombia is being initiated by Hernando Acosta and Sebastian Londono (Los Andes University). At Ucumari National Park, Colombia, a study has been proposed by Craig Downer, Jaime Cavelier, Carlos Mejia, and Bernardo Ortiz to investigate the role of feces upon montane forest soil fertility, seed predation, home range, and population demography. Finally, an educational program in rural Peruvian villages is being initiated by Ric Barongi and Diana Weinhardt (Houston Zoological Gardens) in conjunction with a spectacled bear educational program.

Malayan Tapir (*T. indicus*)

Ed Ramsay indicates that the major threat appears to be loss of more than three-fourths of pre-colonial forest habitat through permanent conversion for human settlement and tobacco, oil palm, and rubber plantations. This species is not as endangered from hunting as other tapirs, as folklore and religious taboos forbid hunting and/or consumption. Other threats include dam projects and increased human population density due to transmigration programs from areas of high density.

Central American Tapir (*T. bairdii*)

This species is among Meso-American fauna most affected by destruction of Central American tropical forest. For example, JoAnn Andrews (ProNatura) indicates that colonization and development are the major threats to the species in Mexico. Jose Fragoso (University of Florida) and Sharon Matola have identified hunting and a dam project as major threats in Belize.

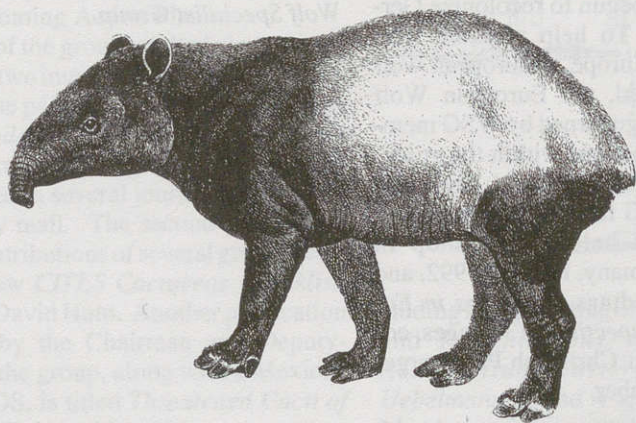
Several studies and educational programs are underway. Carlos Romero has identified an important population in La Sepultura Reserve Zone, Chiapas, Mexico. Sharon Matola is assessing status over time of the population along the Raspaculo River in Belize. Eduardo Narango (National University, Heredia) is proposing a project that will investigate abundance, habitat use, and diet in Corcovado National Park, Costa Rica. Education posters depicting the species have been distributed throughout Belize and Chiapas. An educational program in Campeche, Mexico, has been developed.

South American Tapir (*T. terrestris*)

Several correspondents indicate that colonization of remote areas, leading to large-scale habitat destruction and hunting, is the major threat in Brazil, Paraguay, and Argentina. Additionally, most protected areas are of insufficient size to maintain population stability. Protected areas with unlimited/non-monitored ecotourism may serve equally as a threat. It is probably of no coincidence that the most concentrated tapir populations in the Paraguayan Chaco are in areas associated with low human population density.

Jose Fragoso recently finished a study of feeding, seed dispersal, and territoriality at Maraca Island Ecological Reserve, Roraima, Brazil. Silvia Chalukian (Heredia, Costa Rica) has been studying tapir distribution, status, habitat, and conservation regimes in the Yungas forest of northeastern Argentina. Populations are being monitored in the northeastern Peruvian Amazon by Dan Brooks (Houston Zoological Gardens).

Daniel M. Brooks
Action Plan Editor
Tapir Specialist Group



Wolf Specialist Group

L. David Mech

Triennial Report 1991-1993

The Wolf Specialist Group (WSG) held three business meetings during the triennium: August 1991, in Godollo, Hungary (six members plus four new members accepted); August 1992, in Edmonton, Alberta, Canada (12 members plus one new member accepted); October 1993, in Leon, Spain (15 members plus two new members accepted). New members were recruited from Romania, Czechoslovakia, Hungary, Croatia, Japan, Germany, France, Kazakhstan, Mongolia, and Georgia.

Associated with the Edmonton meeting, member Lu Carbyn organized and convened the Second North American Wolf Symposium, at which 95 papers were presented. About half of them will be published in a peer-reviews book edited by Carbyn and two non-WSG members in early 1994.

Wolves have been increasing in Poland and Italy, as well as several other European countries, and they have begun to recolonize Germany and France. To help promote wolf recovery in central Europe, a European wolf subgroup was formed, the European Wolf Network. Set up and governed by WSG members, the network functions within the guidelines of the Wolf Manifesto and keeps the chairman of the WSG informed of its activities. The network held a workshop in Oberammergau, Germany, in April 1992, and published the proceedings in *Wolves in Europe: Status and Perspectives*, 136 pages, edited by WSG member Christoph Promberger and a non-WSG member.

In the U.S., a \$3 million International Wolf Center (IWC) was opened during 1993 in Ely, Minnesota, by a non-profit organization founded by WSG chair David Mech. The mission of the IWC is to promote public education about wolves. Some 60,000 people visited the center and viewed its captive wolf pack and its 6,000-square-foot Wolves and Human exhibit. The IWC has 6,000 members and publishes a quarterly magazine, *International Wolf*, which goes to all members and 4,000 other people. The WSG uses the magazine as its newsletter and has a regular column published in it.

Future activities of the WSG include promoting wolf recovery in central Europe, advising on a possible reintroduction of wolves to Japan, facilitating wolf research in India, and exploring means by which wolves and humans can coexist.

L. David Mech, Chair
Wolf Specialist Group

Cacti and Succulents Specialist Group

Edward Anderson

The Cacti and Succulents Specialist Group has been very active during the past three years. It has held annual meetings in conjunction with one Congress and two Inter-Congresses of the International Organization for Succulent Plant Study (IOS). The Conservation Section of IOS has almost the same membership as the SSC Specialist Group. Joint sessions were held in Bonn, Germany in 1991, in Phoenix, Arizona, U.S.A. in 1992, and in Malta in 1993. Another joint session is planned for August 1994 in The Netherlands.

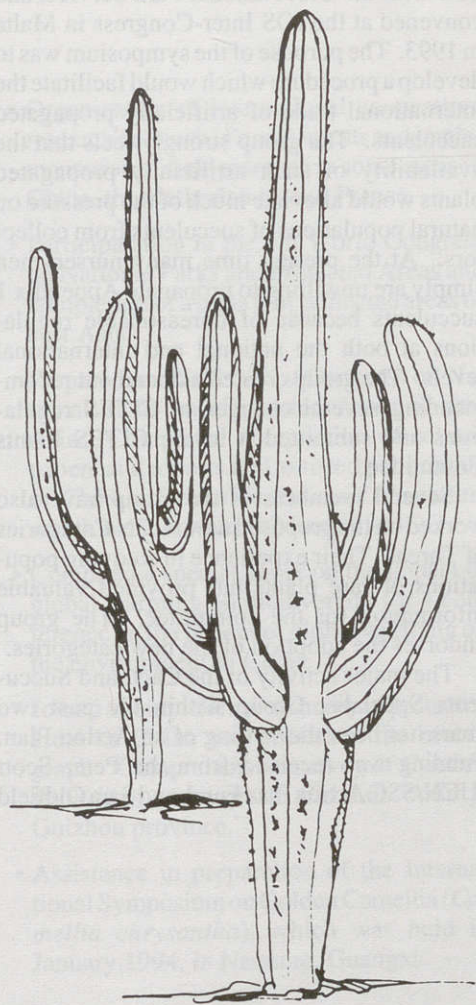
The group presently has 30 members from 12 countries located on four continents.

One particularly productive symposium was organized by Gary Nabhan in which scientists from both the U.S. and Mexico worked on conservation measures for the family Agavaceae. The meeting was held as part of the 1992 IOS Congress in Phoenix. Much of the information from the symposium has been incorporated into the chapter on the Agavaceae for the forthcoming Action Plan.

Members of the group worked closely with the authors of two important publications which appeared in the past three years. The first was a new *IOS Code of Conduct*, authored by Sara Oldfield, Secretary of the group. This has now been published in several journals and widely distributed by mail. The second publication which had contributions of several group members is the new *CITES Cactaceae Checklist*, compiled by David Hunt. Another publication co-authored by the Chairman and Deputy-Chairman of the group, along with a Mexican member of IOS, is titled *Threatened Cacti of Mexico*. It will appear in 1994.

The group also produces a newsletter. Four issues have appeared to date and a fifth is in preparation.

Members of the group have been active advisors to governments making CITES proposals. Significant additions to Appendix 1 listings were made during the triennium, in-



cluding the upgrading of species of *Ariocarpus* and *Turbinicarpus*, and the addition of *Astrophytum asterias*, *Discocactus*, *Uebelmannia*, and 4 species of *Melocactus*. Members of the group have also engaged in field work in several countries within South America and Africa, and in Mexico. Such research will facilitate the necessary and appropriate ongoing evaluation of the status of both Appendix 1 and Appendix 2 species.

One of the group's primary concerns during the triennium has been the regulation by CITES

and various countries of artificially propagated Appendix 1 plants. A special session of the group was organized by Peggy Olwell, now with the U.S. National Park Service, and convened at the IOS Inter-Congress in Malta in 1993. The purpose of the symposium was to develop a procedure which would facilitate the international trade of artificially propagated succulents. The group strongly feels that the availability of such artificially propagated plants would alleviate much of the pressure on natural populations of succulents from collectors. At the present time many nurserymen simply are unwilling to propagate Appendix 1 succulents because of unreasonable regulations at both the national and international levels. The group created a document recommending several changes in CITES regulations and submitted it to the CITES Plants Committee.

Several members of the group have also worked on the proposed new IUCN Categories of Threat. Their experience in studying populations of rare plants has provided valuable information for the committee. The group endorses the adoption of the new categories.

The major activity of the Cacti and Succulents Specialist Group within the past two years has been the writing of an Action Plan. Funding was received from the Peter Scott IUCN/SSC Action Plan Fund, and Sara Oldfield

of the United Kingdom and Secretary of the group, graciously accepted the editorship of the document. The general outline of the Action Plan was approved by the group at its meeting in 1992 and various specialists, mostly members of the group, were invited to contribute. The Action Plan will be quite extensive, as it encompasses so many families of plants and such geographical diversity. It will contain 11 chapters on taxonomic groups; four chapters on conservation measures, such as legislation, *in situ* and *ex situ* conservation, and controlling the trade; eight chapters dealing with geographical regions; and a final chapter with proposals for action. Ms. Oldfield has now received most of the contributors' manuscripts and is actively editing them for publication. It is hoped that publication will be in 1994.

The Cacti and Succulents Specialist Group wishes to expand its membership to those people actively engaged in conservation work with succulents, especially in countries presently without representation.

*Edward F. Anderson, Chair
Cacti and Succulents Specialist Group*

China Plant Specialist Group

Wang Xianpu

From 1991 to 1993, the China Plant Specialist Group contributed to conservation efforts in China through members' research projects and other related programs. The main projects were:

- Participation in the compilation of a biodiversity Action Plan for China and publication of two monographs on the "Present situation and conservation strategy for China's biodiversity" and the "Theory and practice of biodiversity" by members of our group. A special report on the establishment of the Biodiversity Conservation Region at the coast and marine of the outlet of the Zhujinag River, Guangdong province, was also published.
- Participation in the compilation of the "China Plants Red Data Book," the first volume of which was published during the triennium; Volume 2 is now being compiled.
- Organization of research on precious, rare, and endangered plants in China. Special topic papers on Hainan plummyew (*Cephalotaxus mannii*), Japanese camellia (*Camellia japonica*), Dovetree (*Davidia involucrata*), and thinleaf Yunnan pine (*Pinus yunnanensis* var. *tenuifolia*) were published or finished.
- Establishment of a desert botanic garden in Turpan of the Xinjiang Uygur Autonomous Region and a germplasm pool of magnolia family (Magnoliaceae) plants in the South China Botanic Garden of Guangdong province. Publication of a topical paper on the function of botanic gardens in the conservation of nature and natural resources.
- Organization of international cooperative research on beech (*Fagus*) forests and implementation of field research in some areas in China, the Netherlands, and France.
- Participation in the 4th World Congress on National Parks and Protected Areas and completion of a review of protected areas of east Asia.
- Prepared and held the 1st Congress on National Parks and Protected Areas of East Asia. Completed compilation of related papers and reports and assisted publication of *Chinese Biosphere Reserves Magazine*, which went on sale in March 1994.
- Compiled a special paper on the impact of global warming on biodiversity for a conference on the impact of global warming on the environment in China.
- Joined a comprehensive survey of protected areas of China and published the monograph "Comprehensive survey of *Cyathea spinulosa* reserve in Chishui county, Guizhou province."
- Assistance in preparation of the International Symposium on Golden Camellia (*Camellia chrysantha*), which was held in January 1994, in Nanning, Guangxi.

In the next triennium, we will continue the above-mentioned projects and concentrate on compilation of the Plant Conservation Action Plan of China and preparation for the Natural Conservation Research, Monitoring, and Training Center of East Asia.

Wang Xianpu, Chair
China Plant Specialist Group

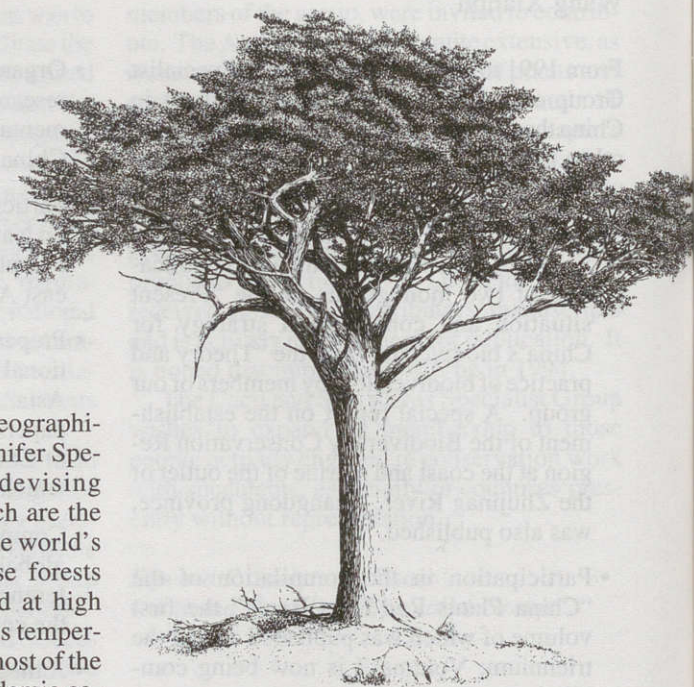
Conifer Specialist Group

Chris Page

The Worldwide Problem

Unlike many species-oriented and geographically focused animal groups, the Conifer Specialist Group is dedicated to devising conservation support for trees, which are the dominant elements of one-third of the world's forests in both hemispheres. These forests include not only vast tracts of land at high latitudes, but also most of the world's temperate rain-forest vegetation, in which most of the range-restricted, relict, and paleoendemic conifer genera are particularly concentrated. This is of immense evolutionary and conservation significance.

Throughout the nearly worldwide range of conifers, individual species (and sometimes their whole vegetation units) are subject to constantly changing threats as they are wild timber resources on an international and nearly worldwide scale. The environmental impact of individual species loss is thus extremely high and the international conservation task an enormous one by any standards, with far-reaching effects on other plant and animal life as well as global climatic and environmental implications. Conifer conservation also impinges directly on issues of sustainability of forest resources, especially temperate forests. An important task for the group has thus been to try to come to terms with the enormity of the problem and the challenge that is posed. We are trying to see a way forward through a web of interconnected scientific and political issues, in which a small voluntary group of



individuals on a very part-time basis can easily become entangled. Analogies of David and Goliath come vividly to mind.

The initial membership was recruited from specialists known to be already working in established conifer research. Most members have been attached to academic institutions in western countries. But the wide extent of the threats to conifers means that it is essential to bring in additional members from the many areas where threatened species are native. These are often in developing countries, and we want to gain appropriate members in as many such countries as possible. Potential members need not feel that they have to be specialists on all the world's conifer species to participate. It is more important that they should be able to adequately represent their indigenous conifer species and the conservation issues surrounding these.

List of Threatened Conifers

We have prepared a threatened conifer list on a worldwide basis. Of a little over 600 species of conifers worldwide, the first draft list from available field data identified 232 species as threatened. The exact status of each has been the subject of debate among members. After circulation to as many workers as possible, this preliminary list has grown to well over 350 species. This list, still regarded as preliminary, but the best estimate yet, has been published to invite further comment and amendment in the journal *Biodiversity and Conservation* (2: 304-326, 1993).

In preparing the list, we have based our evaluation of threats strictly on a biological assessment of population vulnerability, irrespective of whether that population was considered as already locally protected (e.g., within a specific reserve or park). We feel that this approach serves to emphasize the importance of the continuation of present species refuges. It takes into account the very real possibility of threats materializing should political circumstances supporting protected areas change and points to the vulnerability of unnaturally small and localized population patches to natural disasters. The list is an important basis from which to work for future analysis of species status and of gene pools of taxa and as a basis for selection procedures for both *in situ* and *ex situ* developments and priorities.

The Action Plan

Current activity of the group is focused on producing an Action Plan for conifer species protection. A team from within the group to compile the Plan is currently being assembled by the chairman. An outline of the likely contents has been drafted.

Integrated *In situ* and *Ex situ* Developments

There are diverse and sometimes sudden threats to individual species, such as that seen recently to the Pacific yew and to some western Canadian and South American conifer forests, as well as recent the decimation of protected Australian species by forest fires in New South

Wales. These threats underline the importance of *ex situ* programs backing existing *in situ* conservation programs for virtually all threatened conifer species. Florida *Torreya* provides another example of a species with continuing *in situ* decline, despite the best efforts of conservation agencies, but it is responding well to *ex situ* treatment.

The great longevity of cultivated conifers makes an *ex situ* conservation strategy involving whole cultivated trees a potentially valuable back-up for long-term *in situ* work. As an example of such developments, a large program of *ex situ* international conifer species conservation is already well advanced within Britain, operated from the Royal Botanic Garden Edinburgh and currently financed by the Sainsbury family charitable trusts. In this program, conifer populations of threatened species, each building toward representing a cross section of the surviving genetic base of some 200 threatened species, are being set within a climatically proven network of nearly 50 safe-haven sites throughout the British Isles. Considerable progress in establishing these *ex situ* populations has been made, involving several international conservation agencies and individuals who have already helped in structuring the diversity of the growing populations.

We believe that it is now of the utmost importance that similar *ex situ* programs become implemented in other countries, holding both their own and other climatically matched segments of the world's rare conifers, as an internationally coordinated *in situ* and *ex situ* strategy to further reduce the risk of significant further genetic erosion of a declining wild resource. A paper describing this plan more fully is currently in press in *Biodiversity and Conservation*.

C. N. Page, Chair
Conifer Specialist Group
(Illustration by Aljos Farjon)

Cycad Specialist Group

Dennis W. Stevenson

The Cycad Specialist Group would like to recommend four steps that should be taken to reduce the spectre of extinction that faces this plant group that has survived since the early Permian.

1. The encouragement and support of local nursery programs such as that being developed by Andrew Vovides in Mexico. One of the problems with the removal of plants in the wild is that commercial collectors take advantage of the poor economic position of indigenous people and offer paltry sums for wild-collected specimen plants and thus reap huge profits. We would suggest that indigenous people be encouraged and supported to establish nurseries whereby they would raise plants from seed and vegetative propagation and in turn sell these plants as a renewable forest product. In doing so they would provide a local economic product and at the same lead to protection of wild plants and provide an incentive for habit protection in order to preserve the renewable resource.
2. The encouragement of vegetative propagation and seed production by governmental and private for-profit nurseries. Establishment of a database on results of propagation both successful and unsuccessful in aid of further research on the biology of the cycads.
3. Continued support and encouragement of research into the reproductive biology of the cycads, in particular pollination biology, seed germination, and seedling establishment. With this understanding, we can better appreciate the steps necessary for artificial production of nursery plants and vectors affecting successful reproduction in the wild.
4. All of the preceding bear on the success of wild plants. We encourage assessment of the size and reproductive success of wild

populations of cycad species (underway by Roy Osborne of the University of Natal). We also support the protection of habitat, not just endangered species, because the past 15 years of research into cycad reproductive biology indicates that all cycads are obligatorily insect-pollinated and that the pollinators are restricted to and exclusive to cycads. We offer the following example in support. *Zamia inermis* is a very rare endemic species in Mexico. It is pollinated by a snout weevil. The wild population is bordered by an agricultural area in which insecticides are applied by air; the insecticides are also dusted on the nearby forest population. As a result, the forest population no longer sets seeds as the pollinator has been eradicated. However, plants in cultivation in the botanical garden do set seed because the pollinator was specifically introduced into the botanical garden. This makes it clear that propagation in a botanical garden can be successful, but at the same time that reintroduction into the wild would be unsuccessful unless the pollinator and perhaps other factors were present. Thus, we feel that many species, if not all, will eventually be lost unless habitats are preserved. The only way reintroduction could be successful would be to understand the reproductive biology of all cycad species, and we are a long way from having this knowledge. We would thus prioritize habitat preservation of those genera (e.g., *Chigua*) and species where reproductive biology and population sizes are the least well known.

Dennis W. Stevenson, Chair
Cycad Specialist Group

Indian Subcontinent Plant Specialist Group

C. R. Babu

The significant achievements of the group are:

Action Plans for the Conservation of *Meconopsis* and insectivorous plants (excluding *Utricularia*) are nearly completed. The species populations of *Meconopsis* are characterized by small population sizes and extremely narrow ecological niches. Protocols for *in vitro* multiplication of some species have been developed and attempts are being made to reintroduce the species into their native habitats. Some of the insectivorous plants, such as species of *Drosera*, are threatened due to mining. *In vitro* multiplied plants of *Nepenthes khasiana*—an endangered endemic species—have been successfully reintroduced into their native habitat, the Khasia hills of Meghalaya.

Action plans on threatened medicinal plants have been initiated. A new subspecies, *lohitensis*, within the endangered endemic species *Coptis teeta* was described (*Bot. J. Linn. Soc. III*: 371-378, 1993). This subspecies has greater ecological amplitude than the subspecies *teeta*. The conservation status of *Euphorbia acaulis* (*E. fusiformis*, a succulent from the foot hills of the Himalayas, has been ascertained and it is on the verge of extinction. Efforts are being made to secure the species through *ex situ* conservation. The species is considered to be of medicinal value and the tubers are claimed to have aphrodisiac properties.

Action Plans for threatened desert plants of economic potential have been undertaken; status survey reports have already been prepared for *Commiphora* and *Coralluma* species.

Field studies on the impacts of urbanization on Delhi state's flora revealed that *Ceropegia tuberosa*, *Zeuxine sulcata*, and *Andrographis paniculata* are locally extinct. A population of *Orthosiphon pallidus*—a species hitherto considered extinct—is secured in the Wildlife Sanctuary of Delhi through the conservation efforts made by Shri Tarun Kumar, the former Deputy Conservator of Forests of the Government of National Capital Region Delhi. This is a distant wild relative of the Indian sacred plant, the tulsi (*Ocimum sanctum*).

The adverse impacts of accidental and man-made biological invasions on the indigenous plant communities and the importance of evolving effective conservation strategies for medicinal plants have been popularized through the mass media. This has led to the initiation of programs for replacement of existing invaded communities on the Delhi Ridge and forest tracts of northwestern and eastern Himalayas, Western and Eastern Ghats, and hill ranges of Central India by indigenous communities. Through participation in local and regional workshops, the members played a significant role in the development of Action Plans for the conservation of biodiversity. Professor C. R. Babu is an expert member for the preparation of a national Action Plan for the conservation of biodiversity in India.

C. R. Babu, Deputy Chair
Indian Subcontinent Plant Specialist Group

North American Plant Specialist Group

Robert H. Mohlenbrock

1991-1993 Triennial Report

During the triennium, the North American Plant Specialist Group completed the major Centers of Endemism project in cooperation with the Smithsonian Institution. The report of this project is in press. Members of the group who actively participated in the Centers of Endemism project were Shirley Maina, Robert deFilipps, Tim Messick, and Richard P. Wunderlin. The Action Plan continues to evolve very slowly, with still another draft being prepared. Work on the North American Red Data Book for Plants continues, and a new project, the North American Red Data Book for Lichens, was begun. Another project concerning plants presumably extinct in North America and the reasons for the extinction has produced some interesting results.

*Robert H. Mohlenbrock, Chair
North American Plant Specialist Group*

Northwest South American Plant Specialist Group

Enrique Forero

Members of the Northwest South American Plant Specialist Group come from Venezuela, Colombia, Ecuador, Peru, and from the academic community and botanical gardens. While these are people who collect information, they are not always familiar with the way the conservation community works. Members of the academic community are isolated from NGOs and vice versa, except that NGOs use the information provided by the academic community. A more equitable system has to be developed so that members of the academic community receive recognition and financial reward for their contributions.

I am eagerly looking to IUCN, and in particular the new office in Quito, for direction, leadership, and funding. I hope that the coordinator of the Quito office will become familiar with the academic community in the relevant countries. He needs to contact local networks such as those of herbaria and botanical gardens. He also needs to become familiar with ecological groups. I hope that he will provide support and direction for the three regional plant Specialist Groups: Northwest South American Plants, Brazil Plants, and Southern South American Plants.

I hope that opportunities for funding will be explored jointly by the office and the Specialist Groups to develop and implement Action Plans at the regional level. I also want to express my support for the idea of national specialist networks to develop national biodiversity strategies. I see this as the opportunity to carry out, at the country level, exercises similar to the Manaus 1990 workshop and the recent workshop held in Recife, Brazil, for the Atlantic Coastal Forest. As was explained at the SSC meeting in Buenos Aires, these networks should also make it possible to tap into new funding sources.

Enrique Forero, Chair, Northwest South American Plant Specialist Group

Orchid Specialist Group

Vinciiane Dumont

At the Orchid Specialist Group's meeting in Auckland, New Zealand, in September 1990, the group decided to make it a priority to work closely with the CITES Plants Officer and with the national CITES Management Authorities in the conservation of all orchid species. It was felt that the Convention was badly understood by professional growers as well as by amateurs, which contributed to many people not respecting its provisions. To foster better understanding and cooperation, the OSG organized two CITES regulation workshops in 1991: in Rome, Italy and in São Paulo, Brazil. The workshops enabled the group to identify several ways to improve the interpretation of the Convention and at the same time its implementation. The group also participated in the eighth meeting of the Conference of the Parties to CITES in Kyoto, Japan.

After the CITES Conference, revisions relating to trade in orchids were made. The OSG continued working with CITES by participating at their Plants Committee meetings, and by preparing some amendments to the Appendices of the Convention for their ten year review.

The group had planned to compile a list of all the nurseries that sell only artificially propagated orchids, but found out that such list would be so large that it would be impossible to keep it up to date. Ninety-five percent of the trade in orchids concerns only hybrids, which are all artificially propagated. This is why one member of the group, Jean-Jacques Beguin, wrote the "*Artificially Propagated Source*

Book," which only deals with artificially propagated species, and lists the nurseries propagating them. This book is updated annually and is therefore of great value for orchid conservation.

The preparation of an Orchid Action Plan has also been one of our priorities during the triennium. In 1993 we had two important meetings: the first in Glasgow, U.K. and the next in Xalapa, Mexico. Although we are still looking for funds to bring this project to successful completion, writing for the Action Plan is under way and we hope that the Action Plan editor will have received all of the members' contributions by the end of June 1994. We decided that the initial compilation must be done by specialists living in each important geographical area, in order to ensure that the data are up to date.

*Vinciiane Dumont, Chair
Orchid Specialist Group*

Palm Specialist Group

Michael Balick and Dennis Johnson

Triennial Report

The Palm Specialist Group was formed in 1985 and currently has 17 members representing 14 countries. For the past three years, Dr. Michael J. Balick, New York Botanical Garden, has served as chairman of the group and Dr. Dennis Johnson as deputy chairman.

Activities of the group over the past three years have focused on field projects in Asia and Latin America and on compilation of a global Action Plan.

Asia

In 1991, the results of WWF Project 3325, which began in 1986, were published under the title *Palms for Human Needs in Asia: Palm Utilization and Conservation in India, Indonesia, Malaysia, and the Philippines*. The book was edited by Dennis Johnson and contained contributed chapters from S. K. Basu (India), Johanis P. Moge (Indonesia), Ruth Kiew (Peninsular Malaysia), K. G. Pearce (Sarawak), John Dransfield and Dennis Johnson (Sabah), and Domingo A. Madulid (Philippines). A regional Action Plan for Asian palms was included in the concluding chapter and identified four priority issues: economic species of rattans, Asian palms with development potential, *in situ* palm conservation, and palm utilization and conservation in other Asian countries. The book has been reviewed in a wide range of journals, including *Tropical Ecology*, *Food Science and Technology Abstracts* and *Forest Products Abstracts*.

Latin America

Follow-up work under WWF Project 3322 has led to two additional spin-off publications. One is *Las Palmeras de Peru: Colecciones, Patrones de Distribucion Geografica, Ecologia, Estatutos de Conservacion, Nombres Vernaculos, Utilizaciones*. The authors are

Francis Kahn and Farana Moussa of ORSTOM. Publication in Spanish was scheduled for early 1994 by the Instituto Frances de Estudios Andinos, Lima, Peru. The second is "An Assessment of the Conservation Status of *Schippia concolor* Burret in Belize," by Michael J. Balick and Dennis Johnson, to be published in the *Occasional Papers of the Belize Natural History Society* in 1994.

Global Action Plan

A formal project to compile the Action Plan began in 1991, supported by a grant from the Peter Scott IUCN/SSC Action Plan Fund. The objectives of the Action Plan are to set forth the priority actions needed to ensure the maintenance of maximum palm biodiversity and to identify the key utilization issues that impact negatively on wild populations and the continuing source of palm products for subsistence and commercial purposes. There was considerable initial work updating the palm database at WCMC before actual writing of the Action Plan could commence. The group has also worked closely with BGCI to obtain and improve data on *ex situ* palm cultivation.

This activity is being led by Dennis Johnson. Collaborating on preparation of the Action Plan by contributing new material are Francis Kahn (Amazonia), Rodrigo Bernal (Colombia), Paul Tuley (Africa), Henk Beentje and John Dransfield (Madagascar), Wendy Strahm (Mascarene Islands), Francis Friedmann (Seychelles), Neela de Zoysa (Sri Lanka), and John Dowe (Australia and South Pacific). A number of others have advanced the process by providing data on highly threatened palm species and information on utilization patterns. It was anticipated that the Action Plan would be published in 1994.

Michael J. Balick, Chair
Dennis Johnson, Deputy Chair
Palm Specialist Group

Pteridophyte Specialist Group

David Given

The Pteridophyte Specialist Group currently includes just over 20 members, selected because of their specialist interests in ferns and fern allies. Emphasis is placed on geographic representation in the Specialist Group, with secondary representation by experts in aspects such as *ex situ* cultivation and trade.

Much of the time of members has been put into developing an Action Plan for pteridophytes. Principal coordination is by David Given, partly under the terms of a grant from the Peter Scott IUCN/SSC Action Plan Fund. This has proved a considerable challenge, partly because this is one of the first plant Action Plans and partly because of the number of taxa involved: approximately 9,000 species.

Within the Action Plan, emphasis is being given to geographic accounts of conservation needs and priorities. This takes account of the realities of actioning the plan once published; action will be principally at a governmental and regional level. Separate sections are being written on selected topics including trade, and cultivation and *ex situ* collections.

Trade is highly significant for some pteridophytes. Special studies have been made of tree ferns with reference to CITES, and there is a significant trade in several other species groups. The group has contact with trade interest groups from time to time, including the SSC Trade Specialist Group (for example, in connection with their consultancy Report on Tree Ferns) and TRAFFIC, but this contact needs to be more formalized than at present. The group is also developing contact with *ex situ* interests including BCGI and has started to identify specific garden collections.

Members have been engaged in conservation action related to the broader aims of the Specialist Group, which is able to operate as a reference group or catalyst as appropriate. This includes work on the ecological aspects of fern

conservation in New Zealand; conservation of ferns as part of a major conservation program on St. Helena; review of conservation measures for ferns on the Azores archipelago, including working with local conservationists and DNA/electrophoretic studies of genetic variation; and distribution and ecology of rare ferns in Germany.

Like most Specialist Groups, this one relies almost entirely on the voluntary efforts of its members. A significant number of group members are in developing countries or regions with severe economic difficulties or are not in full employment. This places severe constraints on the development of programs and on communications that, even by mail, can be costly.

There is a need to include further expertise on the group and to develop a more regular communication system. A smaller executive group is probably needed to facilitate quicker responses to outside needs and to proactively develop policy and initiatives. Completion of the Action Plan is a very urgent requirement and will be given highest priority in the first half of 1994. This plan can then provide the blueprint for subsequent group action and focus.

David Given, Chair
Pteridophyte Specialist Group

Southern South American Plant Specialist Group

Carlos Villamil

The Southern South American Plant Specialist Group has 18 members (14 from Argentina, two from Chile, one from Paraguay, and one from Uruguay). The geographical area covers almost the whole South American temperate region and includes several phytogeographical provinces belonging to three different dominions.

During the past triennium, efforts were made to bring together the members of the group and to develop a basic plan of activities. The main problem at this stage has been the total lack of financial support, which would permit the undertaking of activities on a continuous basis. As a matter of fact, most of the group members expressed a clear commitment to work on a plant conservation project on a coordinate basis, but financial limitations prevented the achievement of an operative network. Local conditions make unsuitable the approach followed in developed regions to raise the necessary funds and indicate the necessity to develop a new and imaginative fund-raising strategy. Steps have been taken to overcome this problem, and contacts with the appropriate officer at the SSC have been initiated.

Among the important contributions made by members of the group, the following must be taken into account:

A narrow plant endemism (*Neosparton darwinii*, Verbenaceae) has been declared "protected," the first example of current legislation at this administration level in Argentina. The success of this action must be credited to a coordinated joint action of members of the group with a local NGO.

Another member of the group has published a preliminary list on the conservation status of all of the putative endangered plant species growing in the Buenos Aires province. The area considered covers the main portion of the grassland (pampa), a vegetation type for which there is no representative large area under protection.

The Chair of the group attended the inaugural meeting of the SSC Plant Task Force, held in London last November. The publication of a newsletter to keep plant conservationists in contact was approved at the meeting; the newsletter will be issued in English, French, and Spanish versions.

The main goal of the Specialist Group for the coming triennium is to prepare an Action Plan for the conservation of temperate South American plants. The Peter Scott IUCN/SSC Action Plan Fund has provided a grant for the project, and additional resources are being sought.

A person-to-person approach has been attempted with the members of the local scientific communities, as well as with administrative authorities at various levels, in order to carry the conservation message to the political decision makers.

*Carlos Villamil, Chair
Southern South American Plant
Specialist Group*

Crane Specialist Group

George Archibald

The International Crane Foundation (ICF) and its hundreds of colleagues worldwide is the Crane Specialist Group. The following is a synopsis, in order of species rarity, of recent advances in crane conservation.

The whooping crane now numbers approximately 255 birds, 155 in the wild and 100 in captivity. The original population has increased to about 135 birds. The experimental flock in Idaho, established as a consequence of foster-rearing by sandhill cranes, has not been successful and includes only eight individuals. A new, non-migratory flock is being established in Florida through the release of captive-produced cranes on the Kissimmee Prairie. There are now 10 birds in that flock, and 14 more were added in January 1994. Management of the whooping crane is determined by recovery teams in Canada and the U.S.A. Captive populations have been established at the Patuxent Wildlife Research Center, the International Crane Foundation, the Devonian Conservation and Research Center of the Calgary Zoological Society, and the San Antonio Zoo.

The red-crowned crane has increased to about 600 in the non-migratory flock in south-east Hokkaido, Japan, and the mainland population numbers approximately 1,300 birds. Major breeding areas along the Amur and the Ussuri River that form the boundary between China and Russia are threatened by proposed dams and drainage programs. Through the efforts of Dr. Sergei Smirenski and financial support of the Wild Bird Society of Japan and several foundations in the U.S.A., an 11,000-acre Muraviovka Nature Park has been set up on the Amur lowlands near Blagoveshchensk. It is Russia's first private reserve since 1917. The Russians and Chinese have signed an agreement to collaborate on the conservation of cranes and wetlands at Lake Khanka (the northern portion of the lake is in China and the southern portion is in Russia). Efforts are

underway to conserve some of the remaining wetlands within the Three Rivers Plain of northeastern China, a region designated by the Chinese government as China's "great northern food basket."

The three widely separated populations of Siberian cranes are all endangered. Only 10 to 11 birds winter along the Caspian lowlands of Iran. The central flock that winters in India has declined from more than 200 in the mid 1960s to just five known birds in winter 1992-1993. Perhaps as many as 2,500 cranes constitute the eastern flock, and they all winter on mudflats of Poyang Lake and Dongting Lake along the mid-Yangtze lowlands. In the late winter of 1992-1993, Finnish and Russian specialists joined Iranian colleagues in an effort to capture and place satellite radios on cranes in Iran. Unfortunately, the cranes migrated before capture efforts had met with success. During the past three summers, Russian, Indian, German, and American colleagues have collaborated to rear and release Siberian cranes on the breeding grounds near the Kunovat River in western Siberia. In 1992, one crane migrated south with Eurasian cranes, and in 1993, two captive-reared juveniles joined a family of wild Siberian cranes and apparently migrated. Hunting in Afghanistan and Pakistan are major problems facing this flock. Pakistani colleagues have established Lakki Crane Sanctuary along the Kurram River and are using captive Eurasian and Demoiselle cranes to attract wild cranes to the sanctuary and away from the guns and soia of the crane hunters. Efforts are also being made to release captive-reared Siberian cranes with the wild cranes on their wintering grounds at Keoladeo National Park, India. Although the eastern flock is still numerous, its fragile winter habitats are threatened by the proposed construction of the world's largest hydrodam upstream on the Yangtze at the Three Gorges.

As a consequence of a workshop convened

at Russia's Dauriski Nature Reserve in 1992, the white-naped crane, whose entire population numbers approximately 5,000 birds, may benefit from a proposed tri-national nature reserve on the Daurian steppes where China, Mongolia, and Russia meet. Japanese researcher Dr. Hito Higuchi of the Wild Bird Society of Japan has made remarkable progress in determining the migration routes of white-naped, hooded, Eurasian, Siberian, and red-crowned cranes through the application of satellite telemetry. His work revealed that the white-naped cranes from Dauriski Nature Reserve winter with the Siberian cranes at Poyang Lake. In addition, data from the satellite indicated that other parts of Poyang Lake not as yet protected are just as important to crane conservation as regions within Poyang Lake Nature Reserve.

Intensive research by the Tibetan Plateau Institute of Biology, in collaboration with Dr. Mary Bishop, revealed an encouraging 3,900 black-necked cranes on their wintering grounds along river valleys in southern Tibet. Counts in Guizhou, Yunnan, and Bhutan boost the minimum total population to almost 5,000 birds, in contrast to pre-research estimates of fewer than 1,000.

Hooded cranes are increasing and number more than 10,000. They breed in the taiga of eastern Russia. Three-fourths of hooded cranes winter at artificial feeding stations in Japan; the remainder winter mainly in the lower Yangtze River region of China.

Wattled cranes number in excess of 10,000. In August of 1993, an African Crane and Wetland Training Workshop in Maun, Botswana, brought together specialists from 19 African nations to develop plans to help the six species of cranes found in Africa. The escalating numbers of people in sub-Saharan Africa, the complete extirpation of cranes from Africa's most populous nation, Nigeria, and the decline of cranes in almost every nation

represented at the workshop indicate that the Crane Specialist Group must become more active in Africa to help the black-crowned cranes, grey-crowned cranes, blue cranes, and wattled cranes survive the challenges on the horizon. The newly formed Southern African Crane Foundation headquartered in Natal and the East, West, Central, and Northern African working groups are moving to meet those challenges. Action is urgently needed in South Africa, where the endemic blue crane is rapidly losing grassland nesting habitat to afforestation.

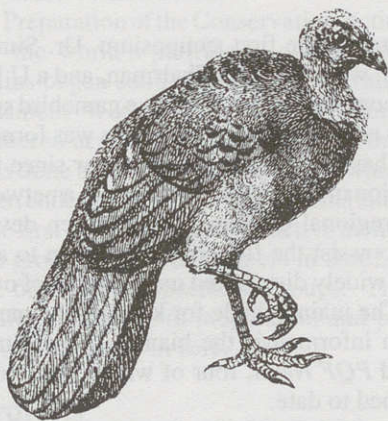
Subspecies of the sandhill crane in Mississippi and Cuba number 140 and fewer than 100 individuals, respectively. During the past three years, 111 Mississippi sandhills reared in captivity at the Patuxent Wildlife Research Center have been released with the remnant flock of wild cranes, and 82 (74%) of them survived the first year. In 1993, three wild pairs fledged chicks. Several pairs of Cuban sandhills are protected within a nature reserve; however, much of the habitat of the remaining cranes is not protected.

Likewise in Indochina, the non-migratory eastern Sarus crane has been extirpated from Thailand, but a remnant flock survives in Laos, Cambodia, and Vietnam. The newly established Tram Chim Nature Reserve on the Mekong Delta provides dry season habitat for about 600 cranes. However, the cranes' breeding grounds in Cambodia and Laos remain unknown and unprotected.

*George Archibald, Chair
ICBP/SSC Crane Specialist Group*

Megapode Specialist Group

Rene Dekker



Activities 1991-1993

- Publication of the *Megapode Newsletter* twice a year to over 70 members.
- Publication (in December 1992) of the Proceedings of the First International Megapode Symposium, which was held in December 1990 in Christchurch, New Zealand. The proceedings also contain a bibliography of 700 references to megapode literature.
- Participation in February 1993 in the Galliform CAMP meeting in Antwerp, Belgium, which will result in the publication in 1994 of a *Conservation Assessment and Management Plan for the Megapodes* and the *Megapode Specialist Group Action Plan for 1994-1998*.
- Writing of the book *The Megapodes* by Jones, Dekker, and Roselaar, which will be published by Oxford University Press in 1994.

- MSG members were directly or indirectly involved, either actively in the field or as advisors, in projects for species. These projects deal with nine of the 22 megapode species currently recognized: Bruijn's brush turkey (*Aepypodius bruijnii*), Waigeu; malleefowl (*Leipoa ocellata*), Australia; maleo (*Macrocephalon maleo*), Sulawesi; Moluccan megapode (*Eulipoa wallacei*), Moluccas; Polynesian megapode (*Megapodius pritchardii*), Niuafo'ou; Micronesian megapode (*Megapodius laperouse*), Marianas; Nicobar megapode (*Megapodius nicobariensis*), Nicobar Islands; and Sula megapode (*Megapodius bernsteinii*), Sula/Banggai.

The Australian brush turkey (*Alectura lathamii*) was the object of studies by Jones and Birks, while megapodes in general were the object of morphological and taxonomic studies by various members of the MSG.

Rene Dekker, Chair
WPA/BirdLife/SSC Megapode
Specialist Group

Partridge, Quail, and Francolin Specialist Group

Simon D. Dowell

Introduction

The Partridge, Quail, and Francolin Specialist Group (PQFSG) was formed at the highly successful First International Symposium on Partridges, Quails, and Francolins held in Fordinbridge, U.K. in September 1991. This meeting, co-organized by the Game Conservancy Trust (the hosts) and the World Pheasant Association (WPA), brought together over 80 delegates from 25 countries. The proceedings from this symposium were published in the December 1992 edition of the French game biology journal, *Gibier Faune Sauvage*. They contain a wealth of valuable new information on status, ecology, breeding biology, behavior, and management of many of the species concerned.

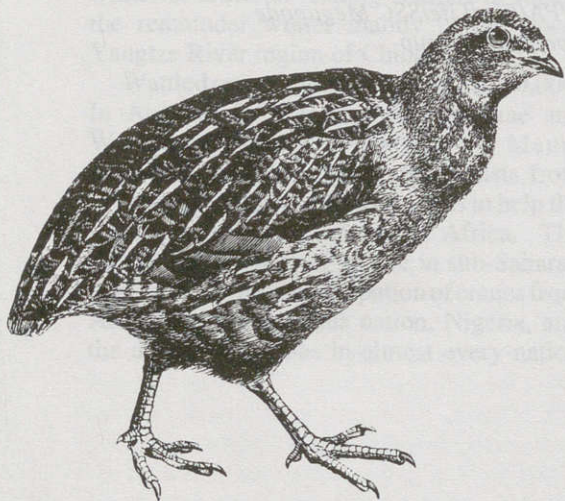
The PQFSG was formed as a subsidiary of WPA (formerly the SSC Specialist Group for all the Galliforms) and covers the world's 144 species of partridges, quails, francolins, snowcocks, and guineafowl. The principle

organizer of the first symposium, Dr. Simon Dowell, was named as Chairman, and a U.K.-based core committee of twelve gamebird specialists and general ornithologists was formed which has met at least twice a year since the formation of the group. In addition, a network of 13 regional coordinators has been developed to assist the flow of information to and from a widely distributed membership of over 100. The main vehicle for keeping the membership informed is the biannual newsletter, entitled *PQF News*, four of which have been published to date.

As a bird Specialist Group, the PQFSG comes under the coordinating umbrella of Birdlife International as well as comprising an important part of the World Pheasant Association under its new devolved structure.

Conservation Assessment Workshop and the Conservation Action Plan

By far the greatest task facing the PQFSG in its first two years was the preparation of a Conservation Action Plan for the world's smaller Galliform species. To initiate this process, a Conservation Assessment Workshop for the Galliforms was held at Antwerp Zoo, Belgium in February 1993, a joint venture with the Pheasant, Megapode and Captive Breeding Specialist Groups. The workshop was funded by the World Pheasant Association and BirdLife International with additional support from Antwerp Zoo and British Airways Assisting Nature Conservation. Twenty-five participants from a wide range of countries reviewed the conservation status of most of the Galliforms, including all 144 species of partridges, quails, francolins, snowcocks, and guineafowl. Mace/Lande threat categories were assigned to each species and conservation action was recommended for every species re-



garded as non-safe or showing evidence of decline. A summary of the results of the workshop will be published by the Captive Breeding Specialist Group, but the main purpose was to initiate the preparation of the Galliform Conservation Action Plans.

Preparation of the Conservation Action Plan for the world's partridges, quails, and francolins began soon after the Conservation Assessment Workshop, using the information gathered at that meeting. Much of the work was done by Dr. Philip McGowan, whose post was funded by BirdLife International and WPA. The first draft was sent to all active members of the group and to our partners in BirdLife and the other WPA Specialist Groups. The final draft is currently in preparation and publication is expected in early 1994.

Projects

The PQFSG supports a major project on the conservation status, breeding biology, and habitat requirements of the threatened swamp francolin (*Francolinus gularis*) in India. The project is based at the Aligarh Muslim University in Uttar Pradesh and is being directed by Dr. Asad Rahmani and Dr. Philip McGowan. To date, preliminary surveys have been carried out, more are planned, and a radio telemetry program will establish some of the finer details of behavior and habitat use. The results will be used to make conservation management recommendations. The project is funded by the International Trust for Nature Conservation, the People's Trust for Endangered Species, the World Pheasant Association, and British Airways Assisting Nature Conservation.

Research on and surveys of the endangered Sichuan hill partridge (*Arborophila rufipectus*) in China have been supported by PQFSG since its formation. The principal investigator, Mr. He Fen-Qi, has located a number of new sites in Sichuan during this period, and has monitored the effects of forestry activities on the survival of the bird.

A major review of research on and surveys of the Central and South American wood-quails (*Odontophorus* spp.) is being carried out by Dr. John Carroll, who began by advertising this work (and the PQFSG) at the International Congress on Wildlife Management in Costa Rica in September 1993. The PQFSG has raised funds from WPA's U.K. and U.S.A. chapters for this project.

Other projects in the planning stage include an investigation into the conservation of the Hainan hill partridge (*Arborophila ardens*) and involvement in the establishment of a Galliforms database. The priority for the next triennium will be to implement 17 urgent field conservation projects described in the Action Plan.

*Simon D. Dowell, Chair
Birdlife/WPA/SSC Partridge, Quail
and Francolin Specialist Group*

Pheasant Specialist Group

Peter Garson

The Pheasant Specialist Group (PSG) was formally established in June 1993, and acts under the equal auspices of the SSC, BirdLife International (ICBP), and the World Pheasant Association (WPA), which acts as an umbrella organization for four other Specialist Groups for the Galliformes. It inherited most of its worldwide network of experts from WPA, which acted as the Specialist Group for all species in the Galliformes during the previous decade. This account therefore also reports on some WPA activities during this triennium.

The PSG is run by a core committee, based in U.K. and chaired by Dr. Peter Garson. The core committee has a membership that includes regional experts (e.g. for the Himalayas, China, and southeast Asia) and other professionals (e.g. in population genetics, field techniques, and aviculture), so that it can react directly to most inquiries from the network. An international membership is developing and a PSG newsletter will be produced twice-yearly from 1994.

International Pheasant Symposium

The most important international gathering of pheasant experts during the triennium was WPA's Fifth International Pheasant Symposium, held in September 1992 in Lahore, Pakistan. Sponsorship attracted by WPA and support from Asian governments, allowed participants to attend from the People's Republic of China, Malaysia, Thailand, Vietnam, India and Nepal. Others came from Indonesia, Turkey, U.K., U.S.A., the Netherlands, Belgium and Germany. Including delegates from Pakistan itself, over 120 people attended. This meeting made maximum use of poster sessions and informal discussion, a format much appreciated by the host of young field researchers from Asian countries who were there as much to learn as to inform. The main topics addressed were: status and distribution in the

wild; habitat selection and diet; captive breeding policy and practice; fieldwork techniques; monitoring populations and breeding productivity; forest conservation and the needs of local people. The proceedings have been published by WPA.

Conservation Assessment Workshop

WPA, with the support of BirdLife International, employed Dr. Philip McGowan from October 1992 to March 1993 to collate questionnaire returns from the network, and a wealth of other published and unpublished material on pheasants, for a second gathering of experts, a Conservation Assessment Workshop (a modification of the Captive Breeding Specialist Group's CAMP concept). This was held at Antwerp Zoo in February 1993, jointly with BirdLife International and the Captive Breeding, the Megapode and the Partridge, Quail and Francolin Specialist Groups. Sponsorship by WPA, British Airways, and other benefactors allowed experts from India, Indonesia, and U.S.A. to join others from several European countries in a group totalling 25, which reviewed the status of all 70 recognized pheasant taxa (including several subspecies). The information collated prior to the workshop was used to classify each taxon into one of the Mace-Lande threat categories, and to outline any future action required.

As a result of this comprehensive review process, three species are now considered to be critically threatened with extinction, a further 12 species and four subspecies (of other species) are classified as endangered, and 17 species and five subspecies are judged to be vulnerable. There was insufficient information on three taxa for them to be classified. Only the remaining 26 taxa (37% of the total) can be regarded as safe from extinction.

Action Plan Preparation

Dr. McGowan was retained by WPA until September 1993, by which time he and Dr. Garson had drafted the Action Plan for pheasants. In collaboration with the Partridge, Quail, and Francolin Specialist Group, the PSG has defined a logical sequence of steps leading from recent information on the status of individual taxa, through the justification of Mace-Lande threat categories, to prioritized outlines for a set of urgent projects that can be feasibly initiated during the period 1994-1998. The text of the Action Plan has been checked and approved by experts on particular taxa or regions from throughout Asia, Europe, and North America, making it a robust consensus document by which the PSG expects to act for the next five years. Other Specialist Groups may find it helpful to contact the PSG before embarking on the preparation of their Action Plan.

Project Review

The process of producing the Action Plan confirmed that Edwards' pheasant (*Lophura edwardsi*) and the newly described and similar Vietnamese pheasant (*L. hatinhensis*), from the lowland forests of central Vietnam, are critically threatened with extinction. Survey projects undertaken by BirdLife International in collaboration with Vietnamese ornithologists since 1988 suggest that Edwards' pheasant may well be extinct in the wild. However, it is represented by a worldwide captive population of over 500 birds, founded on a few individuals brought to Europe in the 1920s. The Vietnamese pheasant has only rarely been seen in the wild and is represented by a small population of captive birds, which have just bred for the first time, within Vietnam. The situation of these two forms demands immediate action, and there are four initiatives underway. First, BirdLife International's Vietnam Forest Project includes surveys of the last remaining scraps of suitable habitat within their supposed ranges. Second, an international management plan for the captive population of Edwards' pheasant is being developed by WPA's Captive Breeding Advisory Com-

mittee, and several pairs of Edwards' pheasants are being given to Hanoi Zoo early in 1994 by European Chapters of WPA. Third, the taxonomic relationship of the Edwards' and Vietnamese pheasants are to be investigated in U.K., using DNA comparison techniques on samples of tissue from wild and captive birds, and from museum specimens. And fourth, a project based in Canada is planned to investigate the viability of Edwards' pheasant sperm following semen storage under various cryopreservation conditions.

The third species now judged to be critically threatened is the Bornean peacock-pheasant *Polyplectron schleiermacheri*. Recently it has only been recorded in two localities in west Kalimantan, although its historical range is supposed to have extended over the whole of the eastern half of Borneo. It is thought to depend on alluvial forests, most of which have already been removed. The PSG is striving to see that field surveys of remaining riverine forests are undertaken in search of this species, of which there is no population in captivity.

Throughout this triennium, the PSG and WPA have promoted and supported a number of field projects focused on the status, ecology and behavior of threatened species in Asia. These include studies of the western tragopan (*Tragopan melanocephalus*) in Pakistan and India; cheer pheasant (*Catreus wallichii*) and grey junglefowl (*Gallus sonneratii*) in India; Cabot's tragopan (*Tragopan caboti*), brown eared-pheasant (*Crossoptilon mantchuricum*), Reeves' pheasant (*Syrnaticus reevesi*), and Elliot's pheasant (*S. ellioti*) in China; Malaysian peacock-pheasant (*Polyplectron malacense*) in West Malaysia; and green peafowl (*Pavo muticus*) on Java in Indonesia. The results of this work have already been translated into recommendations for use by national forest and wildlife management agencies in a number of the countries concerned. In addition, comprehensive sites databases for threatened species have been drawn up for several countries, including Indonesia, India and the People's Republic of China.

Peter J. Garson, Chair
BirdLife/WPA/SSC Pheasant Specialist Group

Piciform Specialist Group

Lester Short



1991-1993 Report

Information was acquired on certain rare piciforms in Africa and Asia, and preparations were made for the production of an Action Plan for the group. Perhaps the most important development (or lack thereof) was the inability of both foreign and Cuban ornithologists to find ivory-billed woodpeckers (*Campephilus principalis*) in eastern Cuba, where up to two were seen in 1986, 1987, and 1988. In addition to the Ojito de Agua region, where the giant woodpecker was seen in those years, expeditions have searched all possible forest areas, including some as far from the last sightings as the Sierra de Maestre. Cuban ornithologists reluctantly concluded in 1993 that the ivory-bill is extinct there. Failure to locate any in the southeastern U.S.A., where it was last seen in

the 1950s, indicates that we have lost this specialized woodpecker.

Rarely are scientists killed in action. Our group member Ted Parker, founder of the Rapid Assessment Program of Conservation International and possibly the most knowledgeable and effective field ornithologist in the world, was killed with colleagues from Ecuador and top botanist Alwyn Gentry when the small plane in which they were conducting a tree-top level assessment of a national park in Ecuador crashed in August 1993. We and the entire conservation community will miss his infectious enthusiasm and wonderful knowledge of piciforms and neotropical birds.

Lester Short, Chair
Piciform Specialist Group

Seabird Specialist Group

David Cameron Duffy

Annual Report

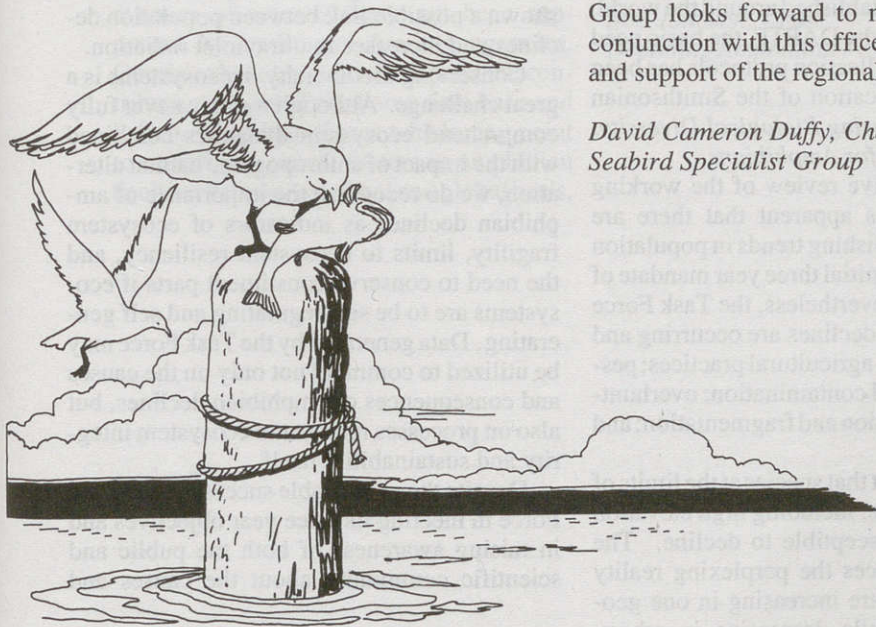
Much of the group's time has been spent on final production of a third seabird volume on the management of seabirds and islands, edited by David Nettleship, Joanna Burger, and Mike Gochfeld. This is now in press and is due out before the BirdLife International meeting in 1994. We hope that this volume, combining several general reviews of threats to seabirds with case studies of management of selected islands and marine areas, will provide information to seabird managers faced with similar challenges.

In addition, the Chair has produced a number of papers as background for an Action Plan for seabirds. These include a review of seabird biodiversity relative to research effort; a review of conservation and management options for seabirds; and national, regional, and world level designation plans for significant seabird nesting and foraging sites.

Much effort has also been expended with other seabird organizations increasing communication between seabird biologists and increasing access to data and methods. Seabird biologists and managers are probably the most dispersed group in the SSC community, and communication has always been a problem. Electronic networks and data banks should reduce this isolation. An initial seabird network has been set up by John Cooper of the FitzPatrick Institute of the University of Cape Town, and we hope to increase the use of this and similar efforts in the next three years.

Much of our time has been spent working with and on the BirdLife International Secretariat in Cambridge for increased efforts concerning seabirds. There is a need for an Action Plan, summarizing existing documents and setting priorities for future efforts, and for a seabird officer, based in Cambridge or elsewhere to implement the plan. The secretariat has now placed funding of this officer very high on its agenda, and the Seabird Specialist Group looks forward to moving forward in conjunction with this officer and with the help and support of the regional seabird groups.

*David Cameron Duffy, Chair
Seabird Specialist Group*



Declining Amphibian Populations Task Force

Bob Johnson

Triennial Report

The Declining Amphibian Populations Task Force (DAPTF) published a Working Document at the end of 1993 providing a synopsis and analysis of data gathered on declining amphibian populations by the Coordinator's Office of DAPTF from the time of its activation in July 1991 to the end of December. Most of the data contained in the report represent the contribution of nearly 100 DAPTF working groups from 90 countries. Although only a fraction of the more than 4,500 known amphibian species are represented, the report provides a significant point of reference on the status of population declines, and hopefully a foundation upon which future work will build.

Data collection on amphibian declines has been compounded by the lack of protocols for the study of 1) single populations over time, and 2) population trends of the same species at different sites. Despite these design limitations, intensive and extensive monitoring programs have been established around the world. With support from the DAPTF, the basic need for standard data collection protocols has been met with the publication of the Smithsonian Institution's *Measuring Biological Diversity: Standard Methods for Amphibians*.

After an extensive review of the working group reports, it is apparent that there are limitations to establishing trends in population biology within the initial three year mandate of the Task Force. Nevertheless, the Task Force has concluded that declines are occurring and are associated with: agricultural practices; pesticide use; chemical contamination; overhunting; habitat destruction and fragmentation; and drought.

There is no doubt that species at the limits of ecological tolerance, including high elevation species, remain susceptible to decline. The Task Force still faces the perplexing reality that some species are increasing in one geographic region, while decreasing in others.

Sergius Kuzmin, working group coordinator for the Commonwealth of Independent States (formerly U.S.S.R.), reports on what may be considered to encompass a typical pattern for declines. Widely distributed species tolerant of anthropogenic changes are increasing due to adaptation to such changes resulting in the relative expansion of habitat. Declines are primarily experienced at geographic range margins or northern boundaries of the range. Narrow-ranged species are declining more than widespread species.

Most exciting and with the greatest potential to link the various causes for decline is Cynthia Carey's physiological explanation for the combined effects of environmental stressors, including low temperature, on immune system response. For the first time, Task Force researchers have a physiological link as a hypothesis to explain the underlying cause of unrelated declines in amphibian populations. More recently, Andrew Blaustein's research with Cascade frogs and western toads has shown a possible link between population declines and increases in ultraviolet radiation.

Conserving biodiversity in ecosystems is a great challenge. Although we may never fully comprehend ecosystem dynamics combined with the impact of anthropogenic habitat alteration, we do recognize the importance of amphibian declines as indicators of ecosystem fragility, limits to ecosystem resiliency, and the need to conserve constituent parts if ecosystems are to be self regulating and self generating. Data generated by the Task Force may be utilized to comment not only on the causes and consequences of amphibian declines, but also on processes relevant to ecosystem integrity and sustainability itself.

Despite the measurable success of the Task Force in meeting its three year objectives and in raising awareness of both the public and scientific community about the causes and

impact of amphibian declines, there remain gaps in our knowledge. A major effort to determine more precisely the causes of unexplained amphibian declines and disappearances is clearly warranted.

Objectives for the Next Triennium

For the next triennium, Ronald Heyer of the Smithsonian Institution has been appointed as Chair and Tim Halliday, of the Open University in the UK, will be the new Coordinator. Some objectives for the Task Force in the next triennium include:

1. *Increased representation from centers of amphibian diversity.* To date, the taxa identified by detailed study represent only a small percentage of the world's amphibian species. In addition, regions of high species diversity remain poorly represented, primarily due to the limited financial and human resources in this area.
2. *Increase seed grant program.* Research conducted under the seed grant program is essential to meet Task Force objectives. The seed grants made by the Task Force in the last triennium have been essential in directing numerous graduate and other studies toward amphibian declines issues. These avenues of research have not been supported by traditional funding agencies. Continued seed grants will expand the contributions to the Task Force data base and help develop hypotheses which may point to underlying causal factors in amphibian declines both on a regional and global basis.
3. *Working Group coordination and support.* The Working Group network requires continued coordination to maintain its tremendous potential. Monitoring for species in the process of decline will be a major focus of working group activities and research. Ultimately, it is hoped that the Task Force through its working groups can identify trends and causal agents. Using the expertise embodied in the working groups to recommend steps to reverse or mitigate those environmental factors implicated in amphibian declines.
4. *Public education.* Many of the issues of concern to the Task Force have implications for the preservation of biodiversity. Public education will focus on the decline of amphibian populations as an issue relevant to individuals and communities as well as scientists. The international media remains excited about the issues and any conclusive evidence of amphibian declines is quickly transmitted to the public.
5. *Fund raising.* The Coordinator will continue to seek funding to support the Task Force's objectives and to increase the number of seed grant research programs under the auspices of the Task Force.

Bob Johnson, Chair

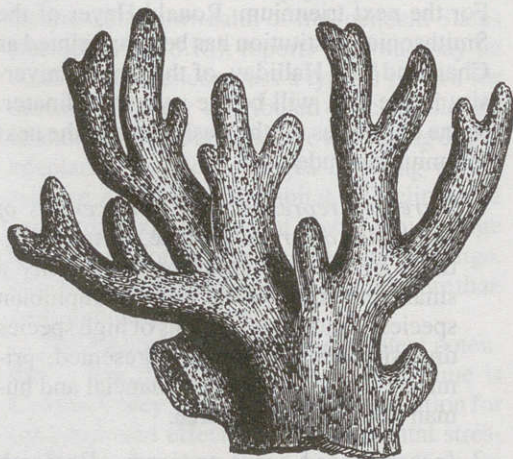
Declining Amphibian Populations Task Force

Invertebrate Conservation Task Force Specialist Group

Tim New

The Invertebrate Conservation Task Force, initiated at the Perth meeting in 1990, has a wide-ranging brief of facilitating, coordinating, and expanding awareness and practice of invertebrate conservation and of advising on the desirable future roles of the SSC. Initial membership of the Task Force comprises the Chairs of the various invertebrate Specialist Groups and members representing several disciplinary groups (such as Captive Breeding) and invertebrate conservation interests in the wider community. Formation of an effectively coordinating Task Force has proved to be difficult, not least because most people involved in invertebrate conservation seem to be extraordinarily busy anyway! This, coupled with the persistent "cinderella syndrome" of invertebrates in many conservation activities, renders the potential value of the Task Force very high in seeking to help deploy limited resources as effectively as possible and in seeking additional resources focused on appreciation of the central roles played by invertebrates in virtually all natural communities. In short, a higher profile for invertebrates is needed to enhance the effectiveness of much conservation directed at natural assemblages and to clarify their major roles as indicators and biomonitors of environmental changes.

Attention has been paid to selection of optimal taxa for formation of additional Specialist Groups, and a working paper lists some of the major criteria that might be used as guiding principles. This paper flows, in part, from papers delivered by the Chair of the Task Force at meetings in the U.S., Australia, and the U.K., where opportunity to promote awareness of invertebrates has been exploited. More invertebrate generalist groups are needed, and



the major taxa being considered at present are (in no particular order) carabid beetles, arachnids, onychophora, freshwater crustaceans, and corals. Some members also see a need for groups based on ecological integrity, such as "pollinators," "reef invertebrates," and the like, but taxonomic and other interpretive problems with this approach are formidable. Members of the Task Force continue to promote interest in their own areas and specialties. Joint exercises being considered include preparation of a directory of invertebrate conservation expertise and a booklet on "Importance of Invertebrates in Conservation."

*Tim New, Chair
Invertebrate Conservation Task Force
Specialist Group*

Plant Conservation Task Force Specialist Group

Clive Jermy and Judy West

History of IUCN/SSC Plants Program

Botanists have long been slow at coming forward. Peter Scott tried to bring plants on board in the early days of SSC, at first involving the charismatic group of orchids. In the late 1960s, with Ronald Melville's help, he expanded the concept of Red Data Books into plants. In 1973 the then Director of Kew, Jack Heslop-Harrison, realized the importance of plant conservation and Kew's potential role, and found money to hire Hugh Synge, to work with Melville. Soon the Threatened Plants Committee was set up with Gren Lucas as Secretary. Synge and his team of three or four keen young botanists mobilized botanists to form a network of sources that produced the basis of the Threatened Plants computer database. The database became part of the IUCN Conservation Monitoring Centre (now the independent WCMC) and, later, many of the botanists joined forces to form plant Specialist Groups within the SSC. It is natural that conservation action began in plants with those groups that were best known to the public—those in trade. The majority of threatened plants cannot be grouped into substantial systematic units, they relate more to regions or to habitats. The total number of endangered species is considerably more than the vertebrates, and our problems and strategies can be best compared to those of the invertebrates.

In 1982, to tackle these broader issues of plant conservation, the Threatened Plants Committee opened discussions with WWF, and the latter was persuaded to launch a Plants Campaign, to follow the successful Tropical Forests Campaign, and, hopefully, to be catalytic in plant conservation. Its intention was to cross the boundaries of the Commissions, being broader than the mandate of any one of them. Hugh Synge was seconded across to WWF and, by the end of that year, had drawn

up a Plants Program costing around U.S. \$3 million which was reviewed by some 70 botanists, and in December 1983, approved by WWF-International. In May 1984, IUCN appointed Ole Hamann as Plants Program Officer.

The most important component of the IUCN Plants Program was the creation, in early 1984, of the Plant Advisory Group, some 12 prominent botanists brought together under the energetic leadership of Peter Raven, Director of the Missouri Botanical Gardens. WWF committed SF 3 million to the program. Ole remained in the post until funding ceased in 1989 with some interesting initiatives launched. The only sad point to relate is that, for various reasons, the main thrust of plant conservation within IUCN was deflected away from SSC, leaving our Commission to be even more animal-centric than before.

One of the most significant initiatives of the Threatened Plants Unit (as the TPC had become) was the formation, in the late 1970s, of the Botanical Gardens Conservation 'Coordinating Body', later to become Secretariat, to develop the *ex situ* network for threatened plants. This was further developed by the IUCN/WWF Plant Advisory Group, first under the aegis of IUCN but now an independent body (the Botanical Gardens Conservation International) with Vernon Heywood as its Director. The role of botanic gardens in plant conservation is substantial, not only in *ex situ* conservation, but also in reintroductions, developing the potential for sustainable use and educating the public to appreciate plants.

On the demise of PAG, Vernon Heywood held a dual role; until his retirement at the end of 1992, he was the first Director of the BGCI and also employed in the IUCN Directorate managerial team as Chief Botanist. A number of botanical issues were developed further. One of these was the *Centres of Plant Diversity* project, the publication of which, backed by WWF, will be seen in this Triennium.

The Plant Conservation Task Force

During the last Triennium, IUCN appointed an SSC Plants Officer. At the same time they agreed to the formation of a Task Force, better seen as a subcommittee of the SSC Steering Committee, to steer the Plants program within the Commission. The Task Force will monitor the effectiveness of the SSC Plants Program, especially the work and effectiveness of the plant Specialist Groups, and, by being catalytic and a driving force, increase the profile of plants in the Union as a whole and in SSC in particular. In November 1993, 16 of the 21 members met for 3 days in London; by the time this account gets published it will have met again (in May, 1994) with some significant developments. We outline below some of the major items in our program.

Some of you will remember, with sadness, the demise of the old *Threatened Plants Newsletter* that was produced by the Threatened Plants Unit under the direction of Hugh Synge. We shall, finance permitting, produce a biannual *Plant Conservation News* to be sent to all members of plant Specialist Groups, project and division leaders in IUCN, and all lead organizations involved in plant conservation. The first issue was mailed in April 1994; if you have not had a copy and want one please let Wendy Strahm know. We hope to publish in three language editions: English, Spanish and French.

Networking and working in partnership will be a dominant theme and if any reader has ideas how SSC can effectively work with others in the plant conservation field, we shall be pleased to hear from you. We must identify active players and relevant specialists in plant science and conservation outside the Union, and strengthen networks of cooperation between them, the IUCN, and the international conservation and development community. An important area here is to work effectively with the Botanic Gardens Conservation International, and a Memorandum of Understanding between the IUCN and the BGCI already drawn up will be a basis for further action. Another area in which plant Specialist Groups can contribute to wider conservation issues is by conserving wild relatives of crop plants, and

we hope a joint program will be developed with the International Board of Plant Genetic Resources (IBPGR).

The role of SSC within CITES (through the Trade Specialist Group) is well established. We shall maintain strong links between the Committee and CITES Plants Committee and explore ways in which SSC can make a positive contribution to plant trade problems in this area, e.g. mahogany and other endangered tropical timbers.

We support any move to obtain funds and establish a Plants Trade Officer attached to the Trade Specialist Group.

The SSC's aim to set up and maintain effective Specialist Groups to act as authoritative sources of conservation knowledge, as well as data collecting units, is of course just as strong for plants as animals. As we said in the introduction, an effective plants database is already well-established and we shall encourage our groups to add to that base. In addition to the taxa-based Specialist Groups, botanists have for some time realized that Regional Plant Groups, consisting of local botanists who know the flora of their area, together with specialist taxonomists of major plant groups dominant in that area, can make a strong team.

Action planning that can relate directly to those who have to execute the Plans is becoming very important, and the need to promote this even further in those countries that are carrying out Country Studies under the Convention of Biological Diversity, means that our regional Specialist Groups have a major role to play. As SSC gets itself mobilized to contribute to country biological assessments, the plant groups will be ready.

We have analyzed the present coverage of taxa-based and geographical Specialist Groups and identified new groups that should be established. Particular attention will be given to ethnobotany and those plants with medicinal and other economic values. We want to establish closer liaison between plant Specialist Groups and the CNPPA, and strengthen links with Protected Areas management teams and local NGOs. However, it is not enough simply to find people with common interests and enlist them in the network. We need commitment from those who are determined to take

action—on the ground, in the field, or in the government chambers, and as a result promote capacity building within NGOs and state agencies. As Wendy Strahm wrote (*Species 20*), a number of plant Action Plans are on their way. The Plants Conservation Committee will study with interest the review by Gimenez-Dixon and Stuart (*Species 20*) on the evaluation of animal Action Plans and their effectiveness. It is important that we move ahead quickly on this front and publish *as soon as possible* realistic plans that can be executed effectively. Those Action Plans which relate to economic plants or areas where indigenous populations utilize wild plants sustainably will be expected to focus on traditional ecological knowledge and meet the needs of local communities. Guidelines on reviewing Action Plans before publication will also be prepared.

A substantial plants database exists, and the World Conservation Monitoring Centre at Cambridge is now the custodian of that database. The staff there, in particular Kerry Walter, have developed it into an effective tool for plant conservation, and we want plant Specialist Groups to respond positively and continue to add to this important database. Most botanists are not aware of the size of this database and we therefore welcome the publication of the *Global Plants Red List* in 1994 as being the result of our long-standing cooperation.

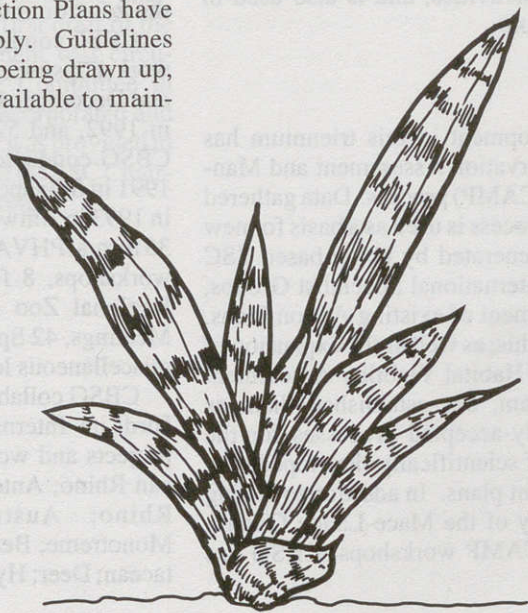
Those who are writing Action Plans have used the database considerably. Guidelines for continued data input are being drawn up, but it will depend on funds available to main-

tain what was once the jewel in TPU's crown. We are also aware that other databases exist, perhaps more pertinent to a particular group, or nearer at hand and therefore easier to influence. We hope that in these cases the information can be made easily and freely available.

The Plant Conservation Task Force is not a fund-raising committee but it must be conscious of the Program's financial needs and make positive moves to attract funds whenever possible. In this respect we work closely with the SSC Development Officer, Susan Tressler, in Chicago, and a member of the Task Force, Charles Stirton, sits on the SSC Special Support Council. Plants are not as charismatic as most animals, and most plant groups may find it difficult to attract funds, so we are doubly keen to hear of any potential sponsors.

If we are to achieve positive action in plant conservation we botanists must collectively, and individually, give the SSC every bit of support we can. In return we will expect from the Commission and from the Union as a whole, something more than just "lip-service" for plant conservation.

Clive Jermy, Co-chair
Judy West, Co-chair
Plant Conservation Task Force
Specialist Group



Captive Breeding Specialist Group

Ulysses S. Seal

The 1991-1993 triennium has been one of tremendous growth and activity for CBSG. Highlights of this growth, both in terms membership and activities, include:

Membership

CBSG membership has more than tripled in this triennium, growing from 166 to 593 members.

Funding Base

CBSG is now supported by 149 donor institutions and organizations, primarily zoos and zoological associations for a total annual donor funding base of U.S. \$332,900. This represents an increase of approximately U.S. \$132,000 from the funding base of U.S. \$200,000 in place in January 1991. CBSG also began an individual donor program in 1992; there are now 73 individual donors contributing a total of \$2,146 per year. A brochure describing CBSG and its programs was developed in 1992. This brochure is used to promote CBSG and its activities, and is also used in fundraising efforts.

Programs

A major development in this triennium has been the Conservation Assessment and Management Plan (CAMP) process. Data gathered in the CAMP process is used as a basis for new Action Plans generated by taxon-based SSC and BirdLife International Specialist Groups, or in the refinement of existing Action Plans. The success of this, as well as the expansion of Population and Habitat Viability Assessment (PHVA) program, has established them as valuable, widely-accepted processes for the development of scientifically-developed species management plans. In addition to testing the applicability of the Mace-Lande Criteria for Threat in CAMP workshops, CBSG has

participated in several IUCN/SSC meetings held to refine the new IUCN Criteria for Threat. The value of these workshops in linking *in situ* and *ex situ* conservation is unparalleled within the SSC.

The CAMP and Global Captive Action Plan (GCAP) programs have been instrumental in serving as conservation reference guides to assist with species prioritization and the development of regional collection plans within the various zoo regions. CBSG's international zoo network was strengthened by CBSG meetings held in conjunction with regional zoo association meetings, including Africa, Australasia, Brazil, Europe, India, Indonesia, Japan, North America, and Thailand.

An emphasis on products continues to be a driving force in CBSG's success. More than 100 CBSG documents have now been generated. Forty-six of these documents were produced in 1993 alone. A Global Zoo Directory has been produced which lists information concerning all the zoos of the world, and has been very well-received by the zoo community.

CBSG conducted and/or participated in 136 workshops/meetings between January 1991 and December 1993, including 38 in 1991, 46 in 1992, and 52 in 1993. In this triennium, CBSG conducted three annual meetings—in 1991 in Singapore, in 1992 in Vancouver, and in 1993 in Antwerp. Other workshops include 35 formal PHVA workshops, 22 formal CAMP workshops, 8 formal GCAP workshops, 20 Regional Zoo Association/Regional CBSG Meetings, 42 Special Interest Meetings, and 8 miscellaneous lectures or seminars.

CBSG collaborated with 24 other SSC and BirdLife International Specialist Groups on projects and workshops, including: the African Rhino; Antelope; Asian Elephant; Asian Rhino; Australasian Marsupial and Monotreme; Bear; Canid; Caprinae; Cat; Cetacean; Deer; Hyena; Mustelid, Viverrid, and

Procyonid; Otter; Primate; Crane; Hornbill; Megapode; Parrot; Partridge, Quail and Francolin; Pheasant; Pigeon and Dove; and Veterinary Specialist Groups.

For the next triennium thus far, plans have been laid for 10 PHVA workshops, and 14 CAMP workshops in and outside of North America, including: Tapir; Panamanian Endemics; Freshwater Fish; Gibbons; Indonesian Primates; Marsh Deer; Fiordland Crested Penguin, Costa Rican Endemics; Heteromyid Rodents; Canids; Felids; and Cracids, among others. In the next triennium, the CAMP program will begin to move further away from a taxonomic approach to a regionally-focused program, with integration of members of the CNPPA emphasized.

Genome Resource Banking

At the CBSG Annual Meeting in 1991, a detailed plan for international genome resource banking for species at risk was developed, based on science, for global/regional cooperation. A second draft of the Genome Resource document, *Tiger Genome Resource Banking (GRB) Action Plan*, was prepared for the 1993 CBSG Annual Meeting held in Antwerp.

CBSG Strategic Plan

1993 marked the first formal strategic planning session for CBSG. The first draft of the CBSG Futures Search document was circulated to the CBSG Steering Committee in April 1993, comments were incorporated and a second draft of the document was provided to CBSG Steering Committee and the SSC Chairman at the 1993 Annual Meeting.

Newsletter

At the beginning of this triennium, the quarterly circulation of CBSG News was approximately 3,000 in 147 countries. CBSG News is now distributed quarterly to more than 7,000 persons in 170 countries.

IUCN/SSC

A Workplan for CBSG was submitted to the SSC Office in 1993 to assist in better integration of CBSG's activities into the SSC Workplan. CBSG staff now regularly attend SSC staff meetings.

Staff

The CBSG staff has expanded in this triennium from three to five people, in addition to the Chairman. Dr. Susie Ellis joined the staff in December 1991 as Program Officer, and now oversees the CBSG office in the Chairman's absence. Dr. Onnie Byers joined the staff half-time as a Program Officer in April 1993. Other staff include: Judi Mikolai, Administrative Officer; Lisa Laqua, Program Assistant; and Shelly O'Brien, Secretary.

Ulysses S. Seal, Chair
Captive Breeding Specialist Group

Reintroduction Specialist Group

Mark R. Stanley Price

Background

The Reintroduction Specialist Group (RSG) was initiated in 1988 to represent the interest of SSC in the reintroduction of plants and animals to their historical ranges.

Group Composition

The RSG has been composed of the following posts in this triennium: Chair and Vice-chair; section chairs for Australasia, birds, carnivores, invertebrates, marine mammals, plants, primates, reptiles/amphibians, and ungulates; and assistant to the Chair/editor of the newsletter.

Group Membership

The RSG's membership has grown from 100 members in 23 countries in 1991 to 180 members in 37 countries in 1993. The membership represents a broad range of expertise in multiple aspects of reintroductions, as well as a variety of institutions, including zoos, botanic gardens, universities, non-governmental organizations, and natural resource divisions of governments.

Activities

Strategic Action Plan: In an attempt to improve its productivity, effectiveness, and clarity of vision, the RSG held a Strategic Planning Workshop in November 1992 in Nairobi. The meeting resulted in a 28-page report outlining a comprehensive strategic plan of action for the group. The implementation of some of the strategic actions commenced in 1993.

Draft Guidelines for Reintroductions: In 1992, the RSG developed a set of draft guidelines for reintroductions. To allow comments and input from a variety of specialists worldwide, the guidelines were circulated to all RSG members and SSC Specialist Group chairpersons/

officers in 1992-1993. In 1994, the guidelines will be presented to the IUCN/SSC Steering Committee for review and formal adoption. Since production in draft, they have been made available to all interested individuals in an attempt to guide potential reintroduction practitioners toward conducting technically sound, well-planned projects.

Guidelines on Confiscated Animals: In 1993, an RSG task force produced the first draft of the group's guidelines for the disposal of animals confiscated from illegal trade. These guidelines were circulated for comment among experts in the fields of confiscation and repatriation and are separately being adapted to address confiscated plants.

Newsletter: The RSG published and distributed six issues of the biannual publication *ReIntroduction News* in this triennium. Of these, four focused on the following specific reintroduction themes: plants, Australasia, carnivores, and birds. The circulation of the newsletter increased from 100 individuals in 1991 to 328 individuals (comprising 180 members and 148 non-members) in 1993. Similarly, the length of the newsletter expanded from eight to 16 pages during the triennium, evidence of the increasing wealth of reintroduction material being submitted to the group.

Project Database: A general database of completed, current, and proposed reintroductions involving both wild-to-wild translocations and releases of captive-bred individuals was begun in 1992 in Nairobi. By the end of 1993, this collection had reached 361 project entries—comprising 174 mammal, 135 bird, 21 invertebrate, 20 reptile, and 11 amphibian reintroductions—and was made available to members and other interested parties on a continual basis.

In 1991, the Vice-chair at the Smithsonian

Commentary

Institution initiated a database concerned solely with the reintroduction of captive-bred animals. By 1993, this important collection contained data on 138 case histories and included much detailed information, including genetic and medical screening, acclimatization, post-release monitoring, number of released animals, and the success or failure of projects.

In late 1993, the generous support of the Fairbairn Trust enabled the plant section chair's office to initiate a bibliographic database on plant conservation issues, focusing on a reintroduction and restoration.

Literature Database: Early in the triennium, the RSG developed a database of reintroduction literature. This collection has grown from 200 entries in 1991 to 397 articles in 1993. The bibliographic database, which is cross-referenced as to taxonomic group and geographic location, has been provided to over 42 members and potential reintroduction executants in the form of reprints of specific articles and print-outs from the reference collection.

Meetings: Two RSG meetings were held in this triennium, the second of which served as an opportunity to discuss preliminary ideas on an RSG task force on conservation introductions. Additionally, from 1991 to 1993, the RSG was represented at 21 conservation meetings, workshops, and conferences world wide.

Networking: In the past three years, the RSG has been able to successfully fulfil its objective of establishing a world wide network of reintroduction practitioners and other relevant experts by establishing communication/collaboration with over 75 organizations, institutions, and agencies world wide.

Consultations: Through membership activities and/or correspondence, the group has extensively consulted on intended or ongoing reintroductions. The number of consultations on reintroductions increased from 28 species/sites in 1991 to 41 species/sites in 1993.

Correspondence: The RSG has been very active in the area of correspondence with its members and IUCN/SSC components, as well as with various other individuals, institutions, and agencies. By the end of the triennium, the group was receiving over 30 items of correspondence per month.

Resources

Funding: A private U.K. foundation generously provided funding to the RSG for two-and-a-half years of this triennium. The final six months were funded by a grant from the Peter Scott IUCN/SSC Action Plan Fund.

Other Support: The African Wildlife Foundation generously continues to provide support to the RSG in the form of office space and services, as well as desktop publishing facilities.

Appreciation

The Reintroduction Specialist Group would like to express its sincere appreciation to the SSC Secretariat for their continual support and assistance over the past triennium.

*Mark R. Stanley Price, Chair
Reintroduction Specialist Group*

Veterinary Specialist Group

Michale Woodford

Triennial Report

The Veterinary Specialist Group of SSC now has approximately 120 members, located in 37 countries. During the triennium, we held a meeting of the group at the joint meeting of the CBSG and the AAWV in Oakland, California, in November 1992. Twenty-one VSG members attended. A joint workshop with the Reintroduction Specialist Group was held at the Sixth International Theriological Congress in Sydney, Australia, in July 1993.

We have produced two newsletters since the last IUCN General Assembly, and a third will be published early in 1994.

Other activities have been largely opportunistic. We have consulted with the Office International des Epizooties (OIE) in Paris, and as a result of this initiative an *ad hoc* working group has been formed (consisting almost entirely of VSG members) to study the prospects for the establishment of a system of worldwide surveillance for wildlife disease, similar to that which has been operated by OIE for the past 70 years for domestic livestock. The intention is to use the existing OIE network of national chief veterinary officers in the 127 member countries of OIE to collect information on the incidence and prevalence of wildlife diseases worldwide and the subsequent publication of this information in the OIE Monthly Bulletin and, if appropriate, in the OIE Weekly Information Report. A further meeting of the *ad hoc* working group is scheduled to take place in early 1994 in Paris, when discussions will include the establishment of global wildlife disease databases, the standardization of diagnostic techniques and vaccines for wildlife, and the harmonization of international wild animal movement regulations.

In order to gather what scanty data exist on the diseases that may threaten "vulnerable" wild species, we have sent a circular letter to the chairs of all the mammal, bird, reptile, and

amphibian Specialist Groups asking for details of any disease conditions that the officers or members of the groups regard as a threat to the health and survival of their taxa of interest. Although some groups have responded nobly, the results have been generally disappointing. Only 19 chairs had the courtesy to respond, out of a possible 60! A follow-up letter has now been dispatched to those who did not reply. The object of this exercise is to identify those diseases that may influence the survival and well-being of threatened species so that these can be accorded special attention when translocation or reintroduction projects are planned.

Databases on the diseases of both captive and free-living wildlife are being set up by many related organizations, and the VSG is cooperating where possible with these. In support of these initiatives, the VSG has prepared a paper on *Disease Monitoring and Disease Research Priorities for Free-ranging and Captive-bred Wildlife*. This paper will be submitted for publication in *Species* in 1994.

Two regional sections of the VSG have been set up during the triennium, one in Australia and the other in South America. Both are active and operate in concert with the two offices of the group in Washington D.C. and England. In view of the scattered membership of the VSG, the formation of regional sections, however small, does much to involve isolated members in the veterinary aspects of conservation. It is hoped that at least two more regional sections of the VSG (in India and Africa) will be formed during the next triennium. Cooperation with other Specialist Groups, especially those that aspire to reintroduction projects, will hopefully increase in the future so that our group will be able to fulfill the purpose for which it was formed.

Michael Woodford, Chair
Veterinary Specialist Group

Commentary

CITES Listing Criteria Revisions

Deborah Crouse

As reported *Species 20*, a proposal has been circulated for new, less subjective criteria for listing species in the CITES Appendices. It is expected that a Resolution will be submitted to the Ninth Conference of the Parties to CITES not significantly different than that discussed at the recent (March 1994) Standing Committee meeting in Geneva. A number of Marine Turtle Specialist Group members, myself included, are concerned that the criteria currently proposed may be inadequate for evaluating the endangerment status of long-lived, delayed reproducers such as sea turtles, and some tropical tree species, tortoises, and chimpanzees also.

In this arena, as with the recent IUCN category revisions proposals, much discussion has centered around questions such as: Is 250 mature individuals adequate or is 500 more appropriate? But there is another issue altogether which has largely been overlooked in this debate, which I think is even more important. That is the issue of whether we should be considering criteria for identification and protection of species solely from biological extinction or should criteria be structured to prevent ecological and commercial extinction?

For the purposes of this discussion, I will define biological extinction as the elimination of every individual of a given species. Ecological extinction, on the other hand, occurs when populations of a given species fall below the levels needed to serve their normal, or perhaps any, meaningful role in maintenance of the ecosystem in which they occur. There are cases where a formerly common species can and will persist, but only in terms of a handful of individuals, perhaps with some value for genetic conservation but of little use to ecosystem maintenance, and certainly no use to sustainable utilization or development. Commercial extinction occurs when a species is reduced to the point that its harvest is no longer economically viable. This point may

coincide with that of ecological extinction, but it need not. For example, if a species or its products are extremely valuable, such as hawksbill tortoiseshell or giant bluefin tuna, it may be economically feasible to continue harvesting it long after ecological extinction is reached. The converse is also possible.

Hence the dilemma: one reason many endangered species appear to have little or no economic or ecological value is that they've already declined passed the points of being either ecologically or commercially viable, marine turtles being a prime example in many parts of the world. Yet I would argue that, while there certainly is value to preserving remnants of species for the genetic diversity they contain, what we really should be striving for is the maintenance of ecologically and commercially viable species. Certainly, if our goal is long-term sustainability of our "human" ecosystem, conserving most wild species' ecological and/or commercial viability is essential.

These concepts are certainly not new, even to the realm of CITES. Article IV (3) of the convention, focusing on Appendix II, specifically states: *Whenever a Scientific Authority determines that the export of specimens...should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs...the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.*

Thus, CITES clearly recognizes the ecological values of wild species and envisions taking an active role in preserving these values. Indeed, a number of reef coral species have been listed under Appendix II despite the clear recognition that they were not likely to become biologically extinct in the near future. Instead, they were listed to preserve the functions they play in maintaining coral reef sys-

tems, functions that might well be jeopardized due to continuing trade. As a trade treaty, the tie to preserving commercial value, be it in sale of products from any species, or in terms of tourism, maintaining the functions of an ecosystem such that its fisheries may be sustainably harvested, etc., should make sense to the Parties to the convention.

However, I believe we have a classic, and potentially dangerous, case of not seeing the forest because of the trees. We have been focusing on the details of how many individuals must be maintained to prevent biological extinction, and overlooked the bigger, more important and appropriate issues of ecological and commercial extinction.

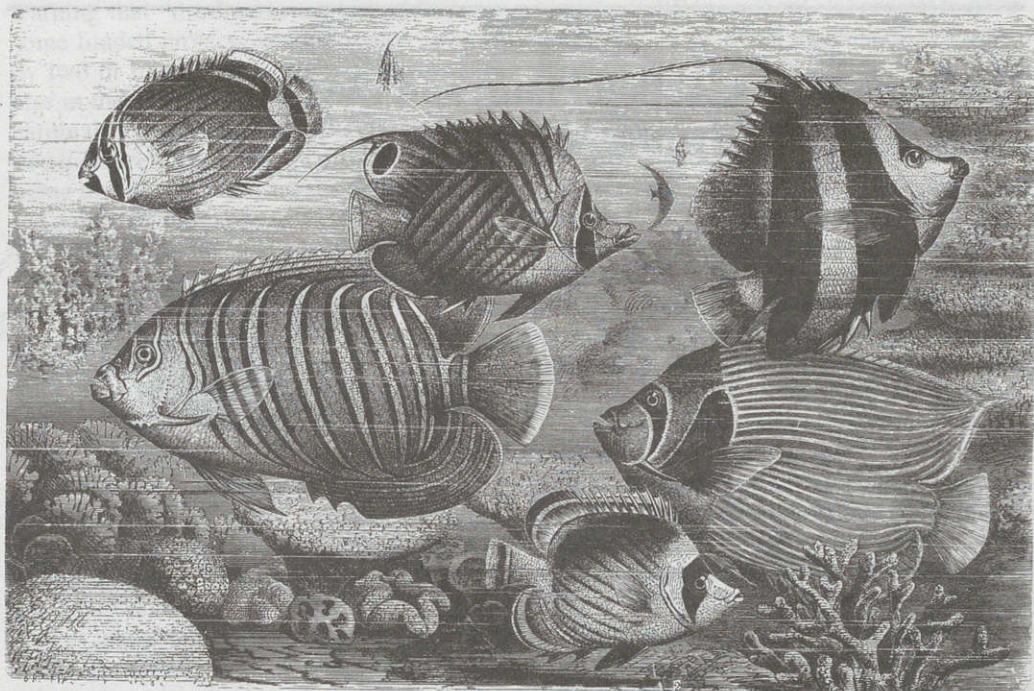
The Ninth Conference of Parties to CITES will be held in Florida, USA, in November of 1994. Already the countries that are signatories to the treaty are formulating their negotiating positions on the criteria for listing. I recommend that all Specialist Group members, the experts on these species, become involved in this process, and urge their respective representatives to the Conference to reframe this discussion in terms of the bigger issues, which are really the more important issues in this debate.

*Deborah Crouse
Center for Marine Conservation
1725 DeSales St. NW, #500
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Response to Crouse

Deborah Crouse makes some good points in her commentary relating to the proposed revisions to the CITES listing criteria. During the development of the criteria, the distinction between biological and ecological extinction was considered. Despite using some world-renowned scientists from all over the globe, it has proved impossible at this stage to come up with a practical, workable definition at this stage of "ecological extinction," let alone develop criteria to determine whether or not a species is "ecologically extinct," or in danger of becoming so. This is, of course, not surprising, since we know so little of the role that most species play in their ecosystems. However, as we were working on these draft listing criteria, we very much agreed with Crouse's point that qualification for Appendix I should not depend on a species becoming extremely rare (be it 250 or 500 individuals). To get around this problem, we developed an additional criterion to define the term "threatened with extinction" that comes closer to an "ecological" as opposed to a "biological" view of extinction. This "decline criterion" states that a species meets the biological qualifications for CITES Appendix I if it has declined by 50% over the last ten years or three generations, or is thought likely to decline to the same extent over the next ten years or three generations. We have found that many long-lived species with delayed reproduction, such as tropical trees, marine turtles, cetaceans, and tortoises, all mentioned by Crouse, qualify for Appendix I under this criterion. Crouse's commentary only refers to the "small population size criterion" (i.e., 500 individuals), and she makes no mention of the other means provided to achieve Appendix I listing, including the "decline criterion" (already discussed), and the "small range size criterion."

I find it less easy to agree with Crouse concerning the possibility of including notions of "economic extinction" in the criteria. First, it is not at all clear from the CITES Treaty text that the Parties ever intended to define extinction in this way. Second, there are a number of species and species' products that become more valuable economically the rarer they



become. This might possibly be less true for marine organisms, but it has been a major problem for certain terrestrial species. Certainly, the business in Spix's macaws became much more profitable as the species drew nearer to "biological extinction" (and long after it was presumably "ecologically extinct"). For such species, the use of criteria for "economic extinction" could make it more difficult to place them on Appendix I if that is what they need.

Crouse is, of course, correct when she cautions us not to miss the forest for the trees in this debate. There is a danger of the debate sinking into discussions of minutiae. Instead, the Parties would do well to focus on issues such as: the need to ensure that the most

threatened species are easily listed on Appendix I; the advantages of having an objective set of criteria for evaluating listing proposals; the need for transparency in the listing process; the concern that the criteria be easy to apply; the need for roughly equivalent standards to be applied across taxa (i.e., similar standards of sustainability should be applied in fisheries as in more conventional wildlife management); and the importance of a precautionary approach in considering downlisting proposals.

*Simon Stuart, Head
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Red Data Books, Action Plans, and the Need for Site-specific Synthesis

N. J. Collar

I was gratified to see my great friend and colleague Simon Stuart's review of ICBP/IUCN's recent *Threatened Birds of the Americas* (*Species* 20: 46-47). But, relieved as I was to receive his forgiveness for the book taking so long to appear, he was mistaken in attributing the delay to the fact that it covers so many species in so much detail. As my introduction makes clear, funds for the venture dried up for the entire two-year period 1988-1990; had this not happened, the book could certainly have appeared only five years after Simon's and my *Threatened Birds of Africa and Related Islands* (1985).

I make this point less in self-defense than in defense of Red Data Books, which no longer appear to figure in the canon of SSC. A seven-year period to cover a continent's avifauna certainly looks unaffordably long, especially if seven authors are named on the title page. But the book does not, of course, represent 49 man-years. For a start, I myself only worked part-time on the American volume for a total of about a year before the funds dried up; and other authors contributed for various periods at various stages. I would put the total man-years for the 1,150 page book at nine; so, under the strictest of regimes and in the most propitious of circumstances, the book could have appeared in 1988.

My point is that Red Data Books are by no means so expensive, either of time or of money, as Stuart's review may accidentally imply. There are, in my opinion, many reasons why they actually represent extremely good value and a very wise investment. Whether my views will help in their revival only time will tell, but, even if SSC persists only with its Action Plan series, there remains a further vital area within the data-gathering remit (or at least potential) of IUCN that has been neglected in both the Red Data Book and Action Plan phases of its development. This concerns the synthe-



sis of threatened species data, and in particular their distributional data. The issue of *Species* that carries Stuart's review also carries his and Mariano Gimenez-Dixon's evaluation of the effectiveness of Action Plans.

This paper praises Specialist Groups for having the capacity "to amass large quantities of high quality data at relatively little cost" which, whether true or not (and the point is at least debatable), still leaves them in need of funds "for Action Plan implementation and hiring staff dedicated to Specialist Group activities." The article concludes by stressing the need to explore "mechanisms that will allow the more effective channelling of SSC Action Plan recommendations to broader audiences that have the ability and responsibility to manage natural resources."

So, Action Plans need more money to get them implemented, and they need a means to be more accessible to managers and decision-makers. One solution—admittedly only partial, but very obvious—lies in combining projects wherever possible, and repackaging them as site-specific actions that address as broad a suite of species as possible. Gimenez and Stuart give a table of money spent since plans started to be published, with a footnote

warning that "the figures are not additive as some funded projects address issues covered by two or more Action Plans"; yet nowhere else in the article is there any mention of the cardinal importance of integrating conservation measures from different plans, despite this being the most obvious means of maximizing the value of minimal levels of funding.

I argued this constantly as a member of the IUCN unit that produced Red Data Books in Cambridge through the 1980s. It did not need the opposition to Red Data Books from those who could not see the value of what were effectively large sets of uncosted (and in their eyes unfundable) single species action plans, although such (very real) opposition should certainly have helped concentrate minds on the matter. It was simply a matter of common sense that there should be a small team that took the single species accounts from Red Data Books and reconstituted their information as analyses informing the more area-oriented conservationists and decision-makers where the critical sites of sympatric occurrence of threatened species lie.

Frustrated by lack of interest in this approach, I made sure that each bird Red Data Book account should attempt to identify, in a final entry under Remarks, where overlap with other threatened birds occurred. I even wrote a book (with Stuart) that took this approach, effectively boiling down the 800 pages of *Threatened Birds of Africa* into 100 pages, along with as much information as we could garner on other threatened and restricted-range life-forms, under the title *Key Forests for Threatened Birds in Africa* (1988). My colleagues Adrian Long and David Wege are currently doing the same with *Threatened Birds of the Americas*, and similar thinking lies be-

hind the ICBP (now BirdLife) project to document centers of avian endemism in *Putting Biodiversity on the Map* (1992).

Coordination can be done with Action Plans, too. The prospect of a particular species of monkey, parrot, snake, butterfly, and plant each requiring and receiving individually tailored action relating to the same site or set of sites is unappetizing. It can do the conservation community no great credit to be drawing up plan upon plan targeting individual species or species groups, with no regard as to which other species can be helped along the way at the same time, under the umbrella of a single project.

Action Plans are clearly now a key component of the SSC agenda. However, it is not just the extension of this component to cover and involve all groups that is needed (and it is one of my abiding concerns that Action Plans represent a kind of special pleading for those elements of life on earth that happen to have a Specialist Group assigned them—hence my continuing belief in Red Data Books). No less important (and in my view far more so, as well as far more feasible) is the addition of a synthesizing authority to integrate information on species' distributions and requirements, and then to negotiate the development of projects that minister to as many species as possible for, as far as possible, the cost of ministering to one.

N. J. Collar

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Calendar

Meetings

- Third International Parrot Convention, September 14-17, 1994, Canary Islands, Spain. Contact: Loro Parque, 38400 Puerto de la Cruz, Tenerife, Spain.
 - First Italian Congress of Theriology, October 27-29, 1994, Pisa, Italy. Contact: Sandro Lovari, Department of Evolutionary Biology, University of Siena, Via P. A. Mattioli 4, 53100 Siena, Italy.
 - Anatidae 2000 Conference, December 5-9, 1994, Strasbourg, France. Contact: Simon Nash, IWRB, Slimbridge, Gloucester, GL2 7BX, U.K.
 - Seminar on the Endangered Fauna of Kanyakumari District, Tamilnadu, December 16-17, 1994, Nagercoil, India. Contact: Prof. D. Joseph Dharmasingh, Department of Zoology, Scott Christian College, Nagercoil 629 003.
 - Pacific Seabird Group Annual Meeting, January 10-13, 1995, San Diego, California, U.S.A. Contact: William Everett, Natural History Museum, P.O. Box 1390, San Diego, California 92112, U.S.A.
 - Fifth International Conference, "Rodents & Space," Biodiversity and Adaptation, March 20-24, 1995, Rabat, Morocco. Contact: Dr. Abdelkader Zaime, Convenor, Conference on Rodents & Space, Département de Physiologie Animale et Thérapeutique, I.A.V. Hassan II, B.P. 6445 Rabat-Instituts, 10101 Rabat, Morocco.
 - Second European Congress of Mammalogy, March 27-April 1, 1995, Southampton, England. Contact: Dr. R. J. Putman, ECM-II, Department of Biology, Boldrewood Building, Bassett Crescent East, University of Southampton, Southampton, England SO9 3TU.
 - SI/MAB Symposium: Measuring and Monitoring Forest Biological Diversity, May 1995, Washington, D.C., U.S.A. Contact: Francisco Dallmeier, Forest Biodiversity Symposium, Smithsonian/MAB Biodiversity Program, 1100 Jefferson Drive, S.W., Suite 3123, Washington, D.C. 20560, U.S.A.
 - First European Conference for the Protection of Wild Plants, May 13-19, 1995, Hyères, France. Contact: PLANTLIFE, London, 44 (0)71 938 9111, fax 44 (0)71 938 9112.
 - International Congress of Chelonian Conservation, July 6-9, 1995, Gonfaron, France. Contact: Secretariat, SOPTOM, B.p.24, 83590 Gonfaron, France.
 - Fifth Neotropical Ornithological Congress, August 5-11, 1995, Asunción, Paraguay. Contact: General Secretary, V Neotropical Ornithological Congress, Intertours, Mcal. Estigarribia 1097 esq. Brasil, Asunción, Paraguay.
 - Second International Asian Herpetological Meeting, August 25-30, 1995, Ashkhabad, Turkmenistan. Contact: Dr. Sc. Sakhat M. Shammakov, Institute of Zoology, Academy of Sciences of Turkmenistan, 744000 Ashkhabad, Azady Street 59, Ashkhabad, Turkmenistan.
 - World Veterinary Congress, September 3-9, 1995, Yokohama, Japan. Contact: Secretariat for WVC '95, c/o Sankei Convention, Sankei Bldg. 10F, 1-7-2, Chiyoda-ku, Tokyo 100, Japan.
 - International Union of Game Biologists, XXII Congress, September 4-8, 1995, Sofia, Bulgaria. Contact: Prof. Nickola Botev, President of IUGB, VLTI-XXII Congress of IUGB, Bul. Kl. Ochridski 10, Sofia 1756, Bulgaria.
- Please send notices of forthcoming meetings to: Mariano Gimenez Dixon, IUCN, Rue de Mauverney 28, CH-1196, Gland, Switzerland.

In order to maintain an effective SSC communications network, we need your submissions and updates for *Species*. Submissions for *Species* 23 are due November 15, 1994. Correspondence and address corrections should be addressed to:

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